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ABSTRACT BOOK

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ORAL COMMUNICATIONS SESSION ABSTRACTS

ORAL COMMUNICATIONS 1 - BASICS IN PAIN

O01

CAN OXYTOCIN INFLUENCE PLACEBO AND NOCEBO EFFECTS IN PAIN?

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Placebo effects relieve pain but it is yet unclear how they can be enhanced to maximize positive treatment outcomes. Oxytocin may potentially be a mediator of the placebo effect due to its trust enhancing and stress relieving actions. In two studies, we investigated the influence of oxytocin on placebo analgesia and hyperalgesia. In the first study, 108 female participants were allocated to one of four groups: oxytocin with positive verbal suggestions, placebo with positive verbal suggestions, oxytocin without suggestions, and placebo without suggestions. The administration of 24 IU oxytocin or a placebo spray was preceded by positive verbal suggestions regarding the pain-relieving properties of the spray or no suggestions. Pain was assessed with a cold pressor test. In the second study, 80 male participants were allocated to an oxytocin or a control group. After the administration of 40 IU of oxytocin, they received verbal suggestions regarding a sham electrode that was said to increase or decrease their pain sensitivity depending on the mode indicated by a visual cue. To induce and test placebo analgesia and hyperalgesia, a conditioning task was used in which visual cues indicated low, medium or high heat pain. Positive verbal suggestions and a combination of suggestions and conditioning induced significant placebo analgesia and hyperalgesia. No evidence was found that oxytocin influences placebo effect, using female and male samples and also different dosages of oxytocin. Future research should focus on other possible mediators of the placebo effect such as, for example, vasopressin or other pharmacological agents.

O02

DEVELOPING A BIOPSYCHOSOCIAL PAIN AND OPIOID USE CURRICULUM FOR MEDICAL STUDENTS AT MAYO CLINIC

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Medical schools must equip future physicians to provide appropriate biopsychosocial care for patients with pain and problematic opioid use. A recent systematic review of 383 medical schools[1] found minimal instructional time and limited breadth of content dedicated to pain. This session will review the Mayo Clinic's development of a comprehensive pain and addiction curriculum.
Methods: A Pain and Opioid Curriculum Subcommittee was formed in 2018. A gap analysis using curriculum mapping of objectives identified gaps in existing curriculum as compared to International Association for the Study of Pain[2] Core Competences for Pain Management. A survey of graduating medical students indicated perceived knowledge and confidence gaps in biopsychosocial evaluation and treatment of acute and chronic pain, pediatric pain, and opioid use disorder as well as ratings of satisfaction with current curriculum.
Results: Curriculum is being integrated both vertically and horizontally to provide a longitudinal learning experience in biopsychosocial aspects of pain and opioid use from first to fourth years. We mapped current curriculum and forecast increasing curriculum by 25% yearly for next 4-5 years. To date, we have increased content by 15%, expanding didactic and experiential learning opportunities for medical students in all 4 years. A survey of graduating medical students will be repeated in May to assess changes in perceived knowledge, confidence, and satisfaction

with curriculum.
Conclusions: The initiation of a subcommittee focused on creating a biopsychosocial pain and opioid curriculum into an existing 3-site medical school will be reviewed in this session, and progress, challenges and future plans discussed.

O03

PAIN CONSULTATIONS IN CHILDREN AND YOUNG PEOPLE - A POPULATION-BASED CONSULTATION PREVALENCE STUDY

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Background and aims: Pain is a common cause for consulting healthcare. Thus far, most research has focused on the adult population and on single pain conditions. Our objective was to investigate the annual consultation prevalence of a wide range of pain conditions (headache, back/neck pain, abdominal pain, dysmenorrhea, joint pain/myalgia, juvenile idiopathic arthritis, acute pain, unspecified and persistent pain) in young people in a well-defined population.
Methods: We used the Skåne Healthcare Register (covering a total population of n=1.3 million), that include data from all levels of care in the southernmost part of Sweden. For individuals, aged 0-24 years in 2017 (n=390,567), we calculated the consultation prevalence, stratified by sex and age, and the standardized morbidity ratio (SMR), to assess overall healthcare consultation attributable to pain conditions.
Results: In total, 58,279 (15.9%) individuals consulted for any pain condition and 44.1% of them consulted at least twice for their pain. Abdominal pain, joint, pain/myalgia, headache and back/neck pain were the most common specific complaints and the consultation prevalence increased with age. Girls had higher consultation prevalence compared to boys: 17.8% versus 14.2% (p< 0.001). The SMR were 2.17 (95% CI=2.10-2.25) for girls and1.76 (95% CI=1.69-1.85) for boys.
Conclusions: The proportion of individuals under the age of 25 that consult healthcare for pain from various sites is high and many are frequent consulters. This warrant precaution for the risk of future severe forms of persistent pain. The even higher consultation rates among young girls need additional attention.

O04

AN ULTRA-FAST SYSTEM FOR SIGNALING MECHANICAL PAIN IN HUMAN SKIN

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Background and aims: The canonical view is that pain in humans is signaled exclusively by slowly conducting, thinly myelinated ('fast' pain) or unmyelinated ('slow' pain) afferents. While other mammals have rapidly conducting nociceptors, these have not been demonstrated in humans.
Methods: We performed single-unit axonal recordings (microneurography) from mechanoreceptive cutaneous

afferents in the peroneal and radial nerves of healthy participants, and psychophysical observations in patient groups with selective deafferentation or channelopathy.
Results: We identified myelinated high-threshold mechanoreceptors (A-HTMRs) that were insensitive to gentle touch, encoded noxious skin indentations, and had conduction velocities similar to thickly myelinated low-threshold mechanoreceptors. Intra-neural electrical stimulation of single A-HTMRs evoked painful percepts. Testing in patients with selective deafferentation revealed that pain judgments to graded mechanical stimuli were impaired only in the condition of absent thickly myelinated fibers. This function was preserved in patients with loss-of-function mutation in mechanotransduction channel PIEZO2.
Conclusions: Mechanical pain in humans does not require the PIEZO2 channel, and can be signaled by thickly myelinated, rapidly conducting afferents. Their existence in humans questions the validity of dichotomous fast touch-slow pain systems in classical teaching. This calls for a reappraisal of neurological views that mechanical pain examination specifically assesses small-fiber function, and that painful neuropathies imply small-fiber involvement, opening up novel therapeutic targets in pain disorders.
Disclosure: This work was supported by Swedish Research Council (HO), ALF Östergötland (HO and SSN), Pain Relief Foundation (FM and AGM), Intramural Research Program of NIH, specifically NCCIH (ATC and MCB), DDIR Innovation Award (ATC), and NINDS (CGB).

O05

WHY IS RUNNING A MARATHON LIKE GIVING BIRTH? THE ROLE OF POSITIVE AFFECT AND THE MEANING OF THE PAIN EXPERIENCE IN THE MEMORY OF PAIN

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Background and aims: There is growing evidence that people may not remember pain accurately, i.e., there are significant differences between the ratings of the experienced and recalled pain. However, previous research results are ambiguous, indicating that, with time, acute pain is recalled either as stronger, or as weaker, or accurately. The paper aims to answer the question of what factors contribute to the memory of pain.
Methods: Nine studies on different types of acute pain were conducted, including dental pain, headache, post-operative pain, post-partum pain, experimentally pain induced, and pain induced by completing a marathon. In all of the studies, pain intensity and pain unpleasantness were rated twice: during the pain experience and from a week to six months later. Positive and negative affect, as well as state and trait anxiety, were also measured.
Results: Conducted studies proved that the memory of pain is influenced not only by experienced pain, but also emotions accompanying pain experience, both negative (including anxiety) and positive. Trait anxiety was also found to contribute to the memory of pain.
Conclusions: The meaning of the pain experience and affect associated with that meaning influence the memory of pain. These results have important implications both for clinical practice and pain research as the memory of pain affects diagnoses and decisions about pain treatment, assessments of the effectiveness of treatments for pain, subsequent experiences of pain, chronic pain, and decisions on undergoing painful medical procedures.

O06

PRIORITIZING PAIN: AN ANALYSIS OF THE POLICY ENVIRONMENT AFFECTING PATIENTS SUFFERING FROM CHRONIC PAIN ACROSS EUROPE

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Background: There are 100 million people with chronic pain in Europe, but despite the large and increasing burden it has not received sufficient policy attention. To date there has been little research to identify critical areas of need in the policy environment, or what actions are required to support treatment and care for patients.
Methods: A systematic literature review across 7 European countries was undertaken to populate a comprehensive framework comparing national government policies and non-governmental initiatives in chronic pain across four policy areas: awareness and recognition, coordination and diagnosis, access to treatment and ongoing support.
Results: Chronic pain is not prioritized through coordinated national plans, although targeted policies and programs exist. Patient advocacy groups are key drivers for awareness-related policy change and implementation, however these often receive limited government support. While clinical guidelines on diagnosis, treatment and management have been established, application is often limited, and many countries report delays in diagnosis and suboptimal pain management. There are no provisions in value assessment and reimbursement processes applied to specialized pain treatments, and dedicated centres supporting patients' long-term care varies across regions and countries.
Conclusions: Given the challenges facing patients, sharing best practices is vital. Governments should prioritize chronic pain; developing a clear policy agenda to address the lack of awareness amongst patients, healthcare professionals and payers. Policy should ensure patients play an important role in the assessment of treatments and that there are appropriate provisions in value assessment methodology in order to ensure appropriate access to treatment and care.

O07

DEVELOPING THE NETWORK PAIN REHABILITATION LIMBURG: RESULTS OF A FEASIBILITY STUDY

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Background and aims: Rehabilitation care for chronic musculoskeletal pain (CMP) face challenges as mismatches exist between the complexity of patient's pain problem and the treatment offered which can lead to less efficient care and increased costs. The Network Pain Rehabilitation Limburg (NPRL) is a transmural integrated healthcare network designed to provide integrated care to improve patients' level of functioning despite pain from a biopsychosocial perspective. This feasibility study provides insight into the barriers and facilitators for the development, implementation, and transferability of NPRL.
Methods: In this study with a three-phase iterative and incremental design, interviews and focus groups were performed in which healthcare professionals (HP), and patients involved in NPRL, participated. The results of each phase, analyzed following the Consolidated Framework for Implementation Research, were used to refine NPRL in daily practice.
Results: General practitioners (n=5), a practice nurse mental health (n=1), therapists (n=10), a secondary rehabilitation center (n=1) and a tertiary rehabilitation center (n=1) participated. This led to 58 patients who gave informed consent. Numerous barriers and facilitators were indicated. Eg. The content of NPRL is developed in collaboration with participating HPs. During implementation, against expectations, primary care HPs found it difficult to recognize patients with CMP on the spot. When NPRL will be transferred to other areas, it will be more difficult to attract HPs without a focus on CMP.
Conclusion: NPRL seems to be feasible in daily practice when the identified barriers and facilitators are used to adjust the content of NPRL.

O08

THE POSITIVE IMPACT OF PAIN-SPECIFIC RESILIENCE IN PEOPLE LIVING WITH HIV AND CHRONIC PAIN

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Background: Chronic pain is increasingly recognized as a common problem for people living with HIV (PLWH). In a recent systematic review of psychosocial factors associated with chronic pain in PLWH, it was reported that few studies to date have examined protective psychological factors that might help mitigate chronic pain for PLWH. This study examined pain-specific resilience in relation to clinical and experimental pain, as well as pain coping in PLWH with chronic pain. Pain-specific resilience refers to the ability to maintain relatively stable, healthy levels of psychological and physical functioning in the face of chronic pain.
Methods: A total of 85 PLWH (median CD4+ = 620; 13% detectable viral load >200; 99% on antiretroviral therapy) who met criteria for a chronic pain condition completed the Pain Resilience Scale (PRS), the Coping Strategies Questionnaire-Revised (CSQ-R), and the Brief Pain Inventory - Short Form (BPI-SF) prior to a quantitative sensory testing battery designed to assess tolerance for painful heat and cold stimuli.
Results: In adjusted multiple regression models, greater pain-specific resilience was significantly associated with less pain interference ($p = .004$) but not pain severity ($p = .064$) on the BPI-SF. Greater pain-specific resilience was also significantly associated with less pain catastrophizing ($p < .001$) and greater use of distraction ($p = .026$) on the CSQ-R, as well as significantly greater heat pain tolerance ($p = .049$) but not cold pain tolerance ($p = .071$).
Conclusions: Findings suggest that pain-specific resilience may help protect PLWH from the deleterious effects of chronic pain.

ORAL COMMUNICATIONS 2 - DIAGNOSIS & MEASUREMENT IN PAIN and PAIN THERAPIES

O09

PAIN AS A FIRST AND ONE OF THE MOST DISTURBING SYMPTOMS OF MULTIPLE SCLEROSIS

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Background and aims: MS manifest in a wide range of syndromes. One of these syndromes is pain syndrome. But it is rarely considered as a first symptom of MS. However, when collecting a medical history, many patients are referring to pain as a first symptom of the disease.
Methods: Cross-sectional study conducted in neurology department of Lviv Regional Clinical Hospital. 64 patients with MS have passed structured interview, clinical examination and standardized questionnaires for evaluation of pain (SF-MPQ-2 , PainDetect), Anxiety and Depression (HADS) and quality of life (SF-36).
Results: Patients mean age was 37.5 years, mean disease duration 9,3 years. 71,9% of patients had pain syndromes. For 31,25% patients pain was the most disturbing symptom. 26,5% patients had neuropathic or mixed pain syndromes as a first manifestation of the disease. Among them 14% patients had ongoing extremity pain, 3,1% had Lhermitte's phenomenon, 1,6% trigeminal neuralgia and 7,8% painful tonic spasms as a first manifestation of the disease. These patients had higher levels of anxiety and depression and lower quality of life.
Conclusions: Pain is common syndrome in MS and has big influence on patients quality of life. As a first manifestation of MS, pain syndromes are also quite frequent. But mostly neither doctors nor patients associate them with the disease. Further study of pain syndromes and objectification of subjective sensation of pain in MS with such technologies as fMRI will improve understanding, diagnostics and treatment of these conditions and, as a consequence, patients quality of life.

O10

IS THE ALTERED BRAIN MORPHOLOGY IN CHRONIC PANCREATITIS DRIVEN BY PAIN OR OTHER DISEASE CHARACTERISTICS?

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Background and aims: Abnormal pain processing in the central nervous system is a hallmark of chronic pancreatitis (CP). We characterized brain structure in CP patients and identified disease characteristics that impact the brain morphology in CP patients.
Methods: Thirty-three CP patients and 23 matched healthy controls underwent brain magnetic resonance imaging. All patients completed a short-form brief pain inventory questionnaire. Total and regional gray matter volume (GMV) and cortical thickness analyses were performed. Multivariate linear regression models were applied to determine independent predictors of total GMV.
Results: CP patients had 31.9±9.3 (mean±SE) cm^3 (5.1 %) reduced total GMV compared with healthy controls (587.1±5.8 cm^3 vs 619.0±7.0 cm^3, P< 0.001). Alcoholic etiology was independently associated with decreased total GMV (P< 0.001), while no associations were seen for pain or other disease characteristics (all P>0.05). Likewise, regional GMV loss and cortical thinning were seen for several cortical areas in patients with alcoholic etiology compared to their non-alcoholic counterparts (P< 0.05). These regional differences were particularly evident for pain related cortical areas; however, no significant differences in regional GMV or cortical thickness were seen between patients with and without pain (all P>0.05).
Conclusions: Patients with CP have GMV loss that associates with alcoholic disease etiology. No associations were detected between pain and GMV loss, likely because the potential effect of long-lasting pain on brain structure is masked by the effects of previous alcohol use. The findings implicate that alcoholic etiology is the most prominent contributing factor for structural brain alterations in CP patients.

O11

EFFECTS OF A TAILORED EXERCISE PROGRAM IN KNEE OSTEOARTHRITIS PATIENTS WITH CHRONIC PAIN: AN FNIRS STUDY

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Background and aims: Functional near-infrared spectroscopy (fNIRS) is a novel, noninvasive neuroimaging modality for monitoring cortical activation. The aim of this study was to quantify the efficacy of an exercise program tailored for knee osteoarthritis patients with chronic pain via fNIRS. To this aim, cortical hemodynamic correlates of painful stimuli were obtained before and after a 6-week intervention. The second aim was to investigate the relationship between changes in pain level and hemodynamic parameters pre and post-intervention.
Methods: Eleven patients with knee osteoarthritis participated in the study. They attended 18 sessions in 6 weeks. Pain severity during activity was determined using the Visual Analog Scale, and brain hemodynamic responses were assessed with a 48 channel fNIRS device at the onset and end of the exercise program. The fNIRS experimental protocol consisted of 15 trials of painful and nonpainful stimuli applied for 5 seconds in a randomized order, separated by interstimulus intervals of 30 seconds.
Results: Preliminary results yielded a significant main effect of channel location and intervention at the group level for painful stimuli in terms of parameters related to oxyhemoglobin (HbO) consumption calculated by repeated measures ANOVA (p< 0.05). Post-hoc paired t-tests revealed a significant difference in HbO parameters pre- and

post-exercise pointing out an increase in dorsolateral prefrontal and frontopolar cortex activation.
Conclusions: Our preliminary results demonstrate the potential of fNIRS as an objective biomarker of pain assessment and therapy monitoring. fNIRS is a promising tool for exploring the neuroplastic effects of exercise programme in chronic pain conditions.

O12

A PROSPECTIVE GLOBAL REGISTRY OF REAL-WORLD OUTCOMES USING SPINAL CORD STIMULATION SYSTEMS FOR CHRONIC PAIN

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Background and aims: Real world evidence (RWE) derived from large patient outcome registries via application of advanced data analytics represents a potentially important aspect of the on-going rational assessment and future development of commercially-available Spinal Cord Stimulation (SCS) devices. We present here a prospective global registry designed to evaluate long-term, clinical application of neurostimulation therapy for pain.
Methods: This is a prospective, multicenter global registry (RELIEF Registry, Boston Scientific) that aims to assess several various aspects of the pain treatment experience and the safety profile associated with using SCS in up to 1700 participants at up to 81 centers (ClinicalTrials.gov Identifier:NCT01719055). Eligible study participants are trialed for “on label” use only with a commercially-approved SCS system (Boston Scientific) and must sign an IRB-approved informed consent form. All permanently-implanted subjects are followed out to 36-months.
Results: A total of 1,151 subjects at 81 global study sites have been assessed out to 3 years post-implantation. Patient satisfaction (PGIC) assessment determined that 88% of registry participants reported overall therapeutic improvement within span of this 3-year duration. In addition, a low incidence of explants due to device-related complications of 7.9% was determined with only 2.4% indicating that this was due to inadequate pain relief (% explant per year: 3.6%).
Conclusions: The 3-year results of this prospective, multicenter real-world registry demonstrate a low percent explant rate per year and a high percentage of patients reporting therapeutic improvement when using an SCS device to treat their chronic pain.

O13

POLYMORPHISMS OF THE μOPIOID RECEPTOR GENE INFLUENCE PAIN PROCESSING IN FIBROMYALGIA AND HEALTHY CONTROLS

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A possible mechanism underlying impaired pain inhibitory control in fibromyalgia (FM) is dysfunctional endogenous opioid signalling, which may contribute to alterations in pain modulation in the CNS. Recently, reduced μ-opioid binding potential/receptor availability in FM[1] was linked to reduced clinical pain affect and decreased pain-related activity in antinociceptive brain regions[2]. A genetic polymorphism of the μ-opioid receptor gene (OPRM1) interacted with serotonergic mechanisms to influence pain modulation in FM and healthy controls (HC)[3]. This study investigated whether the genetic variants of the A118G rs1799971 polymorphism in OPRM1 were associated with differences in pain-processing in FM patients (n=70) and HC (n=35) using fMRI. Participants received 20 individually calibrated pressure stimuli corresponding to pain ratings of 10mm (low intensity) and 50mm (high intensity) on a 100mm visual analogue scale and were prompted to rate pain intensity after each stimulation. There was no difference between

OPRM1 genotypes' pain ratings (t=0.622, β= 1.67, p=0.54), independent of group (t=0.343, β= -1.525, p=0.73), indicating successful pain calibration. A significant difference between OPRM1 genotypes during the processing of painful stimuli was observed. Compared to AA homozygotes, G carriers showed increased activation in the primary motor cortex/posterior cingulum extending to the precuneus (t=4.56, $p_{(FWE)}$=0.005, peak at [-2 -28 48]). This effect was observed across pressure intensities and groups. Our data suggest that OPRM1 exhibits a similar effect of stronger opioid tone increasing activation of sensory-discriminative brain regions in FM patients and HC alike.
1 Harris et al. (2007)
2 Schrepf et al. (2016)
3 Tour et al. (2017)

O14

FACILITATORY AND INHIBITORY PAIN MECHANISMS IN HUMANS: METHODOLOGICAL ADVANCES

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Background and aims: Central sensitization, a key mechanism underlying chronic pain, can be experimentally investigated by temporal summation of pain (TSP). TSP evoked by tonic heat can be examined using conventional rating-based methods or participant-controlled temperature (PCT). This study compared these two approaches for the investigation of TSP evoked by tonic heat and its modulation by a heterotopic noxious conditioning stimulus.
Methods: Thirty healthy subjects underwent a sequential conditioned pain modulation (CPM) paradigm with a cold pressor test (9°C) and tonic heat as conditioning and test stimulus, respectively. Temporal changes in perception of tonic heat were assed using either a rating-based approach (i.e., computerized visual analog scale (CoVAS)) or PCT. Lower limb noxious withdrawal reflex and pressure pain threshold were included as positive controls for CPM effects. Tonic heat using CoVAS or PCT was compared regarding TSP occurrence. CPM effects were analyzed using general linear mixed models.
Results: TSP was more prevalent in the tonic heat paradigm using PCT compared to CoVAS (85.7% vs. 36.7%). Inhibition of TSP by CPM was detected when tonic heat was applied using PCT (p=0.01) but not when using CoVAS (p=0.78). Increased thresholds of lower limb noxious withdrawal reflexes (p=0.004) and pressure pain (p< 0.001) in response to cold pressor test confirmed an inhibitory CPM effect.
Conclusions: PCT is more sensitive to detect tonic-heat-induced TSP and its inhibition by CPM compared to the rating-based approach. PCT might therefore be better suited to explore the complex interactions of facilitatory and inhibitory mechanisms contributing to chronic pain.

O15

DIFFUSE NOXIOUS INHIBITORY CONTROLS AND BRAIN NETWORKS ARE MODULATED IN A TESTOSTERONE-DEPENDENT MANNER IN SPRAGUE DAWLEY RATS

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Background and aims: Diffuse noxious inhibitory control (DNIC), which involves endogenous pain modulation, has been investigated as a potential mechanism for the differences in pain modulation observed between men and women, though the literature shows contradictory findings. We used a capsaicin-induced DNIC behavioral assay and resting state functional magnetic resonance imaging (rsfMRI) to assess the effect of testosterone on pain modulation

and related brain circuitry in rats. We hypothesized that testosterone is required for DNIC that leads to efficient pain inhibition by increasing descending pain modulation.
Methods: Male, female, and orchidectomized (GDX) male rats had a capsaicin injection into the forepaw to induce DNIC and mechanical thresholds were observed on the hindpaw. rsfMRI scans were acquired before and after capsaicin injection to analyze the effects of DNIC on periaqueductal gray (PAG), anterior cingulate cortex (ACC) and nucleus accumbens (NAc) connectivity to the whole brain.
Results: The strength of DNIC was higher in males compared to females and GDX males. PAG connectivity with prelimbic cortex (PrL), ACC and insula was stronger in males compared to females and GDX males, whereas females and GDX males had increased connectivity between the right ACC, hippocampus and thalamus. GDX males also showed a stronger connectivity between right ACC and NAc, and right NAc with PrL, ACC, insula and thalamus.
Conclusions: Our findings suggest that testosterone plays a key role in reinforcing the endogenous pain inhibitory system, while circuitries related to reward and emotion are more strongly recruited in the absence of testosterone.

ORAL COMMUNICATIONS 3 - PAIN SYNDROMES

O16

ASSESSMENT OF CENTRAL SENSITIZATION IN NEUROPATHIC PAIN FOLLOWING SPINAL CORD INJURY

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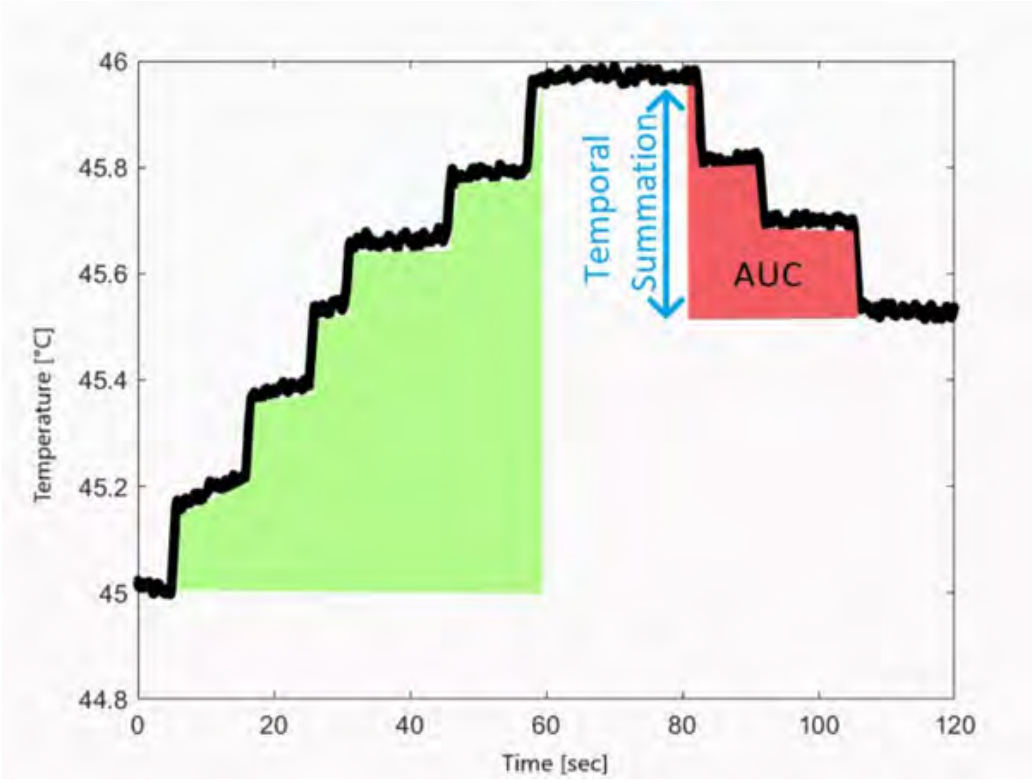
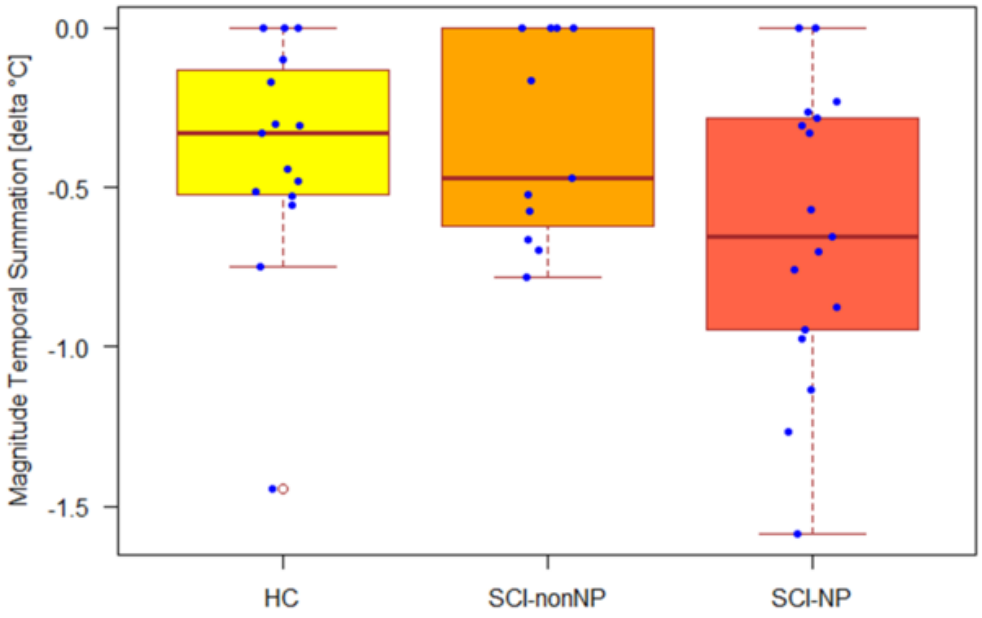
Background and aims: Individuals with neuropathic pain following spinal cord injury (SCI-NP) show a lack of anti-nociception or a preponderance of pro-nociception reflected in central sensitization along the nociceptive neuraxis. Temporal summation of pain (TSP) can serve as an experimental readout of such sensitization processes. The aim of this study was the assessment of TSP in SCI-NP by a tonic heat application.
Methods: This study used a tonic heat paradigm in three groups: thoracic SCI patients with and without neuropathic pain (SCI-nonNP), and healthy controls (HC). Tonic heat was applied for 2min at the volar forearm, and participant-controlled temperature (PCT) was used to keep the pain constant. The main readouts were the occurrence of TSP, the TSP magnitude, and the area under the curve (AUC) (Fig. 1, red). These variables were related to the patients' pain characteristics such as intensity and extent.
Results: SCI-NP patients showed the highest percentage of TSP occurrence (88%, SCI-nonNP: 63.6%, HC: 80%). SCI-NP had a significantly higher TSP magnitude ($p=0.044$) and AUC ($p=0.037$) compared to SCI-nonNP (Fig. 2). The correlation of TSP magnitude with pain intensity and pain extent was not significant ($r=-0.22, p=0.198$, resp. $r=-0.309, p=0.114$).
Conclusions: PCT is a sensitive tool to assess tonic-heat-related TSP - serving as a proxy for central sensitization in SCI-NP patients. Tonic heat paradigms enable a quantitative and continuous measure of processes such as TSP and adaptation (Fig. 1, green).



[Figure 1: Participant-controlled temperature, with adaptation (green) and temporal summation (red)]



[Figure 2: Magnitude of temporal summation across the three different groups]

O17

PERSONAL AND SOCIETAL IMPACT OF LOW BACK PAIN; THE GRONINGEN SPINE COHORT

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Background and aims: The socioeconomic burden of LBP is very high. A minority of patients visits secondary or tertiary care because of severe and long lasting complaints. The objective was to study the personal and societal impact of LBP in patients admitted to a multidisciplinary spine center.
Methods: Baseline data were acquired through patient-reported questionnaires and health insurance claims. Primary outcomes were LBP impact (Impact Stratification, range 8-50), functioning (Pain Disability Index, PDI; 0-70), quality of life (EuroQol-5D, EQ5D; -0.33-1.00), work ability (Work Ability Score, WAS; 0-10), work participation, productivity costs (Productivity Cost Questionnaire, iPCQ), and healthcare costs one year prior to baseline. Healthcare costs were compared with matched primary and secondary care LBP samples.
Results: In total 1502 patients (age 46.3±12.8 years, 57% female) were included. Impact Stratification was 35.2±7.5 with severe impact (≥35) for 58% of patients. PDI was 38.2±14.1, EQ5D 0.39 (interquartile range, IQR: 0.17;0.72); WAS 4.0 (IQR: 1.0;6.0) and 17% was permanently work disabled. Mean total healthcare costs (€4875, 95% CI: 4309;5498) were higher compared to the matched primary care sample (n=4995) (€2365, 95% CI: 2219;2526, p< 0.001), and similar to the matched secondary care sample (n=4993) (€4379, 95% CI: 4180;4590). Productivity loss was estimated at €4315 per patient (95% CI: 3898;4688) over six months.
Conclusions: In patients seeking multidisciplinary spine care, the personal and societal impact of LBP is very high. Specifically, quality of life and work ability are poor and healthcare costs are twice as high compared to patients seeking primary LBP care.

O18

DOES THREAT OF PAIN INFLUENCE CORTICAL MOVEMENT PREPARATION IN LOW BACK PAIN?

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Background and aims: The anticipation of pain can have detrimental effects on motor control, resulting in delayed trunk muscle activity. Effects of cognitive-affective factors like anticipation/threat of pain are hypothesized to differ depending on the type of low back pain (LBP), as previous literature has found a higher presence of maladaptive cognitive-affective factors in chronic compared to recurrent LBP patients. To date only peripheral measures of movement preparation have been experimentally examined in this regard. The influence of threat of pain on central measures of movement preparation, such as the contingent negative variation (CNV), could further elucidate the chronification process in LBP.
Methods: A rapid arm movement task (RAM) was tested in a 'threat' and a 'no threat' condition, respectively with and without electrocutaneous back pain inducement. The CNV amplitude was measured with EEG in the phase prior to arm movement and was compared between healthy controls, RLBP, and CLBP sufferers for both conditions. Furthermore, cognitive-affective factors were assessed with questionnaires.

Results: There was a significantly larger negativity of the late CNV in the threat condition compared to the no threat condition (p< .001), but no differences were found comparing populations.
Conclusions: Threat of pain induces enhanced cortical movement preparation, but this process is independent of the presence or degree of LBP
Disclosures: This study was funded by an interdisciplinary grant [BOF14/IOP/067] from the Special Research Fund/ Bijzonder Onderzoeksfonds (BOF) at Ghent University. Jessica Van Oosterwijck is a Postdoctoral Fellow funded by the Research Foundation - Flanders (FWO) [12L5616N].

O19

EXPERIENCE OF PAIN FROM INDIGENOUS AUSTRALIAN PERSPECTIVE

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Background and aim: Chronic pain is a debilitating health condition that affects all irrespective of age, gender and ethnicity. Although, pain is a universal experience the degree of suffering greatly differs between individual's. One key factor which shows significant impact on patients' experience is their cultural beliefs and views surrounding pain. This study aims to understand the Indigenous Australian perspective on pain, present pain assessment and management, using a qualitative study design, as very little is known about Indigenous people experience of pain.
Method: Five Focus group discussions were conducted with Indigenous Australian participants across Adelaide. All focus groups were audio-recorded, and transcripts were coded and analysed thematically with the program NVivo.
Results: Five key themes were identified:
(i) Pain as an integral element of living;
(ii) Difficulty in comprehending current pain assessment tools;
(iii) Difficulty in accessing medical care;
(iv) Difficulty in communicating pain to providers; and
(v) Issues beyond pain control.
Conclusions: These findings show that present pain assessment and management is failing to capture the pain experience of Indigenous community in its entirety. Large scale trials are needed to develop tools for managing pain especially tailored to Indigenous sentiment.
Acknowledgements: We would like to acknowledge all Indigenous communities for their participation.

O20

LIFE SATISFACTION IN OLDER ADULTS WITH CHRONIC PAIN

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Chronic pain in later life is a worldwide problem. Chronic pain affects life satisfaction negatively in younger patients. It remains unknown whether this outcome will extend to old age. This study aimed to examine which factors determined life satisfaction of older adults with chronic pain.
Methods: The cross-sectional analysis involved a random sample of a population ≥ 65 years in south-eastern Sweden (N= 6611). A postal questionnaire addressed pain aspects and health experiences. The questionnaire LISAT-11 was used to capture the individual's estimations of satisfaction with life as a whole (LISAT-life), physical health (LISAT-PH) and mental health (LISAT-MH).
Results: Median scores of LISAT-life, LISAT-PH and LISAT-MH (range 0-6), were 5, 4, 5, respectively, indicating

rather satisfying to satisfying. The subgroup with chronic pain (2790, 42%) rated lower scales than those without chronic pain (P< 0.001). In the subgroup with chronic pain, factors that decreased LISAT-life were pain spreading (greater number of pain sites), non-optimal lifestyles (smoking, high alcohol consumption), increased age, diagnosis of gastrointestinal diseases and having anxiety or depression. Pain spreading and severe pain decreased both LISAT-PH and LISAT-MH. The variables lessening LISAT-PH also included several chronic medical diseases. In contrast, having a history of trauma was related to a higher score of LISAT-MH.
Conclusion: There is a different profile of factors that related to life satisfaction in older adults with chronic pain regarding pain aspects, comorbidities and sociodemographic factors. Pain management may shift the focus on comorbidities and severe pain in order to reach a better life satisfaction.

O21

BACK PAIN IN BRAZILIAN ADOLESCENTS: A LONGITUDINAL STUDY

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Back pain (BP) is a significant public health problem. Although several recent studies examined the prevalence and risk factors of BP in adolescents, most had a cross-sectional design; thus, no causality could be established. Owing to the lack of longitudinal studies in Latin American countries, we aimed to evaluate BP and its risk factors in a three-year longitudinal study of Brazilian adolescents. We analyzed data of 525 adolescents (aged 11-16 years) attending primary school (5th to 8th grade) in Brazil. The students were administered the self-reported Back Pain and Body Posture Evaluation Instrument (BackPEI) questionnaire in 2011 and at a follow-up evaluation that was conducted 3 years later (2014). BP was the outcome variable; the exposure variables included exercise, behavioral, hereditary, and postural factors. Generalized estimating equations were used to perform a Poisson regression model with robust variance. The prevalence of BP at baseline was 56%; this increased significantly at the 3-year follow-up evaluation to 65.9%. The frequency of experiencing BP also increased after 3 years in both boys (p=0.002) and girls (p=0.001). The prevalence of BP increased significantly in adolescents up to 13 years old, stabilized in those 14 years and older, and was higher among girls. A family history of BP (in the parents), watching television for lengthy periods, and carrying a backpack asymmetrically were predictors for BP.

ORAL COMMUNICATIONS 4 - PAIN SYNDROMES

O22

SUBCUTANEOUS TANEZUMAB FOR OSTEOARTHRITIS PAIN: A 24-WEEK PHASE 3 STUDY WITH A 24-WEEK FOLLOW UP

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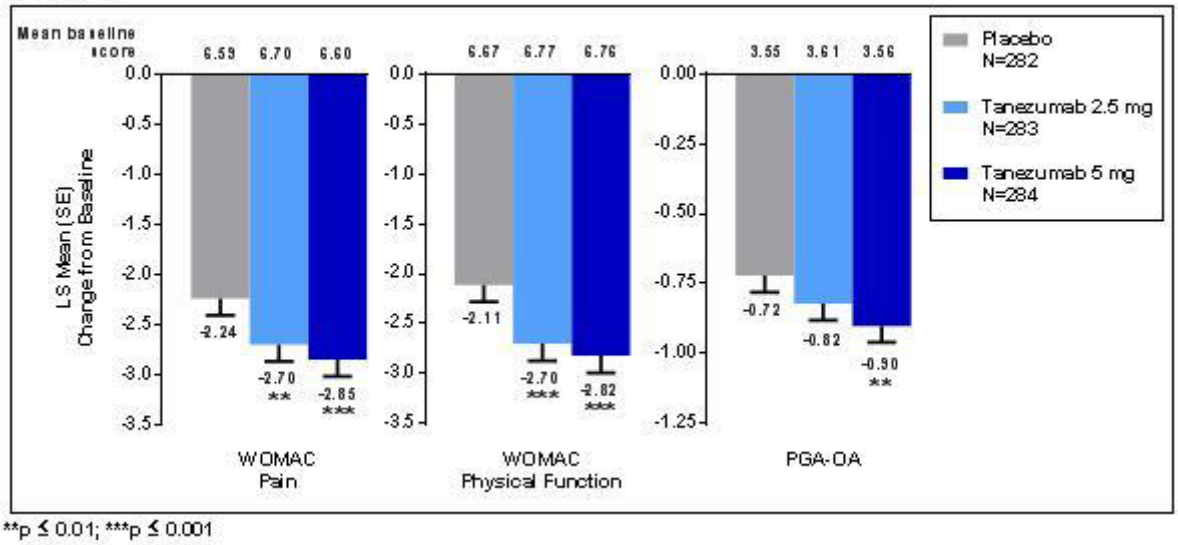
Background/aim: To assess tanezumab, a monoclonal antibody against nerve growth factor, in patients in Europe or Japan with moderate-to-severe osteoarthritis (OA) pain of the knee or hip and history of inadequate response or intolerance to standard of care analgesics.

Methods: Patients in this randomized, double-blind study (24-week treatment; 24-week follow-up) received subcutaneous tanezumab (2.5 or 5mg) or placebo every 8 weeks. Co-primary endpoints were change from baseline in Western Ontario and McMaster Universities OA index (WOMAC) Pain, WOMAC Physical Function, and Patient Global Assessment of OA (PGA-OA) scores at week 24.
Results: Tanezumab 5mg met all co-primary endpoints (Fig. 1). Tanezumab 2.5mg met Pain and Physical Function endpoints but not PGA-OA. Incidence of adverse events (AEs; 53-57%) and study discontinuations due to AEs (0.4-1.8%) were similar across groups during the treatment period. Serious AEs occurred more frequently with tanezumab (2.8-3.2%) than placebo (1.1%). Total joint replacements (TJRs) were similar across groups. Joint safety events, including TJRs, were mostly adjudicated as normal progression of OA (58/79; 73.4%). Pre-specified joint safety events occurred in 0% and 2.5% (n=14) of patients in the placebo and tanezumab groups, respectively. Events in tanezumab groups included rapidly progressive OA (2.5mg n=4; 5mg n=8), subchondral insufficiency fracture (2.5mg n=1), and primary osteonecrosis (5mg n=1).
Conclusion: Tanezumab 5mg significantly improved pain, function, and PGA-OA. Tanezumab 2.5mg significantly improved pain and function, but did not reach significance for PGA-OA. Joint safety events were more frequent with tanezumab than placebo.

Figure 1. Change from baseline in WOMAC Pain, WOMAC Physical Function, and Patient Global Assessment of OA scores at Week 24.



**p ≤ 0.01; ***p ≤ 0.001

[Figure 1]

O23

HUMAN IAPP MEDIATES PAINFUL DIABETIC PERIPHERAL NEUROPATHY

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Background and aims: Diabetic peripheral neuropathy is a frequent complication of type 2 diabetes mellitus (T2DM). Hyperglycemia alone cannot completely explain for the development of T2DM neuropathy. In T2DM large quantities of Human Islet amyloid polypeptide (hIAPP) are produced by the pancreatic islet β-cells. hIAPP, contrary

to mouse/rat IAPP, can form pathogenic aggregates (oligomers and amyloid), leading to islet β- cell death and possibly damage in other tissues. Here we investigated whether hIAPP drives the development of painful T2DM peripheral neuropathy.
Methods: Mechanical thresholds were measured using von Frey hairs in a transgenic mouse model of T2DM (Obese mice that produce hIAPP in their islet β-cells; hIAPP Ob/Ob), and compared with WT mice, ob/ob mice (slightly hyperglycemic), and hIAPP mice (normoglycemic). Spontaneous pain was assessed using conditioned place preference. Intraepidermal nerve fiber (IENF) density was assessed using PGP9.5 staining.
Results: hIAPP Ob/Ob mice had elevated blood glucose compared to WT mice and increased mechanical sensitivity. hIAPP mice had normal glucose levels but elevated hIAPP levels, and intriguingly also showed mechanical allodynia and spontaneous pain behaviors as compared to WT mice. hIAPP and hIAPP Ob/Ob mice had reduced skin IENF. Both intraplantar and intravenous injection of hIAPP dose-dependently induced long-lasting allodynia (1-2 weeks) and reduction in IENF density. In contrast, mouse IAPP and non-amyloidgenic hIAPP did not induce allodynia or reduced IENF density.
Conclusions: Human IAPP induces signs of peripheral neuropathy. Therefore human IAPP may play a key role in the development of T2DM associated neuropathy.

O24

SUBCUTANEOUS TANEZUMAB VERSUS TRAMADOL FOR CHRONIC LOW BACK PAIN: EFFICACY AND SAFETY RESULTS FROM A 56-WEEK PHASE 3 STUDY WITH A 24-WEEK FOLLOW UP PERIOD

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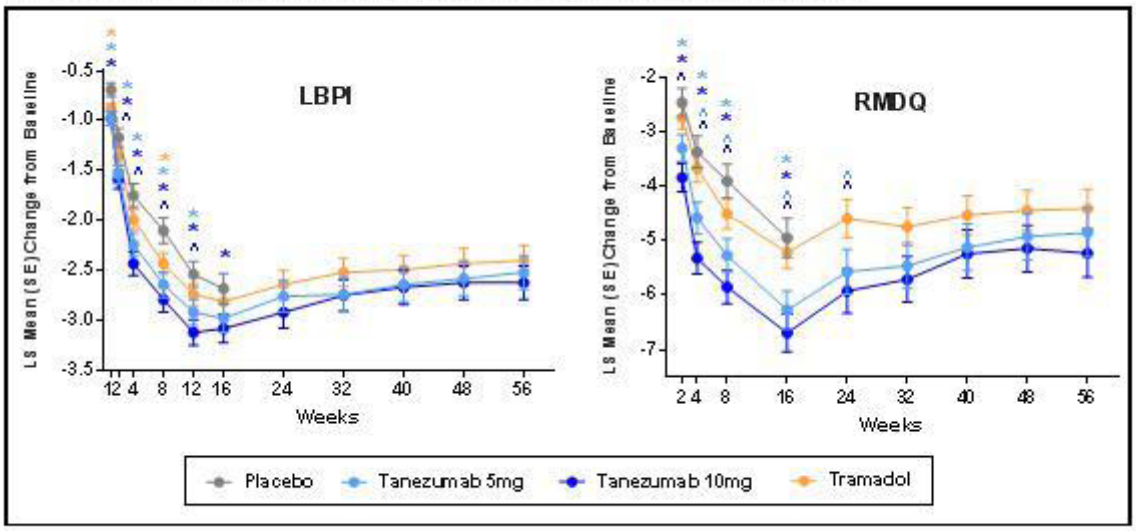
Background: A randomized, double-blind trial (56-week treatment; 24-week follow-up) was conducted in patients with Chronic Low Back Pain (CLBP) and history of inadequate response/intolerance to standard of care analgesics.
Methods: Patients received placebo, subcutaneous tanezumab (5 or 10mg every 8 weeks), or oral tramadol prolonged release (100-300mg/day). At week 16, patients receiving placebo were switched (1:1) to tanezumab 5 or 10mg. Low Back Pain Intensity (LBPI) and Roland Morris Disability Questionnaire (RMDQ) were assessed through week 56. Safety, including joint safety, was assessed through week 80.
Results: Improvements in LBPI and RMDQ, relative to baseline and tramadol (N=605; mean dose=209mg/day), were maintained throughout the study with tanezumab 5mg (N=407) and 10mg (N=407) but were not significantly better than tramadol at week 56 (Figure). Adverse event (AE) rates through week 56 were 58.3%, 63.7%, and 65.4% in the tanezumab 5mg (N=506), tanezumab 10mg (N=502), and tramadol (N=602) groups, with treatment discontinuation rates of 6.7%, 7.4%, and 10.5%, respectively. Rapidly progressive osteoarthritis occurred in 1.4% (type-1 n=12; type-2 n=2) and 0.2% (type-1 n=1) of tanezumab- and tramadol-treated patients, respectively. Subchondral insufficiency fracture and total joint replacement occurred in 0.4% (n=4) and 0.7% (n=7) of tanezumab-treated patients; none with tramadol. No joint events occurred with placebo.
Conclusion: Improvements in pain and function with tanezumab were maintained long-term, but were not significantly better than tramadol at week 56. AE-related treatment discontinuations were more frequent with tramadol; joint safety events were more frequent with tanezumab.

Figure. Change in LPBI and RMDQ scores through the 56 week treatment period.



*p<0.05 versus placebo; ^ p<0.05 versus tramadol

[Figure 1]

O25

EARLY PREDICTION OF CHRONIC POSTSURGICAL NEUROPATHIC PAIN USING THE DOULEUR NEUROPATHIQUE 2 QUESTIONNAIRE

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Background and aims: Chronic postsurgical neuropathic pain (CPSNP) is often severe, having a negative impact on recovery from surgery. Early identification of patients at risk for CPSNP provides the opportunity to timely institute anti-neuropathic treatment. The aim of present study was to determine if the douleur neuropathique 2 (DN2) questionnaire identifies patients at risk for CPSNP.
Methods: After ethical approval, patients after vascular, trauma, orthopedic and general surgery were interviewed on postoperative day 1 (POD1), POD14 and POD90 using the DN2 and the International Pain Outcomes Questionnaire. Pain was defined by a score of 4 or higher on a 11-point Numeric Rating Scale. Pain with neuropathic characteristics was diagnosed when additionally the DN2 score was 3 or higher.
Results: From January till August 2018 368 patients were included of whom 63% responded on POD14 and 62% on POD90. At POD1, POD14 and POD90 respectively 78%, 40% and 31% of patients were in pain. Incidence of CPSNP on POD90 was 16.3%. A positive DN2 on POD1 was significantly associated with pain with neuropathic characteristics at POD14 (OR 1.11, p< 0.01) but not with CPSNP at POD90. Pain and a positive DN2 on POD14 were both significant risk factors for CPSNP at POD90 (resp. OR 1.73, p < 0.001 and 1.06, p = 0.02).
Conclusions: Pain and a positive DN2 on POD14 are significantly associated with CPSNP on POD90. Further research is needed whether initiation of anti-neuropathic treatment on POD14, can improve postsurgical recovery and prevent development of CPSNP on POD90.

O26

A SHARED DECISION APPROACH TO CHRONIC ABDOMINAL PAIN BASED ON CINE-MRI: A PROSPECTIVE COHORT STUDY

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Background: Chronic abdominal pain develops in 11-20% of patients undergoing abdominal surgery, partly owing to post-operative adhesions. In this study we evaluate results of a novel diagnostic and therapeutic approach for pain associated with adhesions.
Methods: Prospective cohort study including patients with a history of abdominal surgery referred to the outpatient clinic of a tertiary referral center for the evaluation of chronic abdominal pain. Subgroups were made based on outcome of adhesion mapping with cine-MRI and shared decision making. In operatively managed cases, anti-adhesion barriers were applied after adhesiolysis. Long-term results for pain were evaluated by a questionnaire.
Results: A total of 106 patients were recruited. Seventy-nine patients had adhesions on cine-MRI, 45 of whom underwent an operation. Response rate to follow-up questionnaire was 86.8%. In the operative group (Group 1), the number of negative laparoscopies was 3 (6%). After a median of 19 (range 6-47) months follow-up, 80.0% of patients in group 1 reported improvement of pain, compared with 42.9% in patients with adhesions on cine-MRI who declined surgery (group 2), and 26.3% in patients with no adhesions on cine-MRI (group 3), P = 0.002. Consultation of medical specialists was significantly lower in group 1 compared with groups 2 and 3 (35.7 vs. 65.2 vs. 58.8%; P = 0.023).
Conclusion: We demonstrate long-term pain relief in two-thirds of patients with chronic pain likely caused by adhesions, using cine-MRI and a shared decision-making process. Long-term improvement of pain was achieved in 80% of patients who underwent surgery with concurrent application of an anti-adhesion barrier.

O27

EPIGENETICS OF THE BRAIN-DERIVED NEUROTROPHIC FACTOR (BDNF) GENE IN PEOPLE WITH FIBROMYALGIA AND CHRONIC FATIGUE SYNDROME (FM/CFS): AN EXPLORATIVE STUDY

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Purpose: Understanding FM/CFS from an epigenetics viewpoint might provide insight on its pathophysiology. It is hypothesised that BDNF level is higher and DNA methylation of the BDNF gene is lower in people with FM/CFS, when compared to healthy controls.
Methods: We designed a cross-sectional design and enrolled 27 patients with FM/CFS and 27 matched healthy controls. Subjects underwent a comprehensive assessment, including clinical questionnaires, pain thresholds, and measures of BDNF protein level and gene methylation from blood. To assess temporal stability of protein levels and gene methylation, subjects underwent the same assessment twice within four days. BDNF protein level was measured using ELISA, and BDNF methylation using Pyrosequencing technology in 3 different promoters (Promoter I, IV, IX).
Results: Repeated measures ANOVA were performed for between-group analysis, so to control for time and within-group variability of the measures. BDNF protein levels were significantly higher in people with FM/CFS in both assessments (F=11.013, p=.002). On average, BNDF concentration in serum was 17.23 (4.45) ng/ml in patients, and 14.03 (3.89) ng/ml in healthy subjects. Repeated-measures general linear model showed that BDNF gene is hypo-methylated in promoter IX in people with FM/CFS (F=4.987; p=.03). Stepwise linear regressions show that lower methylation at the BDNF promoter IX is associated with higher protein expression (r=-.452, p=.001 on the first assessment; r=-.290, p=.037 on the second assessment).

Discussion: BDNF protein levels is stably higher in people with FM/CFS and BDNF methylation of promoter IX might play a role in regulating protein expression.

O28

PAIN TRAJECTORIES AS PHENOTYPES OF KNEE OSTEOARTHRITIS

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Background and aims: Patient-specific pain development over time can help in understanding osteoarthritis (OA) heterogeneity by defining groups with similar characteristics, and likely different treatment needs. We aimed to identify pain trajectories, to describe patients within trajectory-group using baseline demographic and psychosocial characteristics, and to explore whether trajectories predict end-stage disease, i.e. total knee replacement (TKR).
Methods: We used data from a three-year, double-blind RCT of vitamin D supplementation on knee OA (N=474, placebo vs 800IU vitamin D, mean age 64, 61% women). The pain was measured in 6-month intervals using the WOMAC questionnaire (0-100 scale). Latent class growth analysis was employed to identify pain trajectories, multinomial analysis to regress trajectories on baseline patients' characteristics, and logistic regression to predict TKR by pain trajectories.
Results: We identified four distinct pain trajectories. The first trajectory (36.6%, baseline pain 17.7, slope -1.4); the second (38.6%, baseline pain 30.5, slope 0.8); the third (21.4%, baseline pain 48.0, slope 2.1) and the fourth trajectory-group (3.4%, baseline pain 71.5, slope 2.2). Among baseline demographic and psychosocial characteristics, age, BMI, physical and psychological health were significantly different among groups; of these, physical health distinguished every trajectory from all others. The fourth trajectory had OR of 12.14 (95% CI 1.59-92.86) of having TKR.
Conclusions: There are distinct OA patient groups with similar pain experience described as different baseline pain and development over time; these differ in baseline characteristics and progression risk. Future clinical OA trials can benefit from targeting patients at risk for disease and symptom progression.

O29

CENTRAL SENSITIZATION IN PEOPLE WITH NON-TRAUMATIC NECK PAIN: SYSTEMATIC REVIEW AND META-ANALYSIS OF OBSERVATIONAL STUDIES

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Background and aims: Central sensitization plays important roles in majorities of chronic musculoskeletal pain cases; however, evidence of its importance in non-traumatic neck pain is inconsistent. This systematic review and meta-analysis aimed to quantify differences in outcomes of measures of central sensitization between people with and without non-traumatic neck pain and whether such differences were influenced by demographics and pain-related characteristics, as this would have implications for effective management.
Methods: Studies reporting case-control differences in pain sensitivity at non-painful remote sites, temporal summation, conditional pain modulation and efficacy of exercise-induced analgesia were selected and reviewed. Standard mean differences (SMDs) and 95% confidence intervals (CIs) were calculated using random effects models when appropriate. Associations between effect sizes with demographics and pain-related characteristics were explored using meta-regression.

Results: Twenty-five studies were eligible and 22 were included for meta-analysis. Compared to healthy individuals, people with non-traumatic neck pain had increased pressure [549 controls vs 657 patients, SMD = -0.65, 95%CI = (-0.83, -0.46)], cold [87 controls vs 90 patients, SMD = -0.51, 95%CI = (-0.89, -0.14)] and heat [97 controls vs 80 patients, SMD = -0.37, 95%CI = (-0.70, -0.05)] pain sensitivity at remote sites. Effect sizes of pressure pain sensitivity at remote sites were negatively associated with age (adjusted R^2 = 45.6%, P = 0.010). There were limited or conflicting evidence for other outcomes of central sensitization.
Conclusions: People with non-traumatic neck pain show widespread hyperalgesia, suggesting the presence of central sensitization. The effect of widespread mechanical hyperalgesia is reduced with age.

O30

PAIN AND DISABILITY IN LOW BACK PAIN CAN BE REDUCED DESPITE NO IMPROVEMENTS IN THE PAIN SENSORY PROFILE

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Background and aims: Increased sensitivity of pain mechanisms has been reported in people with chronic low back pain (CLBP) compared with healthy controls. It is unclear whether recovery is associated with normalization of pain mechanisms. This study aimed to investigate whether treatment-related reduction of pain is linked with changes in pain sensitivity.
Methods: Forty males and females (20 with CLBP) participated in this prospective cohort study. Quantitative sensory testing (QST) was performed at baseline and after discharge from physiotherapy treatment (CLBP) or after 6 weeks (controls). The QST consisted of pressure-pain thresholds (PPT) at the low back and shoulder, and the assessment of temporal summation of pain (TSP, 10-inflations, 0.5Hz) and conditioned pain modulation (CPM, test-stimuli during tonic conditioning-stimulus) using cuff algometry on the legs. Pain and disability were assessed by a numeric rating scale (NRS; 0-10) and the Roland-Morris Questionnaire (RMQ; 0-24), respectively. The effect size for treatment effect was determined by calculating the Cohen's *d*.
Results: The CLBP group experienced a reduction in pain NRS scores (4.5±2.3 to 1.8±1.8, d=1.23, P< 0.0001) and disability (6.8±3.6 to 1.7±2.3, d=1.58, P< 0.0001). No significant *group* x *time* interaction or main effects were found for any of the QST measures.
Conclusion: In contrast to previous findings, no significant difference was found at baseline between the CLBP and controls. Interestingly, none of the QST parameters changed significantly despite large effect sizes in pain and disability changes. The lack of findings may relate with less affected (pain/disability) patients in the present study.

LATE BREAKING ORAL COMMUNICATIONS

O31

RELIABILITY AND DETERMINATION OF CUT-OFFS FOR THE DANISH VERSION OF THE TAMPA SCALE OF KINESIOPHOBIA (TSK) IN PATIENTS WITH SEVERE CHRONIC PAIN

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Background and aims: Kinesiophobia is associated with the degree of disability in patients. Tampa Scale of Kinesiophobia (TSK), which has recently been translated into Danish, is a valid and reliable tool for identifying kinesiophobic beliefs. The aims of this study were to investigate test-retest reliability for both the continuous and dichotomous scale at different cut-offs for the TSK-17, TSK-13 and TSK-11 versions, as well as measurement error.
Methods: Twice, 77 patients with severe chronic pain referred to multidisciplinary pain treatment completed the TSK-17 at home. Mean interval 8.4 ±1.9 days. Intraclass Correlation Coefficient ($ICC_{2,1}$), Standard Error of Measurement (SEM), Smallest Detectable Change (SDC95) as well as reliability (% stable) and measurement error (k-values) between classification into high and low TSK scores were calculated.
Results: For test-retest reliability, $ICC_{2,1}$ were 0.86 (CI:0.79-0.91), 0.88 (0.82-0.92) and 0.87 (0.81-0.92) for TSK-17, TSK-13 and TSK-11, respectively. For TSK-17, TSK-13 and TSK-11, SEM-values were 3.1, 2.4 and 2.1 and SDC95 were 8.5, 6.7 and 5.8. With cut-off scores derived from the median of the population, the reliability in classification into high and low TSK between days were significant (TSK-17: 80.5% of patients, k=0.61; TSK-13: 84.4% of patients, k=0.69, TSK-11: 78.0% of patients, k=0.54; p< 0.001). Patients classified as high TSK had higher pain-related disability and were less physically active.
Conclusions: In patients with severe chronic pain, the Danish versions of TSK are reliable. With median derived cut-offs, all versions showed good reliability with good k-values, lending evidence to the clinical relevance of these cut-offs.

O32

THE PAINCHEK® STORY: FROM CONCEPT TO AUSTRALIA-WIDE IMPLEMENTATION

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Background and aims: Assessment of pain in patients with advanced dementia is challenging due to impaired cognition and communication abilities. Our aim was to address this by developing a pain assessment system (PainChek®) that overcomes current challenges through the use of artificial intelligence (AI) and smart-automation.
Methods: We developed a system which includes a point-of-care application that uses AI to detect facial action units indicative of pain. This data when combined with other non-facial indicators of pain collected using digital checklists, enables real-time computation of a cumulative pain score. Our concept was initially supported through Alzheimer's Australia grant (2012). Following stakeholder consultations the first prototype was released in November 2013. This was further refined and validated against the Abbey Pain Scale in people with moderate to severe dementia.
Results: Our research findings demonstrated the tool has excellent psychometric and clinimetric properties; the results of which were used to support its clearance as a Class 1 medical device in Australia (TGA) and Europe (CE mark) in July 2017. Since that time, PainChek® has been successfully implemented in over 70 Australian residential aged care facilities (RACFs) in Australia, with more than 450 users completing nearly 30,000 pain assessments. On April 29th, 2019 the Australian government announced $5m in funding to facilitate implementation of PainChek® in RACFs across Australia and their 100,000 residents living with dementia.
Conclusions: We have successfully developed, validated and implemented in clinical practice the world's first point-of-care app utilizing AI to assess pain in patients with dementia.

O33

IMPACT OF CHRONIC LOW BACK PAIN FROM PHYSICAL, PSYCHOLOGICAL AND SOCIAL PERSPECTIVES - INITIAL RESULTS FROM A GLOBAL 8,990 PATIENT SURVEY: CITIZENS' RESEARCH

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Background and aims: Chronic low back pain (CLBP), one of the most common chronic pain conditions, affects 5-10% of people worldwide; the impact on patients' lives isn't fully understood. Hence, this 14 country CLBP survey was undertaken.
Methods: Patients (≥18y) with self-reported physician diagnosis of CLBP, recruited via online panels, completed the survey March-May 2019. Data were weighted by sample size, CLBP prevalence and pain severity.
Results: 8,990 patients completed the survey [mean age 52y (SD=14.91); 45% female]. Using a 0 (no pain) to 10 (pain as bad as you can imagine) numeric rating scale, 41% reported severe (≥7), 49% moderate (4-6), 10% mild (≤3) pain.
Patients with severe pain reported more interference (0-10 scale) with general activity (6.15), mood (6.02) and sleep (5.59) compared with mild pain (2.11, 1.97, 1.69 respectively) during the past 24hrs.
Patients with severe pain felt more frustrated (33%), anxious (28%) and desperate (26%) than those with mild pain (16%, 15%, 8% respectively). Financial issues were a concern for 41% with severe pain, (22% mild pain), with 34% having reduced their working hours (16% mild) and 34% reporting a reduced income due to CLBP (18% mild); 67% had missed ≥1 day of work on average per month (30% mild), 25% missing ≥5 days (6% mild), with 38% worried about losing their job/business because of their CLBP (24% mild).
Conclusions: These data indicate that CLBP has a substantial negative impact on patients' wellbeing and working ability. Adequate multidisciplinary healthcare resources are needed to manage patients holistically.

O34

PATIENTS' PERCEPTIONS AND BELIEFS REGARDING CHRONIC LOW BACK PAIN IN PRIMARY CARE: A QUALITATIVE STUDY IN SPAIN

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Background and aim: Low back pain is the most frequently reported musculoskeletal problem and one of the most common in the world. The aim of this study was to explore patients' beliefs concerning the source and meaning of chronic low back pain.
Design: Generic qualitative study.
Setting: Seven primary healthcare centers in Lleida, Spain
Subjects:. Sixteen patients with chronic low back pain. To ensure the discursive significance of the results, we included a similar number of subjects from different age groups, genders, and educational levels in the sample.
Methods: We performed 16 semi-structured individual interviews. A thematic analysis of the transcripts was

conducted using the ATLAS-ti 7 software.
Results: We identified four themes related to the patients' beliefs about their chronic low back pain: (1) structural/ physiological alterations of the lower back as the source of pain, (2) influence of the patient´s psychosocial aspects on the source and maintenance of pain, (3) physical activity as a pain modulator, and (4) the need for a better understanding of their pain.
Conclusions: This study showed that patients with chronic low back pain base their beliefs on a biomedical model, which makes them look for a unique cause that justifies their pain. The inability to find the cause affects them in a negative way both cognitively and emotionally. These findings suggest that health professionals involved in the management of patients with chronic low back pain should be more didactic and base their treatment on the biopsychosocial model of pain.

O35

ACUTE AND CHRONIC POSTOPERATIVE PAIN AFTER BREAST CANCER SURGERY: THE UK PREVENTION OF SHOULDER PROBLEMS TRIAL (UK PROSPER)

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Shoulder dysfunction and chronic pain following breast cancer treatment is common, impacting upon quality of life. Early postoperative exercise may improve function and reduce postoperative complications. We undertook a multicentre RCT to evaluate the clinical and cost-effectiveness of a supervised exercise programme, incorporating behavioural support, compared to usual care, for women at high risk of developing shoulder problems after breast cancer treatement.
Methods: We randomized 392 women from 17 centres England. The structured exercise intervention was delivered by physiotherapists. Follow-up was undertaken at 6 weeks, 6 and 12 months post-randomisation. Primary outcome of upper arm function was assessed using the Disabilities of the Arm Shoulder and Hand (DASH). We report secondary outcomes of acute and chronic pain, measured using VAS (0-10) and neuropathic pain (NeuP), using Doleur Neuropathique (DN4); and health-related quality of life (HRQoL) measured using the SF12 and EQ-5D-5L.
Results: Mean (SD) preoperative pain scores were low (VAS 1.9; (2.5)), with 79 (22%) women reporting preoperative numbness and 34 (10%) being NeuP+ve. At six weeks, over half reported operative site numbness with 19% NeuP+ve. Mean (SD) SF-12 physical and mental health scores improved over follow-up (PCS 4.8 (1.3) at baseline; 4.7 (1.3) at 12 months; MCS 6.4 (1.1) at baseline; 6.5 (1.0) at 12 months). Pain data by treatment arm over time will be presented. Findings from the UK PROSPER trial will provide evidence of whether supported exercise can improve the recovery trajectory for women at high risk of shoulder problems after breast cancer treatment.

O36

THE TIME COMPONENT OF EXPECTATION IN PLACEBO ANALGESIA AND NOCEBO HYPERALGESIA

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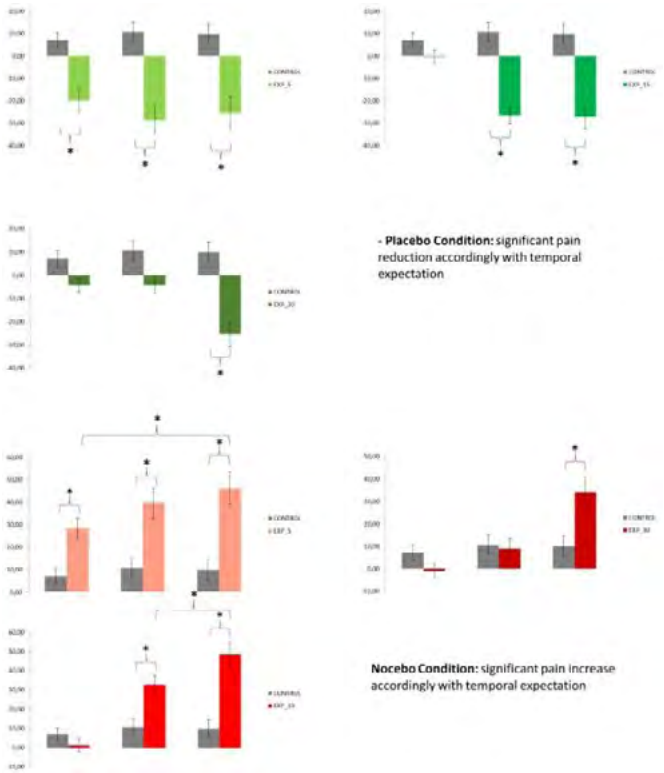
Background and aims: The time component of expectations underlying placebo analgesia and nocebo hyperalgesia, was not yet investigated. This study assesses whether manipulation of temporal information associated with placebo/nocebo cream treatments, modulates cream onset of action.
Methods: 160 healthy volunteers underwent the same electric shock pain paradigm at baseline, after 10, 20 and 35 minutes. An inert cream was applied after the baseline trial. In the placebo condition, all participants were told that the cream had strong analgesic properties, but some were told that it would be effective in 5 minutes (*Exp_5*), others in 15 (*Exp_15*), and others in 30 minutes (*Exp_30*). The nocebo condition was identical, but volunteers were told that the cream had powerful hyperalgesic properties. Control and natural history groups were also present. Pain perception was assessed by means of Numeric Rating Scale (NRS).
Results: The onset of placebo/nocebo cream analgesia and hyperalgesia varied accordingly with the given temporal suggestions. Significant analgesic (placebo) and hyperalgesic (nocebo) responses were present after 10 minutes from cream application in *Group Exp_5* ($p < .05$). Differently, in *Group Exp_15*, there was no significant pain reduction/pain increase in the trial after 10 minutes, but only in the trial after 20 minutes as well as in *Group Exp_30,* pain reduction/pain increase occurred after 35 minutes ($p < .05$).
Conclusions: These findings show that the time component of expectation is finely tuned with the onset of placebo analgesia and nocebo hyperalgesia



[Expectation significantly modulated time of analgesia or hyperalgesia onset]

O37

IDENTIFICATION OF PERIPHERAL NEUROPATHIC PAIN SENSORY PHENOTYPES BASED ON SPECIFIC COMBINATIONS OF SYMPTOMS IDENTIFIED WITH THE NPSI (NEUROPATHIC PAIN SYMPTOM INVENTORY)

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One way to better personalized the treatment of peripheral neuropathic pain (PNP) would be to identify specific sensory phenotypes of patients responding to different classes of drugs. Recent results have suggested that quantitative sensory testing (QST) could be useful, but these psychopysical methods are expensive and time consuming. Here we tested whether sensory phenotyping could rely on neuropathic pain symptoms assessed with a simple self-questionnaire: the Neuropathic Pain Symptom Inventory (NPSI).
We first performed a clustering analysis of the 10 NPSI items in a cohort of 628 PNP patients. Three clusters were identified on the basis of specific combinations of neuropathic pain symptoms: above-average pressing pain (cluster 1); higher evoked pain (cluster 2), and above-average paresthesia/dysesthesia (cluster 3). To verify the clinical relevance of these three pain phenotypes, we performed post hoc analyses of two pooled multicenter randomized controlled trials of the effects of subcutaneous injections of botulinum toxin A. All 94 PNP patients included in these studies were assigned at baseline to one of three predefined NPSI clusters. In the placebo arm, no difference was observed between clusters. In the active arm, patients from cluster 3 had no treatment response and were not better than placebo patients. By contrast, in patients included in clusters 1 and 2, the effects of botulinum toxin were significantly better than those of placebo.
These results tend to confirm that it is possible to identify relevant sensory phenotypes of neuropathic pain patients predictive of treatment response on the basis of specific combinations of symptoms.

O38

LIFTING WITH A ROUND-BACK IS DANGEROUS! HOW BELIEFS MIGHT AFFECT LUMBAR SPINE MOTION DURING OBJECT LIFTING IN PAIN-FREE INDIVIDUALS

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Background and aims: “Lifting an object with a round back is dangerous!” This is a widespread belief among the general public, which might influence an individual’s lifting technique. We therefore aimed at investigating the relationship between the perceived threat value of lifting with a round back and lumbar spine motion during repetitive lifting maneuvers.
Methods: Twenty pain-free adults (mean age=32.4y, 12 females) completed the Photograph-Daily-Activities-Series-Short-Electronic-Version (PHODA-total), including pictures showing a person lifting a flowerpot with a round- and straight back (PHODA-round-back and PHODA-straight-back, respectively). Subsequently, participants were equipped with 58 retro-reflective markers and asked to lift a 5kg-box. Marker data were collected with a 20-camera optical-motion-capture system and used to calculate sagittal spinal curvature angles. To investigate the relationship between PHODA scores (0 ‘Not harmful at all’,100 ‘Extremely harmful’) and kinematics, linear regression analyses were carried out using one-dimensional Statistical-Parametric-Mapping (alpha-level=0.05).
Results: Mean scores were 20.68(SD=±13.87) for PHODA-total, 13.95(SD=±13.87) for PHODA-straight-back and 43.1(SD=±27.21) for PHODA-round-back, respectively. Linear regression analysis revealed a negative relationship between the PHODA-round-back score and lumbar curvature angles during 0-72% of the lifting-up ($-0.53 \leq r \geq -0.57$, $p=0.010$) and 28-73% of the putting-down cycles ($-0.52 \leq r \geq -0.54$, $p=0.026$). No relationships were found for PHODA-total and PHODA-straight-back scores.

Conclusions: Healthy adults with “round back danger” beliefs demonstrated less lumbar spine flexion during distinct time periods of the lifting maneuver, potentially driven by lumbar stiffening. This might predispose these individuals for a lumbar stiffening strategy when they experience low back pain, potentially aggravating symptoms through pronociceptive triggers such as increased paraspinal tissue loading and muscle fatigue.

O39

AN INVESTIGATION INTO THE IDENTIFICATION OF PREDICTORS OF CHRONIC PAIN AFTER WHIPLASH INJURY

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Introduction: Few subjects provoke such a diversity of opinion as whiplash associated disorder (WAD). Regardless, WAD is a public health issue with significant socio-economic costs. The aim of this study was to identify variables that predict the development of chronic WAD.
Methods: Prospective cohort study of patients presenting to an urban emergency department (ED) with road traffic collision (RTC) related neck pain. Patients had a detailed history and physical examination and a range of outcome measures and psychometric testing were performed. They were reviewed at 1 and 2 months and those with persisting pain reviewed at 3 and 5 months. The results obtained in the acute and chronic groups at baseline were compared.
Results: 159 people participated. 114 (72%), had symptoms that resolved in 2 months and 45 (28%) had neck pain lasting > 2 months.
There were no collision specific or demographic factors that predicted chronicity. There was a significant association between a past history of chronic pain ($p < 0.0001$) and previous major emotional life event ($p < 0.0001$) and the development of chronic WAD. A comparison of baseline psychological variables revealed higher scores for the Beck Depression Inventory (BDI), Digit Span, PASAT and Connors’ CPT ($p < 0.0001$ in each case) in the chronic group compared with the acute group.
Conclusion: The greatest predictors of chronic WAD were; past history of chronic pain, traumatic life event and higher scores on the psychological tests which may be helpful in identifying those at risk of chronicity for targeted interventions.

POSTER BOARD SESSION ABSTRACTS

PAIN SYNDROMES WALK 1

P001

INVASIVE TREATMENT MODALITIES' IMPACT ON CLINICALLY RELEVANT OUTCOMES AT 12 MONTHS FOLLOW-UP IN A CHRONIC PAIN POPULATION - AN OSLO UNIVERSITY HOSPITAL PAIN REGISTRY STUDY

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Background and aims: Studies on real-world outcomes in a general chronic pain population are rare. We aimed to assess whether the addition of invasive treatment modalities on selected chronic pain patients had a beneficial impact on the patients´ self-reported global impression of a clinically relevant change.
Methods: The Oslo University Hospital Pain Registry (OPR) is the local registry of the largest university and interdisciplinary outpatient pain clinic in Norway. We analyzed data regarding treatments and 12 month follow-up on 476 patients with complete records. Primary outcome was the Patients´ Global Impression of Change (PGIC). For clinical purpose we converted the original PGIC 7 point Likert scale to a binary outcome: success (clinically significant improvement) and failure (ranging from clinically insignificant improvement to clinically significant deterioration). We included the following independent variables in a logistic regression analysis: work status, pain duration, pain catastrophizing (all three previously shown to impact 12 month follow-up outcomes); ICD-11 diagnosis (primary, secondary, or other pain), invasive treatment modality, interdisciplinary treatment, and treatment frequency.
Results: Work status, pain duration, pain catastrophizing, and receiving an invasive treatment modality predicted clinical management success. Receiving an invasive treatment modality increased the odds for success with 2.8.
Conclusions: In this study, patients receiving an invasive treatment modality had a substantially increased odd for success. These data are preliminary, and only highly selected patients received this type of treatment. Several of these patients also received interdisciplinary pain treatment. We cannot conclude that invasive treatment is the treatment of choice for most patients.

P002

MITOCHONDRIA ARE REQUIRED FOR PAIN MEMORY IN SENSORY NEURONS

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Background and aims: Injury and inflammation induce hyperalgesic priming, a long-lasting latent hyper-responsiveness of nociceptors to inflammatory mediators. Priming can persist for months and represents a kind of "pain memory". Priming requires translational control and changes in signaling cascades, processes that likely depend on mitochondrial functioning. Here we tested whether mitochondria in sensory neurons contribute to hyperalgesic priming.
Method: Hyperalgesic priming was induced by an intraplantar injection of 5 ml 1% carrageenan. After resolution of hyperalgesia, PGE_2 (100 ng/paw) was injected intraplantar. Mitochondrial functions were assessed using Seahorse analysis, ATP-assays and Western blot. To alter mitochondrial functioning, FAM173B was expressed in sensory neurons using herpes simplex virus.
Results: After priming with an intraplantar injection of carrageenan, mice displayed prolonged PGE_2-induced hyperalgesia. Hyperalgesic priming was associated with increased mitochondrial respiration in sensory neurons and increased expression of FAM173B, a recently identified mitochondrial protein that contributes to chronic pain development. Knockdown of FAM173B in sensory neurons prevented carrageenan-induced priming. In cultured

sensory neurons, FAM173B increased mitochondrial respiration and ATP production, suggesting that FAM173B promotes mitochondria to become hyperactive. Sensory neuron specific expression of FAM173B was sufficient to mimic carrageen-induced priming. Moreover, FAM173B-mediated priming was prevented by inhibition of mitochondrial oxidative phosphorylation, suggesting that hyperactive mitochondria in dorsal root ganglia induce hyperalgesic priming.
Conclusions: Mitochondrial hyperactivity in sensory neurons contributes to hyperalgesic priming. Inhibition of mitochondrial respiration or inhibition of FAM173B in sensory neurons are potential approaches to reverse hyperalgesic priming to prevent chronic pain.

P003

KETAMINE AND CHONIC PAIN: A COHORT STUDY

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Background and aims: Neuropathic pain (NP) involves the N-methyl-D-aspartate receptor (NMDAR) and ketamine, a non-competitive NMDAR, could improve chronic pain. This study evaluates the benefits and risks of ketamine over a 12 months period in patients suffering from chronic pain.
Methods: This study (NCT03319238) was conducted in thirty French pain clinics. Pain assessment (Numerical Rating Scale (NRS)), emotional status (Hospital Anxiety and Depression scale (HAD)), quality of life (SF-12), Patient Global Impression of Change (PGIC) and adverse events were evaluated.
Results: Among the 585 chronic pain patients included, 256 patients (age = 50.7 ±11.5 years, 76% female) had one ketamine administration; 45% with fibromyalgia, 36% NP, 11% CRPS and 8% others. At baseline pain was 6.7 ±1.8, DN4 = 5.2 ±2.3, HAD anxiety = 10.1 ±4.5 and depression = 9.03 ±4.5, SF-12 physical health score = 30.1 ±7.5 and mental health score = 38.5 ±9.9. Pain intensity, anxiety and depression diminished significantly one week (w1) after ketamine administration. This improvement was maintained during 12 months ($p < 0.001$ at all times) as well as SF-12 mental health score ($p < 0.001$), and PGIC in 44%. Adverse events were fatigue, headache and nausea at w1 only. No serious adverse event was reported.
Conclusion: This study shows for the first time the potential benefits of ketamine in refractory chronic pain patients for pain intensity, emotional domains and quality of life. Standardization of ketamine administration may allow to optimize chronic pain treatment.

P004

THE INCIDENCE AND CHARACTERISTICS OF PERSISTENT PAIN FOLLOWING LABOUR - A SWEDISH COHORT STUDY

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Background and aims: Although several studies have been conducted, the knowledge about persistent pain after childbirth is still limited. The primary outcome was the incidence of persistent pain eight months after the labour. Pain intensity, frequency and bodily localisation as well as pain´s interference with daily activities were also examined.
Material and methods: Data were obtained through two self-administrated questionnaires and the patient record system Obstetrix. The first questionnaire was distributed at the maternity ward to 1507 women during 24-36 hours after delivery and the second questionnaire was sent by post eight months after the childbirth.

Results: Our results show, that 7.6% (n=89) had pain with onset during labour. Furthermore, 18% of the women reported pain during intercourse and 16% experienced pain during defecation. Over half of the women scored the intensity of their worst experienced pain as ≥ 5 on a 10-point NRS. The pain interfered with women´s daily activities, more than 1 in 4 women scored the pain interference to 5 and higher on a scale 0-10. Almost 40% of the women had pain constantly or daily.
Conclusions: The findings of this multicenter prospective cohort study indicate, that persistent pain after childbirth is a common condition among Swedish women and that the pain may have negative impact of women´s quality of life. There is a need to improve knowledge and education regarding pain as well as to develop strategies for prevention and treatment of persistent pain related to labour.

Acknowledgements: This study was funded by Sophiahemmet.

P005

PRELIMINARY ANALYSIS OF PREDICTORS OF SUCCSESS AT 12 MONTH FOLLOW-UP IN A GENERAL CHRONIC PAIN POPULATION - THE OSLO UNIVERSITY HOSPITAL PAIN REGISTRY PREDICTOR STUDY

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Background and aims: Research on real-world outcomes in a general chronic pain population is rare. We aimed to assess factors that predict increased chances of long term clinical success in management of chronic pain conditions.
Methods: The Oslo University Hospital Pain Registry (OPR) is the local registry of the largest university and interdisciplinary outpatient pain clinic in Norway. We analyzed baseline and 12 month follow-up data on 453 patients with complete data records. Primary outcome was the Patients´ Global Impression of Change (PGIC). For clinical purpose we converted the original PGIC 7 point Likert scale to a binary outcome: success (clinically significant improvement) and failure (ranging from clinically insignificant improvement to clinically significant deterioration). We included patients' age, sex, cohabitation, employment, litigation, pain duration, number of painful regions, pain intensity, pain bothersomeness, self-rated activity level, self-rated health, psychological distress, quality of life, function, self-efficacy, functional disorders, fatigue, sleep, pain catastrophizing, and experienced injustice as independent variables in the direct logistic regression analysis.
Results: Baseline variables that significantly contributed to success were: work status (employed/students (part/full time)); pain duration (less than two years); and low score on the pain catastrophizing scale (< 25/52). These factors almost doubled the odds for success.
Conclusions: In this preliminary analysis of real-world data on baseline predictors for clinical success at 12 months follow-up, most variables had no clinically significant impact on the outcome. Exceptions were being employed or student, less than 2 years pain duration, and low tendency to pain catastrophizing.

P006

INCREASED MUSCLE PAIN EVOKED BY ISCHEMIC CONTRACTIONS IN A NERVE GROWTH FACTOR (NGF)-SENSITIZED MUSCLE

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Background: Low muscle pH can be provoked by ischemia that can trigger the opening of acid-sensing ion-channels 3 ($ASIC_3$), resulting in pain and muscle-hyperalgesia. Nerve growth factor (NGF) highly regulates $ASIC_3$, possibly affecting muscle sensitivity and pain. The aim of this study was to assess evoked pain and muscle sensitivity following ischemic and non-ischemic contractions in a muscle injected with NGF compared with isotonic-saline (control).
Methods: Twenty-one subjects participated in two experimental phases of this double-blinded crossover study (N-20170007). Each phase lasted for 7 days and included 5 sessions. Muscle pain (numerical rating, NRS) evoked by ischemic (produced by pressure-cuff) and non-ischemic contractions was reported at Day0 and Day1. Pressure pain thresholds (PPTs) on the non-dominant tibialis anterior muscle were assessed before (Day0), 3 hours, 1, 3, and 7 days after 5 distributed NGF-injections (1µg, 4 cm distance) or isotonic-saline (same volume). Additionally, PPTs were assessed after the ischemic contractions, immediately after, and 10 min post cuff-deflation at Day0 and Day1.
Results: In the NGF-sensitized muscle, increased NRS pain score evoked by ischemic-contraction was found compared with isotonic-saline (P=0.012), and Day0 (P=0.003). NGF did not affect the pain evoked by non-ischemic contractions. PPTs were generally lower after NGF-injections compared with isotonic-saline (P=0.05). PPTs were increased immediately after, and 10 min post cuff-deflation at Day0 (P< 0.05) and Day1 (P< 0.05) compared to pre-contractions in both conditions.
Conclusion: This study showed that ischemic-contraction evoked pain was facilitated in a muscle sensitized by NGF as compared with control injections and non-ischemic contractions.

P007

NEURAL CORRELATES OF COGNITIVE INHIBITION AND FACILITATION OF PAIN EXPERIENCES - PAIN RELATED THOUGHT SUPPRESSION, DISTRACTION AND PAIN CATASTROPHIZING

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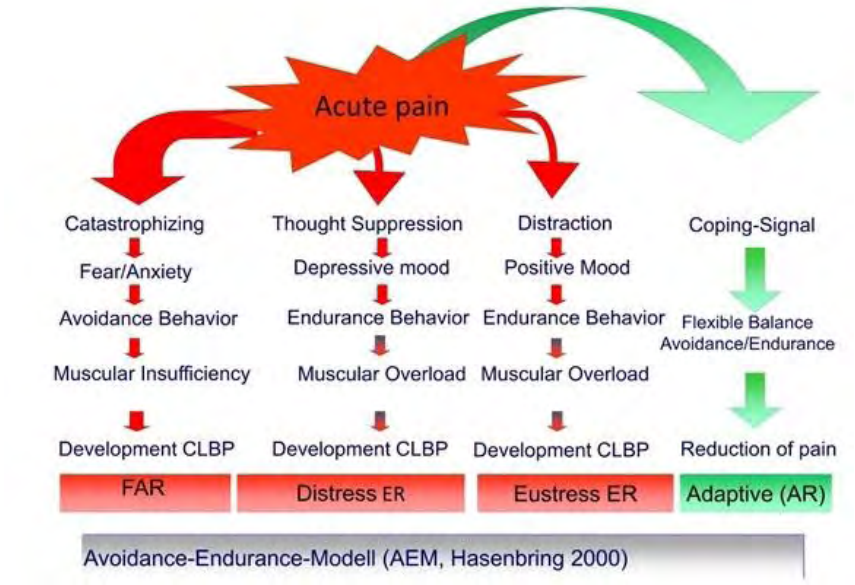
Background and aims: Recent evidence shows that dysfunctional cognitive control of pain has an important influence on pain perception. The avoidance endurance model (AEM) of Hasenbring identified different patterns on the affective and cognitive processing of pain (Fig.1). Both cognitive inhibition in form of pain-related thought suppression (PTS) or humor distraction (HD) and the facilitation of pain like pain catastrophizing (PC) has been shown to be an important predictor for the development of chronic pain. The neural correlates of these dysfunctional strategies are still unclear.
Methods: Forty healthy participants underwent a resting state fMRI to explore distinct functional connectivity (FC) patterns corresponding to the habitual characteristics of PTS, HD and PC. We used the Avoidance-Endurance Questionnaire (AEQ) to measure PTS, HD and PC.
Results: We found a significant positive correlation between the PTS and the descending pain modulatory systems, including ventrolateral periaqueductal gray. HD was associated with the FC between primary visual cortex and precentral gyrus that is involved in the processing of divided attention and distraction. In addition, we found a significant positive correlation between PC and FC between cuneus and the medial prefrontal cortex, which belongs to the default mode network.
Conclusions: These data suggest that inter-individual variability in functional connectivity may be an important neural correlate of cognitive inhibition and facilitation of pain experiences. Furthermore, our findings have potential implications for understanding PTS, HD and PC as risk factors for the development of chronic pain.



[1.]

P008

GREATER OCCIPITAL NERVE BLOCK: A MINIMALLY INVASIVE ALTERNATIVE TO BLOOD PATCH FOR POST DURAL PUNCTURE HEADACHE TREATMENT

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Background and aim: Postdural Puncture Headache (PDPH) is a common complication after inadvertent dural puncture. It is described as a severe postural headache appearing within 72 hours post puncture and relieved upon supine position. During the first 48 hours of symptoms, treatment is conservative including bed rest, intravenous hydration, caffeine and analgesics administration. However, if symptoms persist, invasive procedures such as saline or blood patch should be considered. In this preliminary study, we attempted to perform an occipital nerve block as an alternative to epidural blood patch after failure of conservative treatment.
Methods: 11 female patients diagnosed with PDPH, who did not improve on conservative treatment, were included in the study. Ultrasound-guided greater occipital nerve block (GONB) was done using 5 ml of bupivacaine and dexamethasone. Epidural blood patch was performed when patients failed to respond after GONB.
Results: 6 patients showed complete improvement of symptoms after GONB, while 5 patients underwent a blood patch 3 days post GONB.
Conclusion: Preliminary results suggest that GONB might reduce the need for blood patch. It is therefore considered a minimally invasive and an effective substitute in treating PDPH unresponsive to conservative treatment.

PAIN IN GENERAL

P009

DO WE HAVE TO CONSIDER CHRONIC PAIN AS PART OF POST-ICU SYNDROME? A PROSPECTIVE 12 MONTHS FOLLOW-UP STUDY

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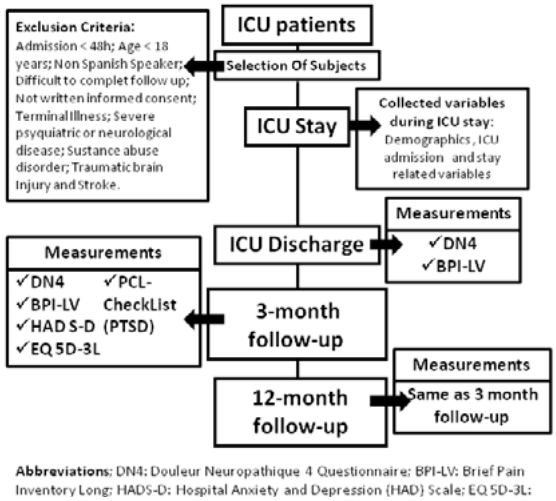
Background: Post-intensive care Syndrome (PICS) is a major problem that affects ICU survivors. Chronic pain interferes with daily activities (ADL) and quality of life (QoL). It´s associated with anxiety, depression and post-traumatic stress disorder (PTSD), all conditions presented in PICS. Despite this, the role of chronic pain in PICS is not well documented.
Aims: Assess in ICU Survivors:
1) Chronic pain and its relationship with ADL and QoL.
2) Anxiety, depression and PTSD, and its association with chronic pain.
Methods: Prospective 12 month follow-up study. Patient were evaluated before ICU discharge, at 3 and 12 months. Study design is represented in figure 1.
Results: Patient flow diagram are in figure 2. Main results summary of the study are in the table.

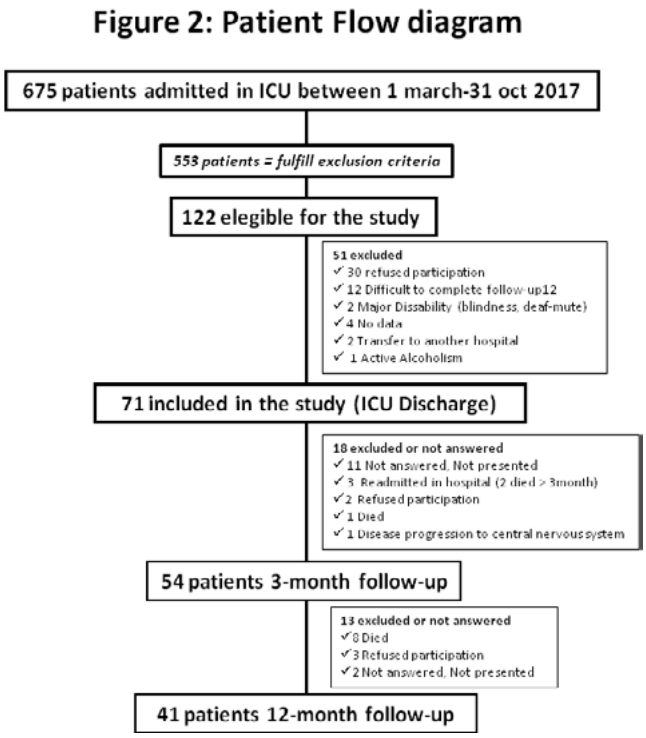
MEASUREMENTS	3 MONTHS	12 MONTHS
Patient report some pain in BPI Intensity Score	38 (70,4 %)	29 (72,4%)
At least moderate pain that interference with ADL in BPI	19 (35,2 %)	14 (35,9 %)
DN4 >=4	20 (37,1%)	10 (25 %)
HADS-D: ANXIETY >10	8 (15,2%)	8 (19,5%)
HADS-D: DEPRESSION >10	7 (13,2%)	9 (22,5%)
PTSD	8 (15,7%)	9 (25%)
EQ VAS	64,2 (18,3)	64,4 (23,2)

[Main results summary of the study. Data are in number, % and SD]

Figure 1: Study Design



[Figure 1. Study Design Summary]



[Figure 2. Patient Flow Diagram]

Conclusion: Chronic pain that affects ADL and QoL, anxiety, depression and PTSD are common in ICU survivors. Chronic pain needs to be consider as a part of PICS.

P010

CONSEQUENCES OF CHRONIC NON-CANCER PAIN IN MENTAL HEALTH IN ADULTHOOD

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Background and aims: Different studies have investigated the relationship between chronic non-cancer pain (CNCP) and mental health finding that mental illnesses are present in 75.3% of pain cases. People suffering from CNCP are vulnerable to adverse consequences in their mental health such as depression-anxiety or risk of suicide. Our aim was to examine and map the consequences of chronic pain in mental health in children and adolescents.
Methods: A review was carried out in PubMed, SCOPUS, WOS and CINAHL, Cochrane Library and gray literature. We selected documents published in English between 2010-2018. 16 of the 382 documents reviewed were included.
Results: The coping of people is conditioned by the levels of self-esteem, resilience and catastrophism they have. In this population, anxiety and depression rates reach 30-40% (more prevalent in women) generating afraid of activities that increase pain, fear and avoidance. Treatment with opioids also increases the risk of anxiety and depression after 30 days of use. On the other hand, the chronic condition originates higher suicide rates by 5-20% compared to the general population. The prevalence of tobacco consumption is also higher (23.5%) in the population with CNCP.
Conclusions: People with CNCP have higher levels of depression and anxiety than healthy people, especially women. Rates of suicidal behavior and smoking are also higher in this population.
Keywords: adult, adulthood, chronic pain, consequences, mental health

P011

MULTIMODAL ANALGESIA IN TRAUMATOLOGIC SURGERY

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Background: 30-50% of patients during minimally invasive operations receive inadequate analgesia, which leads to the deterioration of the operations results. Use of narcotic analgetics often accompanied by multiple side effects, so effective and safe methods of analgesia with non narcotic drugs is needed.
Aim: To evaluate the efficacy and safety of perioperative multimodal analgesia with use of non- opioid analgesics.
Methods: Study was performed in two groups of patients, who underwent minimally invasive operations on lower limbs with the spinal anesthesia. 1st group (89 patients) received nonopiod analgetics (paracetamol and dexketoprofen) in 3-steps method; 2nd group (61 patient) got promedolum 20mg 1-2 times a day; all patients also received adjuvant drugs. 3-steps analgesia: 1st - dexketoprofen 50mg IM within 30 minutes before surgery; 2nd - 1000 mg of paracetamol IV intraoperatively ; 3d - after operation, every 8 hours, - paracetamol 1000mg IV (up to 4 days) , dexketoprofen 50mg IM (up to 7 days).
Results: The time of analgesia achievement and severity of pain by VAS was not different in both groups, duration of analgesia was longer in 1st group: (8.1 ± 1.9) vs (5.7 ± 1.6) hours in the 2nd. Need in analgesics use was shorter in 1st group: (3.2 ± 1.0) days and (4.3 ± 1.9) days in 2nd group. In 2nd group about 20% of patients experienced side effects typical for opioids, which were not observed in first group.
Conclusions: Multimodal perioperative nonopiod analgesia is effective and safe in minimally invasive orthopedic and traumatologic surgery.

P012

IMPROVED SLEEP IN INDIVIDUALS USING TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION FOR CHRONIC PAIN MANAGEMENT

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Background and aims: We evaluated whether sleep is improved in individuals with chronic pain using high-frequency transcutaneous electrical nerve stimulation (FS-TENS).
Methods: Retrospective, observational study evaluated actigraphic sleep measures, including total sleep time (TST), over 10 weeks in a real-world setting. Inclusion criteria were having chronic pain characteristics (daily/weekly pain >3 months), baseline pain ratings, and wearing their device ≥3 nights during weeks 1-2. Participants were allocated to impaired sleep (IS) (TST < 360 min) or acceptable sleep (AS) groups (TST ≥360 min). Objective sleep outcomes included TST, sleep efficiency, and periodic leg movement index.
A subset analysis of device users with week 9-10 data examined TST changes between weeks 1-2 and 9-10.
Results: Inclusion criteria were met by 2975 participants; 703 (24%) IS, 2272 (76%) AS. Baseline sleep metrics were significantly different between groups (Table).

Metric, measure (SD)	IS (n=703)	AS (n=2272)	P-value
Total sleep time, minutes	313 (31)	445 (56)	<0.001
Sleep efficiency, %	84.7 (7.6)	89.2 (5.1)	<0.001
Periodic leg movement index, score	10.7 (13.5)	6.8 (8.2)	<0.001

[Table: Sleep Metrics, Weeks 1-2]

A subset of 880 participants had sleep data in weeks 9-10; 190 (22%) IS, 690 (78%) AS. Overnight FS-TENS utilization was positively associated with increased TST in the IS group (+13.5%; 95% CI, 11.0 - 15.9). Device use did not substantially impact the AS group (-2.1%; 95% CI, -0.9 - -3.2).
Conclusions: Improved sleep duration was observed among individuals with chronic pain and impaired sleep who use FS-TENS.

PAIN IN CHILDREN

P013

IS PAIN MEDIATED INDEPENDENTLY AMONG OTHER SYMPTOMS IN PATIENTS SEEKING FOR FATIGUE?

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Background: Fatigue and pain are two major symptoms in patients with chronic fatigue syndrome. Pain is often reported as musculoskeletal, joint pain and headache together with neurological symptoms. There is lack of knowledge how pain interacts with fatigue as well as with other bodily symptoms. The aim of this study was to investigate a relationship between different bodily symptoms measured by self-scored questionnaires in relation to pain intensity during the last week.
Method: 318 patients (80% women, median age 45 years old) fulfilled questionnaires regarding their body symptoms, emotional status, fatigue and quality of life. Health-related (SF-36, EQ5D), emotional (HADS) and fatigue-related questionnaires (MFI) as well as self-scored symptom questionnaire were analysed together with patient reported data on symptom duration and time spent in lying position in the bed. Results were analysed by linear regression model.
Results: Pain intensity during the last week was approximately 5 according to 10-point Numeric Rating Scale. It was predicted by general pain and joint pain according to symptom questionnaire, as well as by bodily pain in SF-36, anxiety in HADS and health quality scale in EQ5D. Fatigue measured by MFI-20 and by symptom questionnaire did not predict pain intensity, neither depression in HADS and SF-36 dimensions, except “bodily pain”. Self-reported duration of symptoms and time spent in the lying position in bed did not explain pain intensity.
Conclusion: Pain seems to be an independent factor and not related to fatigue or other neurological or immune symptoms in patients seeking for chronic fatigue syndrome .

P014

MULTIDISCIPLINARY EDUCATION TO TREAT ACUTE AND CHRONIC CHILDHOOD PAIN

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Task and objects: We Identified the need of approaching children pain due to its high prevalence in chronic pain 30% and due to the scientifically recognition of its treatment with a multidisciplinary team.
Objects: To play a role as an interdisciplinary team treating children and teenagers with acute and chronic pain covering the different dimensions of paediatric pain.
Methods: We developed a training program for physicians and nurses. This program will concentrate non pharmacological and pharmacological methods, clinical interview with the multidisciplinary team conformed by: a paediatrician, anaesthesiologist, pharmacist, physiotherapist, psychologist, nutritionist and an educational psychologist to allow a comprehensive approach of the pain.

Results: We have obtained a change in attitudes of participants,48,8% up till 88,4% positively addressed the treatment of acute children pain with parents presence and with their collaboration, acquiring the knowledge to put it into practice. The recognition of need of the different specialist improved in anaesthesiologist from72 to 93% psychologist from 79% up till 95 %. Adaptation of places from 4,7% up till 86%.The development of distraction techniques improved from 11,6% up till 90%.
Conclusions: At this workshop we tried to improved sensibilization and to educate health professionals offering them techniques and strategies for the detection and treatment of acute and chronic pain allowing empowerment of the family and the children. It is required better sensibilization and recognition of children pain

P015

INTEGRATED MODEL OF CARE IN PEDIATRIC AND NEONATAL INTENSIVE CARE UNITS: PAIN MANAGEMENT AROUND THE WORLD

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About 90% of children who die annually cannot access PPC; disseminating the Integrated Models of Care (IMOC), which integrates pediatric palliative care (PPC) skills like pain management into PICUS/NICUs, is a possible solution. In the IMOC, ICU personnel maximize available resources by identifying and addressing PPC needs within the unit. Disseminating the IMOC depends upon a chain of interventions including the development of evidence-based recommendations like The Initiative for Pediatric Palliative Care (IPPC) guidelines. “Domain 1: Holistic care of the child” and “Domain 4: Relief of Pain/Other Symptoms” guide pain relief practices. The implementation effectiveness of this intervention depends largely upon the current competency, attitudes, and clinical environments of potential adopters. This study investigated potential IPPC adopters by identifying the PPC tasks that they already complete in PICUs/NICUs around the world and comparing these results with the IPPC recommendations. Our sample included 33 participating PICUs/NICUs representing 18 countries (33.33% HICs, 42.42% UMICs, 24.24% LMICs/LICs from the Americas, Europe, Asia, and Africa. All groups reported partial compliance with pain relief domains. In domain 1, statistically significant differences between scores according to country income group were reported (Table 1). There were no statistically significant differences in domain 4. Barriers related to development, resources, education, and culture probably played a significant role in score differences. The mere dissemination of evidence like the IPPC recommendations is insufficient to spur widespread, perfect implementation. Our results demonstrate that knowledge necessary to improving pain relief and expanding PPC access already exist around the world, regardless of income.

P016

PROMISING CLINICAL EFFECT OF ADDING LOW-DOSE METHADONE IN THE TREATMENT OF COMPLEX PAIN IN PEDIATRIC PATIENTS

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Background: Complex pain in pediatric patients often is a mix of nociceptive and neuropathic origin and is a challenge to treat effectively to an acceptable pain level. A multimodal approach is recommended. Even so the use of this approach does not alleviate pain in a small group of patients. Methadone is an opioid with “rich pharmacology” and some studies in adult oncology patients have shown a good analgesic effect when adding a low-dose methadone to the ongoing opioid therapy.
Methods: At Astrid Lindgren children’s hospital we have used the low-dose methadone strategy as an addition to

ongoing opioid therapy (as part of a multimodal analgesic treatment) in complex pain in pediatric patients for the last 10 years. The dose of methadone used is most often 0.1 mg/kg x 2-3 times daily. In neonates and small infants, a reduced dose is used. Methadone is administered intravenously or orally.
Results: Since the start of using the low-dose methadone approach we have treated almost 200 pediatric patients with complex pain. Looking at retrospective data median age was 8.5 years with a range 1 month to 18 years. More than 50 % of patients had undergone major surgery, about 30 % of patients were oncology patients mostly with treatment related pain problems. A small number were palliative patients.
Conclusion: Adding low-dose methadone has had a major clinical effect on alleviating pain in complex pain in pediatric patients and is routinely used in our hospital.

P017

POSTURAL MISALIGNMENTS OF THE CHILDREN AND THEIR CONTRIBUTION TO MUSCULOSKELETAL PAIN

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Background and aims: Posture has been defined as the alignment of the body segments at a particular time which can be characteristic or for a specific purpose and is an important health indicator. Inadequate posture consists of poor interrelations between parts of the body. These imperfect interrelations cause muscle tension and shortening. The study aims to identify the association between postural misalignments and musculoskeletal pain experienced by schoolchildren in Albanian schools.
Methods: A study was carried out in 2 different schools in Saranda . 446 (m=214/f=232) children between the ages 9 and 11 correctly filled a questionnaire defining the age, height, weight, locations of pain ,intensity of pain, duration of pain ,leisure activity ,after the completion of the questionnaire a postural evaluation was conducted using the posturology chart and the schoolbag weight was measured. The pain was assessed using the Numeric Rating Scale.
Results: The study found that 166 children (f=97 and m=69)from 446 children that were evaluated , resulted with postural misalignments and 206 children(f=114 and m=92) reported pain in a specific part of the body which was associated with musculoskeletal pain.
Conclusion: The conclusion of this study identified some important factors that contribute to postural misalignments as well as the relation between postural misalignments and musculoskeletal pain experienced by children in elementary school. Further research is required to examine the association between posture and musculoskeletal pain reported at different locations.

P018

MEASUREMENT OF INTRAOSSEOUS PRESSURE PAIN ASSESSMENT IN ACUTE HEMATOGENOUS OSTEOMYELITIS IN CHILDREN

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Background and objectives: The diagnosis of acute hematogenous osteomyelitis in children is based on the assessment of pain in the affected bones. The disease develops quickly and requires urgent surgical treatment in the first 24 hours. It is known that reliable radiological signs of osteomyelitis appear at the end of the first week of the disease and may not be useful for emergency surgery. CT and MRI data are also ineffective in early diagnosis. Thus, only a clinical assessment of pain in the affected bone remains the criterion for deciding an emergency operation.
Methods: Schultze E.O.P. conducted the first measurement of intraosseous blood pressure. and Behau B.J. in 1912.

In Russia, Grinev M.V. and Ormantaev KS in 1974, scientifically substantiated the pattern of increase in intraosseous pressure in acute hematogenous osteomyelitis in children and found that the normal values for healthy children are 80-120 mm. water column.
Results: We measured intraosseous pressure with the Waldman apparatus in 72 children with acute hematogenous osteomyelitis, it increased to 200-400 mm. water column for three minutes. The pressure increased in direct proportion to the severity of the pain. After performing the perforation of the bones in the lesion, the pain disappeared.
Conclusion: this method of pain assessment has not received wide application in practice. It remains unclear why world science does not seek to create tools and equipment for measuring pain through increased pressure in acute surgical diseases for the purpose of their early diagnosis.

P019

EFFICACY OF ULTRASOUND-GUIDED QUADRATUS LUMBORUM BLOCKS (QLB) FOR POSTOPERATIVE ANALGESIA IN PEDIATRIC PATIENTS AFTER ABDOMINAL SURGERY: A RANDOMIZED SINGLE BLINDED CASE CONTROL STUDY

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Background: Pain following bariatric surgery can be quite troublesome and prolongs recovery. Quadratus Lumborum Blocks (QLB) block is a new regional anesthetic technique to reduce postoperative pain and is an important part of current analgesic regimen for many abdominal surgeries. The primary objective of our study was to assess the efficacy of the QLB block in controlling postoperative pain in abdominal surgery.
Methods: This is a prospective single blind randomized controlled study. A total of 43 patients were included in the study. Patients were allocated in two groups, using a computer generated randomization sequence using http://www.randomization.com. Test group included 23 patients who received Ultrasound-guided Quadratus Lumborum Blocks (USG-QLB) block along with systemic analgesia and the Control group included 20 patients who received only systemic analgesia. Postoperatively patients were evaluated for pain and satisfaction using VAS scores and ´Capuzzo´ satisfaction score, respectively.
Results: 43 patients were enrolled in the study after fulfilling the eligibility criteria. No patient was lost to follow-up. The difference of VAS scores between test (USG-QLB) and control (Non- USG-QLB) was statistically significant both at rest and on movement. The patient satisfaction score in USG-QLB group was higher than the control group (p value < 0.001). The patients who received USG-QLB block showed earlier readiness for discharge, early resumption of bowel activity, and decreased PONV as compared to the non-QLB group.
Conclusion: USG-guided QLB block is a feasible, minimally invasive technique and can be a part of an effective multimodal analgesia in morbidly obese pediatric patients undergoing abdominal surgery.

P020

FORMER ELITE YOUNG ATHLETES WITH CHRONIC MUSCULOSKELETAL PAIN: EXPERIENCES AND THE ROLE OF FEAR OF FAILURE, FEAR OF SUCCESS AND PERFORMANCE GOALS

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Background: Chronic non-specific pain among children and adolescents is a prevalent problem. An interesting

clinical observation in the rehabilitation of adolescents with chronic unexplained medical pain is that among them there is a subgroup of former elite athletes. This raises the question why these young athletes were vulnerable to developing chronic pain symptoms and became disabled?
First, we investigated the in depth process of an elite athlete becoming a chronic pain patient. In the second part we examined the prevalence of pain complaints in a population of adolescent elite athletes and the association between pain complaints, fear of failure, performance goal orientation, catastrophizing, self-handicapping.
Method: First we conducted a qualitative study with semi-structured interviews with 6 elite athletes. Second, a cross sectional online survey study in elite athletes aged between 12 and 22 year was performed.
Results: Deductive analyses of the interviews revealed several major themes: The former young athletes with chronic pain were driven by performance avoidance goals, fear of failure and self-handicapping. Also the important role of social environmental factors was assessed. Recently 133 young athletes completed the survey. Analyses will be presented at the EFIC.
Conclusion: In former young elite athletes there seems to be a relation between their chronic unexplained pain and goal orientation, fear of failure, self handicapping and the influence of the social environment.

PAIN IN THE ELDERLY

P021

STRUCTURAL BRAIN CHANGES AND EXECUTIVE FUNCTIONS CAN EXPLAIN PAIN RESPONSES IN OLDER ADULTS

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Background and aims: Pain processing changes with aging. Compared to young adults, older individuals show increased pain thresholds, increased temporal summation and decreased pain inhibition. Previous studies suggested that these changes might be associated with an age-related decline in cognitive functions, especially in executive functions. This study aimed to investigate whether - in addition to executive functioning deficits - structural brain changes might also help to explain pain responses in older individuals.
Methods: Pain responsiveness was assessed in forty-six healthy older individuals by verbal and facial responses to phasic pressure pain, pain inhibition (conditioned pain modulation using heat and pressure pain) and temporal summation of heat pain. Executive functioning performance was assessed in three cognitive domains, namely inhibition, shifting and updating. A structural magnetic resonance imaging scan was acquired to assess gray matter volume.
Results: Multiple regression analyses revealed that pain responses could be significantly predicted by cognitive inhibition (R^2=0.248; p=0.038) and shifting (R^2=0.337; p=0.005). Voxel-based analysis of the magnetic resonance imaging scans revealed that one type of pain response, pain inhibition measured via facial expression, was positively correlated with gray matter volume in two regions of the ventrolateral prefrontal cortex ($p< 0.05$, corrected).
Conclusions: The results confirm previous findings of an association between pain responses and executive functions in older individuals. Moreover, this study shows that pain responses in older adults, specifically the loss in endogenous pain inhibition, can be explained by a decrease in gray matter volume in frontal regions of the brain.

P022

INVESTIGATE THE EFFECT OF LOW BACK PAIN INTENSITY ON LUMBAR REGION FLEXIBILITY, ACTIVE HIP FLEXION MOVEMENT AND QUALITY OF LIFE IN PATIENTS WITH HIP OSTEOARTHRITIS

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Background and aims: The aim of this study was to investigate the effect of low back pain intensity on lumbar region flexibility, active hip flexion movement and quality of life in patients with hip osteoarthritis.
Methods: The subjects with at least Grade 2 hip osteoarthritis (according to Kellgren-Lawrence Classification) who had at least 3.5 cm of hip pain (according to Visual Analog Scale) were included in the study. Patients were divided into two groups according to the intensity of low back pain (Group I, mild: 0.5-3.4 cm, n=22;Group II, moderate-severe: 3.5-10 cm; n=22). Lumbar region flexibility (Modified Schober´s Test), active hip flexion (universal goniometer) and quality of life (Nottingham Health Profile) were evaluated in all patients.
Results: The mean hip pain intensities of the patients in in Group I and II were 9.1± 1.3 cm and 8.8± 1 cm, respectively ($p > 0.05$). In group I, the intensity of low back pain was 8.2± 1.8 cm, while it was 1.6± 1.0 cm in Group II ($p < 0.05$). There was no difference between the two groups in terms of lumbar region flexibility (Group I: 3.6± 1.5 cm;Group II: 4.3± 1.6 cm) and active hip flexion (Group I: 82.8°± 13.8;Group II: 84.7°± 13.8) ($p > 0.05$). The quality of life of the participants in Group II (409.9± 68.9) was worse than Group I (342.5± 70.3) ($p < 0.05$).
Conclusions: The results of this study have shown that higher severe low back pain affects the quality of life negatively in patients with hip osteoarthritis.

P023

PAIN AND HEALTH-RELATED QUALITY OF LIFE BY FRAILTY STATUS IN OLDER ADULTS RECRUITED TO THE PREVENTION OF FALLS INJURY TRIAL (PREFIT)

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Background: Few large scale studies have examined changes in health-related quality (HRQoL) of life, pain and frailty trajectory in older adults. We explored change in HRQoL and pain status in a large cohort of adults aged 70 years and older.
Design: Secondary analyses of data reported by 9803 community-dwelling adults aged 70 to 101 years, recruited to the UK Prevention of Falls Injury Trial (PreFIT). This cluster RCT investigated three alternative falls prevention interventions.
Outcomes: HRQoL was measured using the EQ-5D-3L and Short-Form-12 administered at baseline, 4, 8, 12 and 18 months post-randomisation. Frailty was measured using the Strawbridge questionnaire.
Results: 9803 participants were recruited from 63 general practices. Mean age was 78 years (SD 5.7; range 70-101); half were female 5150/9804 (53%). Pain and discomfort was common, with 60% reporting moderate or severe pain at baseline. A slightly higher proportion of responding participants were classified as frail at 18 months (1672/7490; 22.3%) compared with baseline (2005/9803; 20.5%). Overall, baseline HRQoL scores indicated good physical and mental health (mean SF12 PCS score 50.3 (SD10.3); MCS 50.2 (SD9.2)), although these declined over time. We found differences by EQ-5D sub-domains; a lower odds of pain/discomfort (OR 0.79; CI95% 0.63 to 0.99; p=0.05) and mobility problems (OR 0.85; 95% CI 0.74 to 0.98; p=0.03) was reported by participants randomised to

an exercise intervention compared to those receiving advice only. Findings by frailty status will be reported for this large population cohort of community-dwelling older people.

PAIN IN VULNERABLE GROUPS

P024

RELIABILITY AND VALIDITY OF FIVE TIMES SIT TO STAND TEST IN PREGNANCY-RELATED PELVIC GIRDLE PAIN

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Background and aims: To investigate reliability and validity of Five Times Sit to Stand (5TSS) test in pregnancy-related pelvic girdle pain (PGP).
Methods: One hundred sixty-seven pregnant women (28.43±4.59 years-old) who were determined to have PGP or not through clinical tests were included. Physical and sociodemographic characteristics, as well as obstetrical history were recorded. In order to investigate the reliability and validity of 5TSS, both this test and Timed Up & Go (TUG) test were applied to the subjects in two different days, in a randomized sequence, by two independent raters. Perceived pain and difficulty during functional mobility tests were marked separately on two Visual Analogue Scales (VASs).
Results: PGP was determined in 24.6% of subjects. Inter-rater and test-retest reliabilities were high for 5TSS test (ICC:0.999, 95% CI:0.999-1; and ICC:0.986, 95% CI:0.959-0.995, respectively). The 5TSS test scores of subjects with and without PGP were positively correlated with their TUG scores (r=0.420, p=0.006 and r=0.404, p=0.000, respectively). Intensities of pain and difficulty were higher during 5TSS test (95% CI=0.3 to 0.8 and 0.5 to 1.0, respectively).
Conclusions: The 5TSS test is a reliable and valid functional mobility outcome measure in pregnant women with and without PGP. Further psychometric properties of the measure such as responsiveness, should be investigated in the future.
Acknowledgement: This paper has been granted by the Muğla Sıtkı Koçman University Research Projects Coordination Office through Project Grant Number: (17/229).

P025

"IT'S JUST GIVING A LOLLYPOP TO A CRYING BABY"- TORTURE-SURVIVORS' EXPERIENCES OF HEALTH-CARE SERVICES FOR MANAGING PERSISTENT PAIN

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Background and aims: Persistent pain resulting from torture is highly prevalent and impactful, with increasing numbers of torture-survivors presenting to healthcare services with pain-related issues. Given the complex multifaceted needs of torture-survivors, current service-provision may be falling short. The aim of this study was to explore experiences of services for managing pain among torture-survivors, in order to inform clinical practice.
Methods: Thirteen participants were recruited from a specialist pain clinic in the UK set up to help torture-survivors manage their persistent pain. Utilising an ethnographic approach, data was collected via clinic appointment observations, interviews and medical records and analysed using inductive thematic analysis.
Results: Three main themes emerged in relation to experiences of services for managing pain. 'Role-taking in the patient-clinician relationship' explores the distinct hierarchical roles between clinician and patient. 'Multiplicity of

diagnoses and treatments' describes the negative impact of receiving varying and often conflicting diagnoses and experiencing unsuccessful treatments. 'Lack of service integration' highlights the current disconnect between various physical and mental health services.
Conclusions: Torture-survivors struggling with persistent pain currently occupy a precarious position within the healthcare system. The lack of recognition of torture experience when diagnosing and treating pain, alongside the dualistic organisation of many services and barriers to accessing them, can lead to negative experiences and unsuccessful outcomes. Clinical implications include the need for joined up services that recognise the impact of torture experience and its consequences on persistent pain. Strategies to engage and empower torture-survivors in the management of their pain are recommended.

P026

PAIN ASSESSMENT IN DISABLED ADULTS: A FEW MISSING PIECES IN THE JIGSAW

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Background and aims: Persons with multiple disability and handicap often suffer from many conditions, including chronic or acute pain. Because limited communication skills, the diagnosis is often underestimated and analgesic management is often difficult. A number of scales have been validated in persons with impaired communications or with intellectual disability (1).
Methods: The DHIADEM project (Douleur Handicap IAtrogénie DEnutrition Médicament) is a project supported by the French Health Agency. Its main objective is to explore knowledge on pain evaluation of healthcare professionals in 15 centers for disabled persons.
Results: The preliminary data reveal a paucity of pain assessment and a poor use of observational pain scales. Health professionals reported that pain assessment was mostly based on their own judgment in daily care with non-communicating residents. Further data are being collected and full results expected in June 2019.
Conclusion: These preliminary results highlight the lack of knowledge and suggest the importance of training healthcare professionals to pain assessment and management in people with disability, in order to limit inequalities of care in vulnerable people.
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ACUTE PAIN

P027

EFFECTIVE NON-DRUG TREATMENTS FOR PAIN IN PEOPLE WITH DEMENTIA IN AGED RESIDENTIAL CARE SETTINGS: A QUANTITATIVE AND QUALITATIVE SYSTEMATIC LITERATURE REVIEW

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Background and aims: Chronic pain is common in people with dementia (PwD), impacting on quality of life, mobility and increasing behavioural and psychological symptoms. This places resource demands on Residential Care Settings (RCS). Pharmacological treatment can result in negative physiological side effects and reduced QoL.

Non-Drug Treatments (NDTs) are becoming increasingly recognised as a feasible alternative. The aim is to identify effective pain relieving NDTs for PwD in RCS and explore the experiences of those delivering and receiving NDTs.
Methods: Systematic review of scientific databases, grey literature and citation chasing, followed by narrative and thematic synthesis.
Results: Seven studies met inclusion criteria. Qualitative data analysis identified themes of adaptation; emotional, environmental and sensory influence; NDTs as a tool, finding the person and job enhancement.
Quantitative studies included five NDTs. Four *collaborative* interventions (provider and/or environment interact with receiver) and one *directive intervention* (interaction limited to instruction).
NDTs effectiveness for pain reduction was significant for three collaborative interventions; reflexology (SMD = -0.87, 95% CI [-1.5, -0.24]), ear acupressure (SMD = -1.03, 95% CI [-1.53, -0.54]) and massage therapy (SMD = -2.17, 95% CI [-2.75, -1.6]). No significant effect was found using directive intervention group based exercise (SMD = 0.07, 95% CI [-0.34, 0.48].
Conclusion: Evidence supports use of collaborative NDTs for pain in PwD in RCS, with positive experiences for those delivering NDTs and the wider RCS. No significant effect on pain outcomes following directed physical activity. However, studies were small in number and varied across setting and sample size.

P028

CHARACTERIZING EXPERIMENTAL ACUTE SHOULDER PAIN, AND THE EFFECT OF CLINICAL PROVOCATION TESTS

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Background and aims: Hypertonic saline (HTS) injections are used to induce acute experimental pain. Passive stretching, or contracting muscles near the injected region may alter pain perception. The aim of this study was to describe the pain experienced following HTS-injections in the subacromial bursa (SAB) and supraspinatus muscle belly (SSmB) both at rest and during active and passive shoulder movements.
Methods: 1-2mL of 5% NaCL was injected into SAB (n=8) and SSmB (n=10; age 22.9±2.9, 5-male) under ultrasound guidance. Participants were then exposed to 8 clinical provocation-tests, in random order, at 20-second intervals. Pain severity (NRS-11) was reported after each provocation-test. Pain area (cm^2), referral patterns (body-diagram), depth (cm) and quality (Short Form McGill Pain Questionnaire) were reported after completion of all tasks.
Results: SAB and SSmB-related pain was experienced for 925±382 sec and 434±47 sec, respectively ($p< 0.02$); with an average intensity over the first 3.5 minutes of 5.9±1.9/10, $p=0.14$. Pain intensity reduced by 0.8±0.9and 1.0±1.4 during the Hawkins Kennedy-test and active abduction, respectively (both $p< 0.05$) for SAB_{pain}. There was no significant difference between provocation-tests in $SSmB_{pain}$ (all $P>0.07$). Both pain models were described as "aching", SAB_{pain} was also described as "throbbing", "sharp" and "heavy", and $SSmB_{pain}$ as "cramping".
Conclusions: Our study demonstrated that the pain experienced differed between these models. The reduction in pain intensity with clinical provocation tests with SAB_{pain} is in-line with previous studies of HTS-induced acute back pain with stretching/contracting, but in contrast to what is observed in some clinical shoulder pain conditions.

P029

THE IMPACT OF MIDAZOLAM ON POSTOPERATIVE PAIN - A MULTICENTRIC PROSPECTIVE PILOT STUDY

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Midazolam may affect postoperative pain, with studies suggesting conflicting effects. Anxiety may be a confounder. We aim to clarify the relation between anxiety, midazolam and pain.
We prospectively collected perioperative data of inguinal hernia repair patients in 4 Portuguese ambulatory units, with blind telephone interview at 24h, 7 days and 3 months after surgery. Association between pain intensity and midazolam was assessed, including subgroup analysis; alpha=0.05.
Thirty men and two women were recruited May-August 2018; 22% were smokers and 97% ASA< 3. Spinal block provided better pain control; chronic benzodiazepine users referred less 24h-pain but more features of neuropathic pain at 3 months. 24h-pain was related to 7-day and 3-month pain. We found no association between midazolam dose and pain.

	Midazolam n=25 (78%)	No midazolam n=7 (22%)	p	Chronic BZD user n=5 (16%)	No BZD user n=27 (84%)	p	Spinal block n=12 (37%)	General anaesthesia n=20 (63%)	p
Age	51,8 (11,8)	56,6 (17,2)	0,397	63,2 (14,5)	50,9 (12,1)	0,051	56,5 (14,3)	50,6 (12,0)	0,220
Preop pain	2,8 (2,7)	2,0 (2,6)	0,507	2,2 (2,5)	2,7 (2,6)	0,721	1,8 (1,9)	3,1 (3,0)	0,205
Preop anxiety	4,5 (2,3)	1,0 (1,5)	0,001	4,0 (2,6)	3,7 (2,7)	0,821	4,0 (2,0)	3,6 (3,0)	0,684
Midazolam dose	2,2 (1,5)	0	0,001	1,6 (1,3)	1,8 (1,7)	0,844	3,0 (1,8)	1 (0,9)	<0,001
Pain NRS 24h	3,2 (2,0)	3,1 (1,1)	0,976	1,6 (2,3)	3,5 (1,6)	0,035	2,3 (1,7)	3,7 (1,8)	0,043
Pain NRS 7days	2,3 (2,1)	3,3 (2,4)	0,291	2,4 (2,9)	2,5 (2,0)	0,898	1,7 (1,5)	3,0 (2,4)	0,134
Pain NRS 3 months	1,7 (2,1)	1,0 (1,8)	0,426	1,8 (2,2)	1,5 (2,0)	0,768	1,1 (1,6)	1,8 (2,2)	0,361
N. DN4 features	1,8 (1,6)	1,0 (0,9)	0,261	3,3 (2,5)	1,4 (1,2)	0,019	0,8 (1,0)	2,1 (1,6)	0,023
Satisfaction 3 months	9,25 (1,5)	9,0 (2,7)	0,744	9,0 (2,2)	9,2 (1,7)	0,835	9,3 (1,6)	9,2 (1,9)	0,855

[Patient data; DN4 (Questionnaire DN4 Douleur neuropathique); BZD (benzodiazepines). All results as mean (sd).]

Chronic benzodiazepines seem to impact on acute and chronic pain. Our main study (300 patients) might reach statistical power to uncover a possible association of perioperative midazolam and postoperative pain.

P030

ORPHAN NUCLEAR RECEPTOR NR4A1 REGULATES INFLAMMATION AND RESOLUTION OF POSTOPERATIVE PAIN

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Background: Postoperative pain results from a wide range of surgical injuries, and an estimated 10-50% of patients develop chronic pain. Despite our improved understanding of the mechanism underlying the development of chronic pain, little is known about the resolution of pain. Inflammatory responses are essential for tissue repair and pain after surgery, but failure to terminate these responses can result in chronic pain. Here we characterize the nuclear receptor NR4A1 as an endogenous inhibitor of inflammatory responses and a therapeutic target for postoperative pain.
Methods: To investigate the underlying mechanisms of postoperative pain, we have adopted a mouse model that is characterized by increased pain sensitivity and macrophage infiltration after a surgical incision made in the plantar aspect of the hind paw. Pain sensitivity and macrophage infiltration were evaluated in NR4A1 knockout (KO) mice. Expression and function of NR4A1 were also evaluated in neuronal and skin tissues, as well as in cultured macrophages.
Results: Surgical incision not only induced postoperative pain and infiltration of macrophages, but also resulted in a significant increase of NR4A1 expression levels in the paw of wild-type (WT) mice. Interestingly, NR4A1 KO mice revealed delayed resolution of postoperative pain and increased inflammatory responses in neuronal and skin tissues. Consistently, cultured macrophages form KO mice displayed increased pro-inflammatory responses, whereas inflammatory responses in macrophages form WT mice were significantly reduced when treated with NR4A1 antagonists.
Conclusion: Taken together, these findings reveal a previously unrecognized role of NR4A1 in regulating inflammatory responses and postoperative pain after surgical incision.

P031

FUNCTIONAL SPATIAL INTEGRATION OF MULTIPLE CONCURRENT ELECTRICAL STIMULATION ASSESSED BY MEANS OF THE NOCICEPTIVE WITHDRAWAL REFLEX IN HUMANS

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Background and aims: The study aimed at exploring spatial integration of multiple concurrent nociceptive stimuli applied on the sole of the foot by recording the Nociceptive Withdrawal Reflex (NWR) in humans. The effect of single vs double stimulation on the size of the NWR and the effect of the distance between concurrent stimuli on the NWR size, were assessed.
Methods: 15 healthy subjects participated in the study. 5 stimulation electrodes were evenly distributed across the sole of the foot, allowing the assessment of 4 inter-stimulus distance condition. The intensity of the stimulation was set at 1.5 times the reflex threshold for all 5 electrodes (recorded over Tibialis Anterior muscle). For each single and double stimulus, 7 repetitions were performed in a randomized order.
Results: Using single stimulation, the size of the NWR was identical at all five electrode sites. Single stimulation elicited significantly smaller NWRs than double stimulation ($p < 0.01$). During double stimulation, decreasing the

inter-stimulus distance provoked increasing NWR sizes, significant difference was found between two conditions: contiguous stimuli vs stimuli separated by 1 electrode ($p < 0.05$).
Conclusions: A net spatial summation effect was found when stimulating two sites simultaneously. Additionally, the integration of the double concurrent nociceptive input was found to be dependent on the inter-stimulus distance. This may indicate presence of a functional inhibition between stimuli applied in excitatory and inhibitory reflex receptive fields.
Acknowledgement: Center for Neuroplasticity and Pain (CNAP) is supported by the Danish National Research Foundation (DNRF121).

P032

THE EFFICACY OF NALBUPHINE VERSUS FENTANYL AS ADDITIVES TO BUPIVACAINE IN SPINAL ANAESTHESIA FOR INTERNAL FIXATION OF TIBIA-A DOUBLE BLINDED STUDY

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Background: Intrathecal opioids were used in relatively high doses to prolong time of post-operative analgesia as an option of opioid free post-operative analgesia, using intrathecal nalbuphine versus intrathecal fentanyl as adjuvants to bupivacaine in patients undergoing internal fixation of tibia.
Methods: The present study was carried out on 50 ASA I or II patients scheduled for internal fixation of tibia under spinal analgesia, categorized into two groups: Group F Patients received intrathecal injection of 2 ml of 0.5% hyperbaric bupivacaine plus 1 ml fentanyl (50µg) and Group N Patients received intrathecal injection of 2 ml of 0.5% hyperbaric bupivacaine plus 1ml nalbuphine hydrochloride (1.6 mg).
Results: There was no significant difference between the two groups as regard the heart rate and mean arterial blood pressure, onset, duration of sensory block and duration of motor block. Onset of motor block was significantly earlier in group F than group N ($p=0.001$*). Duration of analgesia was significantly longer in group N when compared with group F ($p=0.004$*). There was no significant difference in time of the 1st request analgesia and total dose of diclofenac sodium between the two groups. No cases experienced respiratory depression or bradycardia. As regard hypotension, shivering, pruritus, nausea and vomiting showed no significant difference between the two studied groups.
Conclusion: The addition of intrathecal Nalbuphine 1.6 mg to spinal bupivacaine prolonged the onset time of motor blockade and duration of analgesia compared with the fentanyl. Intrathecal fentanyl 50 µg or Nalbuphine 1.6 mg are safe adjunct to Bupivacaine.

CANCER PAIN

P033

DIFFERENT TITRATION OF FBT FOR BTCP CONTROL

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Background and aims: Breakthrough cancer pain (BTcP) is particularly difficult to diagnose and treat. The initial *fentanyl* buccal tablets (FBT) dose remains controversial is usually proportional to the daily doses opioids (SR). Titration is usually started from the lowest dose.
The aim is to check the new strategies for FBT titration.

Method: Patient selection: patients with diagnosed BTcP and well controlled baseline pain with opioids (SR) whom BTcP episodes were treated with morphine IR or non opioids analgesics. Evaluated for contraindications for the use of a transmucosal fentanyl.
Two group of patient:
I basal opioid treatment equivalent 30-59mg/24h morphine - titration start dose of FBT 100mcg.
II basal opioid treatment equivalent ≥60mg/24h morphine - titration start dose of FBT 200mcg.
Further titration of FBT is performed to provide adequate analgesia.
Patients carry out pain diary to record BTcP caracteristics:
basic pain intensity (NRS scale), basic pain treatment, pain intensity of BTcP, localization, *known causes or nor, time of episode, treatment used, dose used, time for max pain, pain intensity in NRS, time for pain relief, episodes duration, t*reatment-related AE.
Observation is carried out for 7 days.
Results: 20 subjects completed one week observation.
11% started titration with 200mcg FBT, 19% started titration with 100mcg. AE were all mild or moderate.
Conclusion:
1. Titration of FBT can be started safely with higher than the minimal dose.
2. Initial dose 200mcg is safe and well tolerated for patients on ≥60mg morphine /24h

P034

INKK TRIAL : INTRAOPERATIVE KETAMINE FOR PERIOPERATIVE PAIN MANAGEMENT FOLLOWING TOTAL KNEE REPLACEMENT IN ONCOLOGY: A DOUBLE BLINDED RANDOMIZED TRIAL

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Introduction: There has been a growing interest in the use of Ketamine in few orthopedic surgeries including knee and spine surgeries. We hypothesized that low dose intravenous ketamine during surgery would help in mobilization following total knee replacement (TKR) in oncology patients as assessed by the Timed to up and go (TUG) test at 72 hours.
Materials and methods: After ethics approval and informed consent this double blinded trial randomized patients into, Ketamine group which received at induction, ketamine bolus dose of 0.5 mg/kg followed by 10 ug/kg/min and the Control group received saline. An independent team handled randomization using computer generated charts and prepared the study drug.
results: 52 patients were included in the final analysis. General demographics were comparable. The results are as shown in the pic_01. No significant intraoperative hemodynamic changes and postoperative adverse events such as nausea, vomitting, sedation and dysphoric symptoms were noted between the groups. Day of discharge, patient statisfaction score and functional recovery assessed by Oxford knee score were comparable.
Conclusion: Variability in dosage and duration of infusion has been seen. Due to logistic reasons continuation of infusion 24-72 hours postoperatively is difficult in busy recovery areas like ours and is not always feasible to be continued on floors. Although not statisticaly significant a slight decrease in the timed to up and go test along with decreased opioid usage with better range of movements has been noted using intraoperative low dose ketamine infusion.

TABLE:1 STUDY FINDINGS

	CONTROL	KETAMINE	P VALUE
MEAN TUG (SECONDS)	131.94±55.06	130.79±32.25	(p=0.25)
MEAN INTRAOPERATIVE FENTANYL REQUIREMENT (mcg)	213.25±76.75mcg	205.00±86.12	(p=0.69)
POSTOPERATIVELY MORPHINE USAGE (mg)	67.59±40.58	61.34±34.93mg	(p=0.54)
MAXIMUM FLEXION (DEGREES)	74.64±18.96	81.15±16.35	(p=0.58)
MAXIMUM EXTENSION LAG (DEGREES)	3.93±7.38	1.92±5.60	(p=0.43)

Values as mean± standard deviation; p<0.05 is taken as significant.

[findings]

P035

ARE PATIENT EDUCATION AND SELF-CARE ADVANTAGEOUS FOR PATIENTS WITH HEAD AND NECK CANCER? A FEASIBILITY STUDY

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Aim: This study evaluates whether patient education and individually self-care reduces pain and improves Quality of Life (QoL), mood, and sleep during and after radiotherapy treatment for patients with head and neck cancer.
Design: A longitudinal, two-armed feasibility study design was performed.
Methods: Sixty-four participants with curative intent were included in the study. All participants answered questions about pain three times a week and completed a survey questionnaire about pain, QoL, psychological aspects, and barriers towards pain management at baseline, at four weeks, and at ten weeks. Thirty-four of the participants attended in two education sessions on pain based on their beliefs about pain and received individualized self-care instructions based on their weekly rating of pain.
Result: This study did not find any significant group differences for the pain during the radiotherapy course or for pain, QoL, mood, and sleep at four weeks and ten weeks. The only exception was sleep satisfaction, which was significantly higher in the intervention group at ten weeks. A tendency to lower pain intensity was found in the intervention group.
As expected for both groups, we found associations with time regarding all outcomes.
Conclusions: A tendency to lower pain in the intervention group needs further investigation in studies that assess enhanced education and self-care for patients with head and neck cancer.

P036

TRANS-SACROCOCCYGEAL JUNCTION BLOCK OF GANGLION IMPAR FOR PERINEAL PAIN CONTROL IN ADVANCED CANCER PATIENTS

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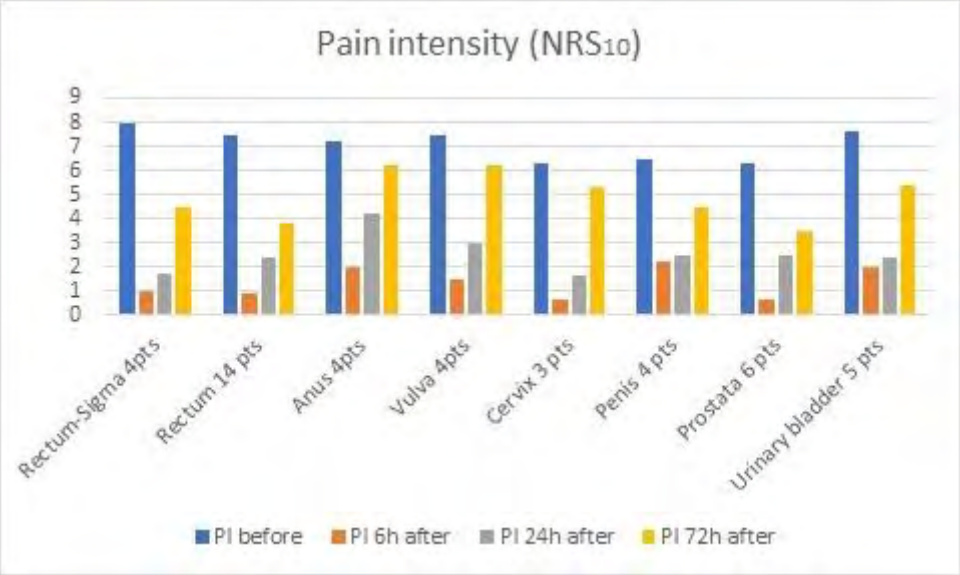
Aims: Ganglion Impar (GI) block is used to control perineal pain in cancer patients in PC Department - Vratsa. Aim is to analyze effectiveness and safety of temporary GI block by trans-sacrococcygeal junction approach and Dogliotti´s principle for needle tip placement.
Methods - retrospective analysis of medical records and pain intensity, opioids consumption, numbers of rescue doses, and side effects "before" and "6h; 24h; 72h after" GI block.
Results: For 5 years (2013-2018) 58 successful and 4 unsuccessful (success rate = 93,5%) blocks were made to 44 patients (32male; 12 female), mean age 66,11y.o.. Patients' diagnoses and pain intensity "before" and "after" block are shown on graph.1. Mean hospital stay was 7,07days. In 9 patients were made 2 and in 3 - 3 blocks per hospitalization. Average interval between blocks in patients with more than one block per hospitalization was 4.32 days (≥2 ≤12) In one patient (ICD10- C21.1) 5blocks were made for 40days. In 4 patients periods between blocks were > 6 months, in two > 1 year; usual interval was 4-6 weeks. Data analysis reveal mean reduction of pain intensity score (35.26% less "72 h after" vs "before") ($p < 0.05$), the number of rescue doses, and reduction of opioid consumption in all patients ($p < 0.05$) No serious adverse reactions were observed.
Conclusions: Data analysis reveal that GI block is effective and safe procedure for controlling perineal pain in advanced cancer patients.



[PI score "before" and "after" GI block by patients and diagnoses]

PAIN SYNDROMES WALK 2

P037

EFFECT OF DEXMEDETOMIDINE ON THE DEVELOPMENT OF MECHANICAL ALLODYNIA AND CENTRAL SENSITIZATION IN CHRONIC POST-ISCHEMIA PAIN RATS

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Purpose: Complex regional pain syndrome type 1 (CRPS I) is an intractable neuropathic pain syndrome. Chronic post-ischemia pain (CPIP) model is an animal model of CRPS I which is produced by ischemia-reperfusion (IR) injury of the hind limb. Dexmedetomidine (DEX) is a selective and potent α2 adrenergic receptor agonist with analgesic and protective effects following an ischemia-reperfusion injury. We hypothesized that DEX protects the development of mechanical allodynia and central sensitization in CRPS I.
Methods: We divided 45 rats into 5 groups: sham, CPIP, CPIP + DEX 10 μg/kg, CPIP + DEX 50 μg/kg, and CPIP + DEX 100 μg/kg. Rats in the sham group received sham surgery, and the other rats received CPIP injury. 1 hour before reperfusion or end of sham surgery, normal saline injected into the rats in sham and CPIP groups, and DEX (designated dose) injected into the rats in other groups. All rats evaluated the withdrawal threshold of both hind paws before surgery and 1, 3 and 7 days after surgery. Phosphorylation of N-methyl-D-aspartate receptor subunits (pGluN1) and Phosphorylation of extracellular signal-regulated kinases (pERK) in the spinal cord was measured at 3 days after surgery.
Results: Administration of DEX before reperfusion showed a significant increase in the withdrawal threshold in both hind paws and a significant decrease in the expressions of pGluN1 and pERK in CPIP rats dose-dependently ($P < 0.05$).
Conclusion: DEX may inhibit the development of mechanical allodynia and central sensitization in CPIP rats.

P038

NEUROINFLAMMATORY MECHANISMS OF CENTRAL SENSITIZATION ARE MEDIATED BY TNF- AND IL1-DRIVEN PATHWAYS IN A PASSIVE TRANSFER-TRAUMA MOUSE MODEL OF COMPLEX REGIONAL PAIN SYNDROME (CRPS)

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Background: Complex Regional Pain Syndrome (CRPS) is a severe chronic pain condition accompanied by hypersensitivity, swelling and autonomic dysfunctions after a small injury. The ethiology is unknown, but immune response against sensory nerve-derived antigens and complex neuro-immune interactions are involved. The therapy is unsatisfactory, therefore, there is need to explore the pathophysiological mechanisms and identify drug targets.

Methods: Female C57Bl/6 mice were treated daily with purified serum-IgG from CRPS patients or healthy volunteers following plantar skin-muscle incision. We determined the mechanonociceptive threshold, edeme, myeloperoxidase activity, inflammatory cytokines, microglia and astrocyte markers in pain-related brain regions. Fractalkin receptor (CX_3CR_1) gene-deficient mice were used to investigate microglia activation mechanisms. The effects of the interleukin 1 (IL-1) receptor antagonist anakinra, the inhibitor of its signaling Janus kinase tofacitinib, or the soluble tumor necrosis factor (TNF) receptor etanercept were investigated by 7-13-day experiments.
Results: Significantly greater mechanical hyperalgesia and paw edema developed after incision in CRPS IgG-treated mice accompanied by a significant increase of astrocyte and microglia markers. Myeloperoxidase activity increased in the early phase but inflammatory cytokine concentrations did not change. CX_3CR_1 gene deficiency, as well as anakinra, tofacitinib and etanercept treatments significantly reduced CRPS IgG-induced hyperalgesia and increase neuroinflammation. Anakinra treatment decreased myeloperoxidase activity and glia activation.
Conclusions: Autoantibody-induced neuroinflammation and central sensitization plays a crucial role in persistent CRPS-related pain. Glia activation is a key factor of this process via CX_3CR_1, IL-1- and TNF-signalling, through the JAK pathway. Blocking these receptors or inhibiting the signal transduction may represent new therapeutic perspectives.

P039

"WHEN I REALIZED IT WORKED, I KEPT ON GOING" - PRELIMINARY FINDINGS: A QUALITATIVE STUDY OF CRPS-PATIENTS´ EXPERIENCES WITH GRADED MOTOR IMAGERY

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Background and aims: In this study we interviewed patients with Complex Regional Pain Syndrome (CRPS) about their experiences receiving individually tailored Graded Motor Imagery (GMI) and tactile desensitization treatment at a Norwegian pain clinic. GMI includes three steps; left/right discrimination training, visualization and mirror therapy. A rigorous home-based training-program was designed for each participant. The aim of the study was to explore how the treatment was perceived and experienced from the patient´s perspective and if it can be improved.
Methods: Semi-structured interviews were conducted with a phenomenological perspective involving ten participants. Analysis was based on systematic text condensation by Malterud.
Results: These CRPS-patients had a strict and demanding training program. What were important factors for adhering to the program? Three key themes emerged; taking back control, positive experiences early in the treatment, and strong support. CRPS is a challenging and disabling syndrome and some participants experienced that the treatment program helped them taking back control over their body and life situation. The second theme were positive experiences early in the treatment, which were a strong motivational factor. A third theme was the importance of strong support and follow-up by an enthusiastic physician that believed in you and in the program.
Conclusion: Taking back control, positive experiences early in the treatment and receiving support and follow-up were highlighted as essential for adhering to the demanding home-based treatment program. These factors seem important to consider for physicians initiating such challenging regimes to their patients.

P040

PERIPHERAL VAGOSYMPATHETIC BLOCKADE IN THE CRPS THERAPY

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Introduction: Complex regional pain syndrome (CRPS) is accompanied by severe pain and dystrophy due to sympathetic downregulation with a subsequent failure of microcirculation. Any peripheral sympathetic blockades for pain relieve and improving local perfusion make the treatment more effective. At our department we use a novocain vagosympathetic "coat-blockade" according to A.V.Vishnevsky, too.
Method: This method stands for infiltrating the patient's limb with a large volume of diluted solution of 0.25% novocaine in a balanced ion solution (the Vishnevsky solution). Patient's limb is injected with 40 to 80 mL proximally from the site of lesion. This therapy is given to outpatients.
Results: In our non-homogenic cohort of 24 patients (9 males and 15 females; age of 14 to 78 years, average 51.8 years) we had 16 patients with a CRPS Type 1 and 8 patients with a CRPS Type 2. We use 40 ml of novocaine solution for an arm, forearm or calf distribution, and 80 ml for a thigh within one session as a supplement to a standard pain therapy (antidepressants, gabapentinoids, opioids). These administrations are performed usually in a series of 10 at one-week intervals. Using this therapy, we achieved an average pain relief of 3.6 points on VAS for several weeks or months. We registered only slight local sensitivity in site of injection as a side effect.
Conclusion: The vagosympathetic coat-blockade can be a useful supplement to a very difficult therapy of a complex regional pain syndrome before we opt for more invasive techniques, such as sympathetic blockades.

P041

WHAT IS THE INCIDENCE OF COMPLEX REGIONAL PAIN SYNDROME TYPE I WITHIN FOUR MONTHS OF A WRIST FRACTURE IN THE ADULT POPULATION? A SYSTEMATIC REVIEW

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Background and aims: The estimated incidence of Complex Regional Pain Syndrome (CRPS), prior to the development of the 2010 Budapest diagnostic criteria, varies widely. Our aim was to establish the incidence of CRPS within four months of a wrist fracture in adults, using a systematic review of the literature published since 2010.
Methods: A systematic search of MEDLINE, PubMed, EMBASE, PsychINFO, CINAHL, BNI and AMED was conducted. The search was limited to observational studies. A validated diagnostic tool and at least one outcome within 4 months were inclusion criteria. Studies reporting on secondary surgery and those with evidence of prior neurology were excluded. Incidence risk was then extracted or calculated, and methodological quality was assessed using a modified Newcastle Ottowa Scale.
Results: Nine studies met all the criteria. There was a high degree of heterogeneity in study populations including study setting, fracture management, and diagnostic criteria. From the three studies with the highest methodological rigor we determined that the incidence risk of CRPS falls between 4% and 9% using the Budapest research criteria, rising to 14% using the clinical criteria.
Conclusions: Use of the research and clinical Budapest criteria resulted in lower incidence than the 1994 International Association of Pain criteria. The high specificity and low sensitivity of the research criteria is likely to lead to conservative estimates of incidence, and results should be interpreted with caution if being used to justify health service provision. Future work on a gold standard diagnostic tool for use in epidemiological studies is needed.

P042

PRE-EXISTING HEADACHE HAS A POSTPONED CLINICAL WORSENING AFTER POST DURAL PUNCTURE HEADACHE

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Objective: The incidence of post dural puncture headache (PDPH) in relation to the pre-existing headache (PH) was assessed, as well as the effect of PDPH on the clinical course of PH, a month and three months after lumbar puncture (LP).
Methods: The study was conducted as a cohort prospective study which including 252 patients (105 men and 147 women), average age of 47.3 ± 15.0 years, in which LP was carried out with traumatic needles of different calibers (20G vs. 18G, p=0,167).
Results: PDPH was reported in 52.8% patients. PDPH was more common in women (p=0.043), in younger patients (p< 0.001) and in smokers with shorter smoking periods (p< 0.001). Patients with PH were more likely to have PDPH (p=0.003). The clinical type of PH did not have an effect on the incidence of PDPH (p=0.128). Patients with PDPH and PH did not have a clinical deterioration of PH after a month of LP (p=1,000) and had a clinical deterioration of PH after three months of LP (p=0.047). The worsening of PH was more common in women with PDPH (OR 5,687 [95% CI: 1,526-21,200], p=0,010) and in patients with a longer history of PH (OR 1,064 [95% CI: 1,007-1,124], p=0.027). Multivariate analysis confirmed the direct association of female sex and worsening of PH after three months of LP (OR 4,478 [95% CI: 1,149-17,452], p=0,031).
Conclusion: These results are important for the prediction of PDPH occurrence and the prevention of clinical worsening of PH.
Keywords: Post dural puncture headache

CENTRAL NEUROPATHIC PAIN

P043

NEW PERSPECTIVES ON THE TREATMENT OF COMPLEX REGIONAL PAIN SYNDROME BY KETAMINE

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Introduction: Complex Regional Pain Syndrome (CRPS) can result in a chronic pain condition that is disabling and difficult to treat. Among the therapeutic strategies that can be used, ketamine, administered over 5 days at infra-anesthetic doses, has a place of choice. However, it is an invasive treatment and the mechanism of analgesic action is not known.
Material and method: Our work focused on two aspects of the treatment of CRPS by ketamine: predicting therapeutic efficacy and understanding mechanisms of action and evaluating cortical excitability by transcranial magnetic stimulation.
In the first study, 105 CRPS patients are selected by clinical Budapest modified criteria, we assessed the benefit of pre-treatment Technetium 99 bone scintigraphy to predict the therapeutic efficacy of ketamine.This efficacy was correlated with the relative increase in inflammatory activity and bone remodeling detected by scintigraphy.
In a second study, In 19 from the 105 CRPS patients, we observed that ketamine strongly and bilaterally repressed intracortical facilitation, a glutamatergic transmission parameter, and on the other hand restored the intracortical inhibition corresponding to the pain side, a gabaergic parameter which was very altered before the treatment. The analgesic effect of ketamine was correlated with this restoration of inhibition as well as the reduction of the facilitation corresponding to the healthy side. Ketamine seems to play a role in the balance of gabaergic and glutamatergic transcallosal influences. **Conclusion:** This work allowed new physiopathological mechanisms to be characterized as well as a new justification of the therapeutic efficacy of the ketamine in the CRPS.

P044

INVOLVEMENT OF IFN-ΜOF TRIGEMINAL SPINAL SUBNUCLEUSCAUDAL MICROGLIA IN NEUROPATHIC PAIN IN RATS WITH INFRAORBITAL NERVE INJURY

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Background and aims: Clinically, it is well known that trigeminal nerve injury causes orofacial persistent pain. To develop the appropriate treatment for these patients, it's important to know the mechanisms underlying this pathological pain. However, the exact mechanism is still unknown. We examined the involvement of Interferon gamma (IFN-γ) signaling in trigeminal spinal subnucleuscaudalis (Vc) in orofacial mechanical hypersensitivity associated with trigeminal nerve injury.
Methods: Male SD rats were used in this study. Infraorbital nerve injury (IONI) was established by partial ION ligation. The head-withdrawal reflex threshold (HWT) to mechanical stimulation of the whisker pad skin was measured before and on day 3 after IONI or sham treatment. The HWTs were also measured on day 3following the continuous intra cisterna magna (i.c.m) administration of IFN-γ antagonist (10 μg / 3 days) in IONI rats or IFN-γ (10 μg / 3 days) in naïve rats. Moreover, localization of IFN-γ receptor andquantification of IFN-γ in Vc was evaluated on day 3after IONI or sham treatment.
Results: The HWT was decreased on day 3 after IONI. IFN-γ antagonism in Vc recovered from the decrement of the HWT after IONI rats, and i.c.madministration of IFN-γ decreased the HWT in naïverats. In Vc, IFN-γ receptor was expressed in microglia and its expression level was increased on day 3 after IONI.
Conclusions: The present findings suggest that expression of IFN-γ signal in activated microglia is a key mechanism underlying orofacial neuropathic pain associated with trigeminal injury.

P045

MULTI-MODAL ELECTROPHYSIOLOGICAL ASSESSMENTS OF DISTINCT SPINOTHALAMIC FIBRE TRACTS IN CERVICAL MYELOPATHY

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Background and aims: Cervical myelopathy constitutes a frequent degenerative disorder of the spinal cord affecting spinothalamic conduction. Multi-modal electrophysiolgical recordings may reveal such impairments of spinothalamic conduction in the clinical setting. The specific aim was to relate modality-specific, segmental electrophysiological measures of spinothalamic integrity to clinical signs and symptoms of neuropathic pain.
Methods: Twelve subjects with focal myelopathy underwent quantitative sensory testing (QST) within the most affected dermatome corresponding to the MRI-defined myelopathy. CHEPs, cold evoked potentials (CEPs), pinprick evoked potentials (PEPs), and dermatomal somatosensory evoked potentials (dSSEPs) were acquired from the affected as well as a control dermatome above the level of lesion. The neuropathic pain phenotype was characterized using the NPSI and painDETECT® questionnaires.
Results: All subjects presented with a "snake-eye appearance" myelopathy upon MRI with at-level alterations of mechano-nociception in 50% of cases, and pathological cold- and warm/heat sensation in 42% or 33% of cases, respectively. Dermatomal SSEPs were preserved in all subjects. CHEPs and CEPs were impaired in 42% of patients, whereas PEPs were impaired in only 17%. Evoked potential preservation could be related to clinical characteristics of neuropathic pain.
Conclusions: Multi-modal neurophysiology reveals altered spinothalamic conduction in patients with focal myelopathies as complementary and confirmatory readouts alongside subjective quantitative sensory testing. The

data supports the existence of modality-specific labelled lines within the spinothalamic system that may dissociate depending on lesion topography. The association with the clinical neuropathic pain phenotype may provide further insights into the pathophysiology of central pain.

HEADACHE

P046

CHRONIC TENSION-TYPE HEADACHE AND COPING STRATEGIES IN ADOLESCENTS. A QUALITATIVE INTERVIEW STUDY

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Background and aims: Headache is the most common cause of chronic pain in children and adolescents. The Nord-Trøndelag Health Study (HUNT) has shown that every third adolescent experiences recurrent headaches. The disorder can have consequences for young people in several of the arenas of life. Few studies have investigated adolescents´ experience of living with chronic tension-type headache (CTTH).
The purpose of this qualitative study was to explore and describe how norwegian adolescents cope with chronic tension-type headache.
Methods: A qualitative design with semi-structured interviews was used. A strategic selection of 17 adolescents aged 14-19 with CTTH participated in the study. The interviews were recorded on audiotape and transcribed verbatim. Transcripts were analyzed using text condensation.
Results: To deal with headache in everyday life it was important to the adolescence to structure their days, especially regarding regular meals and getting enough sleep. Sufficient rest and relaxation were also highlighted as crucial. They had tried different therapies to help ease the pain, with varying effect. All of the adolescents had used or were using pain relievers, but they were ambivalent to the benefits of the medication. Low-intensity physical activity was perceived as beneficial and gave release, distraction an increased feeling of overall well-being.
Conclusions: The adolescents used both problem-focused active strategies and emotion-focused strategies to deal with the headache in daily life. Through exploration and awareness of the types of behavior that worked and did not work, they had arrived at strategies that helped them cope with their headache and its consequences.

P047

PSYCHOLOGICAL AND DEMOGRAPHICAL ASPECTS OF CHRONIC TENSION-TYPE HEADACHES: PATIENTS' ATTENDANCE IN THE PAIN CLINIC

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Background and aims: Chronic tension-type headache(CTTH) is the most prevalent headache disorder in the general population,ranging from 20% to 60%.We analyzed psychological symptoms´ distribution,gender-age structure,marital status,pain severity,education level and pain impact on work,social,family obligations in CTTH patients.
Methods: We conducted a cross-sectional study of 170 CTTH patients,who attended pain clinic in Sept. 2017-Nov. 2018.The diagnose met International Classification of Headache Disorders criteria.The analyzing parameters

were obtained at admission and included routine examination performed by neurologist(as well as pain intensity by Visual analogue Scale),psychological assessment performed by psychiatrist. Hospital Anxiety and Depression Scale(HADS) was used to evaluate anxiety and depression, considering depression or anxiety if the score was≥10.
Results: 61% of the patients were females.The patients' mean age was 39.8±9.7.Most patients were in their working age (21-30-11%; 31-40-18.3%; 41-50-24.5%; 51-60-22.6%),but there were patients under 20-2.1% and 61-70-13.4%,over 70-8.1%.The majority of them got a higher education(60.9%) and was married(54.3%).Pain affected productive functioning in the family in 29,3% patients,at work-37.6% and in society-33.1%.All the patients had anxiety:the mean HADS index was 15.8±1.3points in the anxiety subscale.Depression was diagnosed in 44.2%(mean HADS index in the depression subscale score 13.1±1.8).The mean pain intensity was 6.9±0.9 VAS points.Based on chi-square test statistic for independence $p < 0,001$ it was founded that pain severity virtually depends on gender,age,education level,marital and employment status and the diagnoses.
Conclusions: Psychological aspects in CTTH patients included depression and anxiety that in turn influence pain severity.Moreover,one in three patients admit a negative CTTH impact on work,social,family obligations.

P048

A COMPASS FOR DECIPHERING THE NOCIPLASTIC PAIN MECHANISM OF TENSION-TYPE HEADACHE BASED ON NONLINEAR MULTIDIMENSIONAL ANALYSIS (DETERMINISTIC CHAOS) EEG

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Aims: To study pain mechanisms in adolescents with episodic and chronic tension-type headache (ETTH and CTTH).
Methods: 75 adolescents (ages 13-18) were examined. Three groups were formed: 1st group - patients with ETTH (26 pers.), 2nd - with CTTH (24 pers.) and 3rd - a control group (25 pers.). Estimation of brain dynamical systems during background activity and **in the condition of mental stress** (countdown in mind) was studied by the nonlinear multidimensional analysis (deterministic chaos) EEG and calculated Kolmogorov-Sinai entropy (KSE).
Results: Patients with CTTH, in comparison with 1st and 3rd groups, had a decrease in KSE in prefrontal, central and temporal leads (F3 - -25,58%, C3 - -17,22%, C4 - -38,93%, T4 - -21,71%, T6 - -41,30%, $p< 0,05$), which corresponds to the projections of the limbic reticular system. These neurodynamic changes may indicate a decrease in the number of active parallel functional processes, a reduced capacity to self-organization and ability to form the adaptive ordered dissipative structures, i.e. a reduction in neuroplasticity, resulted in formation of a stable pathological dominant of excitability (reduction in the "level of chaos"), and a decrease in pain control - weak peripheral impulses from the pericranial *muscle* stiffness, vessels and other sources of an afferentiation are interpreted as nociceptive stimuli by the CNS.
Conclusions: Nonlinear EEG index (KSE) can be an objective quantitative measure of the neurodynamic characteristics of limbic-cortical-reticular structures which are involved in the formation of stable pathological dominant underlying nociplastic pain mechanism of CTTH.

P049

SENSITIZATION OF TRIGEMINAL NUCLEUS IN SUBJECTS WITH MIGRAINE INTERICTALLY

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Background and aims: Migraine is catheterized by an increase sensitization of the central nervous system. However, is not clear if central sensitization is present interictally or only in proximity and during the headache attack. Our aim is to answer to this question.
Methods: Patients with Episodic Migraine (EM) and healthy control without familiarity for headache were included. Exclusion criteria included other headaches types and fibromyalgia. We assess central sensitization measuring wind-up and pressure pain threshold over temporalis and pressure pain threshold in the neck. The examination was done interictally and distance from the last and the next attack was recorded.
Results: We included 10 EM (9 women, 1 man), mean age 35,30 ± 13,82 and 10 control (9 women,1 man), mean age 36,10 ± 13,29. Subjects with EM have 6,40 ± 2,99 attack for month. They have lower pressure pain threshold over temporalis (144,50 ± 52,70 vs 233,08 ± 95,83; t(18)= 2,5 p< 0,05), neck (305,97 ± 95,22 vs 461,26 ± 157,19; t(18)=2,67 p< 0,05) and increase wind up ratio (2,70 ± 2,45 vs 0,10 ± 2,07; t(18)= -2,55 p< 0,05.There was no significant correlation between all the variables and the distance from the last (169,00 ± 138,37) and the next (151,10 ± 148,25) attack (p (one tailed) > 0.05).
Conclusion: Our data suggests that subjects with EM have an increase sensitization, perhaps at the level of the trigeminal nucleus, interictally. The level of sensitization is not correlated with the distance from the next and the last attack.

PAIN SYNDROMES WALK 3

P050

NOCICEPTIVE DESENSITIZATION INDUCED BY 8% TOPICAL CAPSAICIN IN A MODEL OF UVB-INDUCED CUTANEOUS HYPERALGESIA

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Background and aims: Several subpopulations of primary afferents (C and Aδ-fibers), express the TRPV1 receptor for capsaicin and heat. During cutaneous inflammation, these nociceptors may become sensitized, contributing to the development of hyperalgesia. While heat hyperalgesia depend on sensitization of TRPV1$^+$ nociceptors, their contribution to development of mechanical hyperalgesia is unclear. This study investigated the contribution of capsaicin-sensitive nociceptors in the development of heat and mechanical hyperalgesia in humans following ultraviolet-B (UVB)-induced cutaneous inflammation.
Methods: Four volar forearm skin areas in 18 healthy volunteers were randomized to treatment with 8% capsaicin or inert vehicle patches for 24 hours. Twenty-four hours after patches removal, one capsaicin treated area as well as one of the vehicle areas were irradiated with 2 x 'minimal erythema dose' (MED) of UVB. At day 1, 3 and 7-post UVB exposure, thermal detection and pain thresholds, mechanical pain thresholds and sensitivity, as well as micro-vascular reactivity, were assessed to evaluate the development of UVB-induced hyperalgesia with/without prior capsaicin-induced TRPV1-dependent ablation.
Results: The 24-hour capsaicin pre-treatment drastically inhibited warmth detection (P< 0.001), and heat hyperalgesia (P< 0.05) at day 1, 3 and 7-post UVB-irradiation, but had no impact on the development of mechanical hyperalgesia (P>0.2), nor UVB-induced erythema (P=1).
Conclusions: These results concur with the notion that high-concentration capsaicin-induced ablation predominantly defunctionalizes TRPV1$^+$ fibers. The present study suggests that, in humans, the sensitization of such fibers is necessary for development of heat hyperalgesia following cutaneous inflammation, but they are dispensable in the generation of robust primary mechanical hyperalgesia.

P051

EVIDENCE FOR HUMAN MINERALOCORTICOID AND GLUCOCORTICOID RECEPTORS ON PERIPHERAL NOCICEPTIVE NEURONS - TRANSLATION FROM ANIMAL TO HUMAN BIOLOGY

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Recently, glucocorticoid (GR, Shaqura et al., 2016) and mineralocorticoid (MR, Shaqura et al., 2016) receptors have been identified on peripheral nociceptive neurons suggesting a central role in pain modulation. Here we examined the localization of mineralocorticoid (MR) and glucocorticopid (GR) receptors on distinct subpopulations of sensory neurons characterized by specific neuronal markers in human versus rat skin. Folloing IRB approval tissue samples from rat and human skin were obtained and subjected to polymerase chain reaction (PCR), western blot, and double immunofluorescence confocal analysis of MR and GR together with the neuronal markers calcitonin gene-related peptide (CGRP), neurofilament 200 (NF200) and tyrosine hydroxylase (TH). PCR and western blot analyses identified MR- as well as GR- specific mRNA and protein bands, respectively. Double immunofluorescence confocal microscopy of human and rat skin revealed that MR predominantly colocalized with calcitonin-gene-related peptide (CGRP)-immunoreactive (IR) nociceptive neurons underscoring a pivotal role for MR in the modulation of pain. However, the majority of GR-immmunoreactivity localized in peripheral peptidergic CGRP-IR sensory, TH-IR sympathic postganglionic, and NF200-IR myelinated mechanoreceptive nerve fibers within human and rat skin. Intriguingly, GR but not MR localized in keratinocytes within the epidermal layer of human and rat skin. Overall, our results indicate considerable overlap in sensory neuron expression of MR and GR in humans and rats endorsing a common systems approach in mammals that may modulate the transmission of sensory information by MR and GR activation. This work was supported by a grant fom the Prof. KH René Koczorek Foundation, Neuried, Germany.

P052

CORRELATIONS BETWEEN THE SEVERITY OF NEUROPATHIC PAIN AND SERUM CONTENTS OF BDNF AND TRKB IN PATIENTS WITH DIABETIC NEUROPATHY

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Background: The biological actions of brain-derived neurotrophic factor (BDNF) in humans' painful diabetic peripheral neuropathy (DPN) are relatively poorly understood. Serum levels of high-specific tropomyosin receptor kinase B (TrkB) in human with DPN wasn't investigated yet.
The aim: To study serum levels of BDNF and TrkB in patients with painful DPN.
Methods: 60 patients with DPN were examined with clinical examination, measuring of serum levels BDNF and TrkB by enzyme immunoassay and were divided into two groups: the 1st group consists of 32 patients with neuropathic pain, 28 patients with painless form of DPN entered the 2nd group . The peripheral nerve dysfunction was confirmed by electroneuromyography (ENMG) with measuring nerve conduction velocity (NCV) of n.peroneus.
Results: In the 2nd group serum content of BDNF (2.38±1.05ng/ml) was significally lower than in the 1st group (3.88±1,12ng/ml, p=0.001), unlike serum level of TrkB (3.14±1.75ng/ml versus 4,874±0,84ng/ml, accordingly, p=0.001). In the 2nd group mean NCV was significantly lower than in the first group (29.85±11.25 m/s versus 38.45±7.9 m/s accordingly, p=0.001). There was obtained the inverse dependence between serum TrkB and the NCV (R=-0.531, p< 0.05) by ENMG.
Conclusions: Neuropathic pain in DPN is characterized by a lower content of TrkB and high expression of BDNF. Peripheral measurements of BDNF and TrkB provides a potential way to both study the pathogenesis of neuropathic pain of DPN as well as act as a biomarker of the disease.

P053

DATA DRIVEN QUANTIFICATION OF THE EFFECTS OF DIFFERENT DOSES OF GABAPENTIN FOR PAIN IN CHRONIC PHASE IN MICE USING MANGANESE-ENHANCED MRI WITH AI BASED ANALYSES

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Background and aims: Central nervous system is a crucial factor in chronic pain. There are limited ways to evaluate animal pain in the brain. Manganese-Enhanced MRI is an attractive tool to evaluate animal brain objectively under anesthesia.
Methods: After the animal ethic committee's approval, twenty-five C57BL/6J mice were involved in this study. Eighteen mice were anaesthetized by pentobarbital with sevoflurane and received planter flap surgery as a chronic pain model. The scanning schedule was set 4 weeks after surgery and 2 days before the scanning day after which 15mg/kg manganese was injected intravenously for two days. MRI measurements were performed with an 11.7 T MR scanner, under isoflurane anesthesia, T1 weighted MR-images were acquired with a spin echo sequence. All the images were anatomically normalized and divided into 19 regions automatically. Furthermore, uptakes of manganese were analyzed by calculating the region-to-muscle uptake ratio. A support vector regression analysis was performed using MatLab to calculate the pain score using signal intensity data in each animal brain. Average scores wereIt´s calculated.
Results: Support vector regression calculated the average score as 27.70 in 100mg/kg gabapentin administered group whereas 74.14 was the average score in 10mg/kg administered group respectively when the MRI signal intensity data labeled as 100 in group after surgery without analgesics and as 0 in naïve group.
Conclusions: This study revealed that we can quantify the effects of different dose of gabapentin to rodent chronic pain using Manganese-Enhanced MRI with support vector regression which is one kind of machine learning algorithms.

P054

SHAM-CONTROLLED NAVIGATED REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IN CENTRAL POST-STROKE PAIN TARGETING M1 AND S2

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Background and aims: Our aim was to compare repetitive transcranial magnetic stimulation (rTMS) given to the primary motor cortex (M1) and to the secondary somatosensory cortex (S2) in central post-stroke pain (CPSP) patients. As a treatment target M1 is well established. S2 seems to play a major part in the processing of pain. In facial pain patients some promising results have been reached with S2 stimulation in previous studies. We were keen to test the S2 stimulation in difficult to treat CPSP patients.
Methods: 17 patients were stimulated with navigated rTMS to M1 and S2 in a sham-controlled crossover trial (10 daily sessions, 5050 pulses per session at 10Hz). Pain intensity was monitored with numeric rating scale (NRS)

before, during and for 4 weeks after each stimulation period.
Results: All stimulation periods delivered short-term pain relief at group level (p=0.042). But the the treatment effects did not differ (p=0.97). A month after each stimulation period the pain intensity did not differ significantly from the baseline. Individual responder rates (short-term/long-term) were 35%/6% for the M1 stimulation, and 29%/0% for the sham stimulation, and 24%/18% for the S2 stimulation.
Conclusions: All three treatments provided significant short-term effect. Navigated rTMS targeted to S2 reduced the long-term pain intensity≥30% in 18% of the patients. S2 is a promising target for pain treatment and for future trials.

P055

STUDY OF SEX DIFFERENCES IN PAIN-, DEPRESSION- AND ANXIETY-RELATED BEHAVIOURS IN THE RAT SPARED NERVE INJURY MODEL OF NEUROPATHIC PAIN

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Background and aims: Several reports show greater prevalence of chronic pain conditions, as well as higher sensitivity to nociceptive stimuli, in women compared to men. However, around 80% of experimental studies are performed exclusively in male rodents (Mogil JS *et al.*2005). The aim of this study was to characterize sex dimorphism in the development of cold and mechanical allodynia in Sprague-Dawley rats subjected to Spared Nerve Injury (SNI). Moreover, the development of anxiety- and depression-like behaviours were also studied as they are associated with long-lasting chronic pain.
Methods: Please see Figure1 for a summary of experimental design and methods.
Results: SNI surgery induced cold allodynia in rats of both sexes. However, male-SNI rats developed cold allodynia later than females and showed a degree of recovery at the end of the experiment. SNI-induced mechanical allodynia did not reach significance (vs Sham) until day 14 in females and day 42 in males. In the OF, SNI did not induce any alteration in horizontal locomotor activity, but decreased vertical activity in males. There were no effects of SNI in the sucrose splash or sucrose preference tests in males or females.
Conclusions: Our results demonstrate differential development of SNI-induced nociceptive behaviour between male and female rats suggesting important sex-dimorphic modifications in pain pathways which persist at least 40 days after SNI surgery. Over this timeframe, SNI had no effect on depression- or anxiety- related behaviour in rats of either sex.
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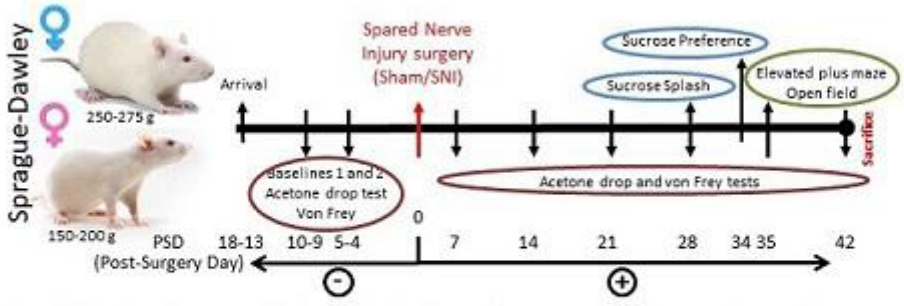

Figure 1. Experimental design. Male and female Sprague-Dawley rats (n=10/group) underwent Sham or Spared Nerve Injury surgery. They were exposed to von Frey (VF) and Acetone Drop (AD) tests on post-surgery days (PSD) 7, 14, 21, 28 and 42 to determine mechanical and cold allodynia respectively. To analyse the emergence of depression-like behaviours (i.e. anhedonia) Sucrose Splash (SS) and Sucrose Preference (SP) tests were run on PSD28 and PSD34 respectively. On PSD35 animals were exposed to Open Field (OF) to analyse locomotor activity and to Elevated Plus Maze (EPM) for the analysis of anxiety-like behaviours.

[Methods_and_Experimental_design_Laura_Boullon]

P056

CHARACTERIZATION OF THE GERMAN HEALTH CARE LANDSCAPE OF MIGRAINE PATIENTS IN THE DATA COLLECTION PANORAMA

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Migraine is a chronic headache disorder and its recurrent attacks have a significant impact on patients' daily life. A range of therapeutic options primarily from other indications exists, but low tolerability and insufficient response are reported to affect treatment success. Treatment options are often reevaluated, but no data on treatment algorithm and treatment failures exist. PANORAMA aimed at collecting data to characterize the health care landscape in Germany and to understand the current medical need for migraine patients.
119 headache and neurology centers participated in PANORAMA. PANORAMA was divided into three parts; the first part was an interview to generate an individual center profile, in the second part, the centers conducted a database research to characterize the migraine patients and the third part was an expert interview, to define the significance of migraine therapy at the center.
On average 13.8% of all patients in each center are migraine patients. 84% are collaborating with other centers mainly to validate therapeutic decisions. 8.9% of patients are currently without medical treatment, 82.5% of patients receive acute treatment of which 66.2% take triptans. 41.6% of patients receive prophylactics, the majority being beta-blockers (35.6%). 16.6% of the patients are already on their third prophylactic treatment and 90.7% of doctors see a high need for new preventive treatments such as monoclonal antibodies.
The PANORAMA study gives a comprehensive overview of the health care landscape and elucidates the lack of treatment algorithms for migraine patients in Germany. Further PANORAMA reveals a high demand for new treatment Options.

P057

LATE USE OF SYMPTOMATIC PHARMACOLOGICAL TREATMENT IS ASSOCIATED WITH HIGHER SENSITIZATION IN PATIENTS WITH TENSION TYPE HEADACHE

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Tension-type headache (TTH) has a prevalence in adult population of 42%, and very high socioeconomic impact. It's pathophysiology is not fully understood, but it seems that central sensitization play an important role. There is no specific medication for TTH, and patients tends to manage the episodes with symptomatic medications.
Our aim was to investigate the differences in clinical features and widespread pressure pain sensitivity according to the use of symptomatic medication.
Individuals with TTH diagnosed according to the International Classification of Headache Disorders criteria participated. A 1-month headache diary was used to collect clinical data and use of symptomatic medication. Pressure pain thresholds (PPTs) were assessed over the temporalis muscle, C5-C6 zygapophyseal joint, second metacarpal, and tibialis anterior muscle.
One hundred and sixty eight patients (72% women, age: 45±14 years; headache frequency: 14±8 days/month; headache intensity: 5.7±1.3; headache duration: 6.1±3.2 hours) participated. One hundred and thirty-six reported use of symptomatic medication for headache (73% NSAIDs); 58 took the medication at the beginning of headache whereas 78 took the medication when the headache intensity was intense. No differences in clinical features and widespread pressure pain sensitivity was observed depending on taking or not the medication (all, P>0.157).

However, patients taking the symptomatic medication when the headache was intense exhibited widespread lower PPTs than those taking the medication at the beginning of the attack (all, P< 0.05).
Consuming the symptomatic medication at the beginning of the headache could turn down the afferent input to the central nervous system, preventing the widespread sensitization.

LOW BACK PAIN AND LUMBORADICULAR PAIN

P058

THE EFFECT OF TREATMENT ON PAIN, FUNCTION AND MOBILITY IN ANKYLOSING SPONDYLITIS

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Background and aims: Ankylosing spondylitis (AS) is a chronic systemic inflammatory disorder which affects the sacroiliac joints, the axial skeleton and peripheral joints causing pain, significant mobility and functional disorders. The aim was to follow-up a group of AS patients as far as pain, mobility and functional ability, as well as to evaluate comorbidities, lipid profile and cardiovascular risk and to evaluate the effect of treatment on these parameters.
Methods: Questionnaires were used for the estimation of pain, function and mobility, namely BASDAI, BASFI, BASMI, health indices, namely BAS-G, ASAS-Health Index and a questionnaire of productivity and work-related productivity, namely WPAI:GH was utilized. ESR and CRP were measured, as well as blood total cholesterol, HDL cholesterol, LDL cholesterol and triglycerides. The 10-year cardiovascular risk was evaluated using SCORE.
Results: BASDAI index decreased from 3.91±0.67 before to 2.51±0.47 (mean±SEM) after treatment in AS patients (p< 0.001, Student's t test), BASFI from 4.05±0.68 to 3.17±0.61 (p< 0.001), BAS-G from 4.25±0.69 to 3.29±0.57 (p< 0.001), ASAS-Health Index from 7.29±1.23 to 5.23±0.93 (p< 0.001) and ESR from 16.12±3.4 mm/h to 12.41±2.9 mm/h (p< 0.001). Total cholesterol increased from 113.52±20.26 mg/dl before to 193.41±8.81 mg/dl (p< 0.001) after treatment, HDL cholesterol from 25.37±4.64 mg/dl to 54.06±4.74 mg/dl (p< 0.001), LDL cholesterol from 69.52±13.02 mg/dl to 112.5±8.67 mg/dl (p< 0.001) and triglycerides from 86.97±22.21 mg/dl to 138.65±23.91 mg/dl (p< 0.001).
Conclusions: It appears that in AS indices of pain, function and mobility as well as health indices improve after treatment, whereas the lipid profile is altered, without, however, an adverse effect on atherogenesis.

P059

RISK FACTORS FOR NEW EPISODES OF BACK PAIN IN EMERGING ADULTS. A SYSTEMATIC REVIEW

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Background and aims: The transition from adolescence to adulthood ("emerging adulthood") is a sensitive period in life for several health-related outcomes. We sought to synthesize evidence on risk factors for new episodes of back pain in this life stage.
Methods: The systematic review protocol was registered in PROSPERO (CRD42016046635). We searched Medline; EMBASE; AMED and other databases up to September 2018 for prospective cohort studies that estimated

the association between risk factor(s) and self-reported back pain. In order to be included, the study had to provide risk factors measured before or during the age range 18-29 years, and episodes of back pain could be measured during or after this age range, with at least 12 months between assessments. Risk factors assessed in≥3 studies were extracted and interpreted. Risk of bias was assessed using a 6-item checklist.
Results: Forty-nine studies were included with more than 150 different risk factors examined. Nine studies had low risk of bias, 26 had moderate, and 14 had high risk of bias. Age, sex, height, body mass index (BMI), smoking, physical activity level, a history of back pain, job satisfaction and structural imaging findings were investigated in 3 or more studies. History of back pain was the only risk factor consistently associated with back pain after covariate adjustment (9 studies).
Conclusion: Despite a large number of studies, we found little consistent evidence of risk factors for new episodes of back pain in emerging adulthood, other than a prior history of back pain.

P060

QST PREDICTORS OF PHYSICAL EXERCISE TRAINING EFFECTS ON CHRONIC LOW BACK PAIN

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Background and aims: According to a recent systematic review conducted by the American College of Physicians, exercise therapy is one of the few interventions reliably showing positive effects in the management of chronic low back pain (CLBP). Unfortunately, we still know very little of the mechanisms underlying the therapeutic effects of exercise therapy, which makes it difficult to predict which patients are going to benefit more from exercise therapy. It has been hypothesized that CLBP may be partially maintained by central sensitization, and that quantitative sensory testing (QST) can be used to infer the degree of central sensitization. Here, we examined the predictive value QST on the effects of exercise therapy on CLBP.
Methods: Patients with CLBP (n = 19) were tested before and after a 14-week PE training program comprising three 60-minute weekly sessions. QST measures included 1) thermal pain thresholds (TPT), pressure pain threshold (PPT), sensitivity to pin-prick pain (PPP) and temporal summation of pin-prick pain (TS).
Results: The beneficial effects of physical exercise training on CLBP were predicted by lower signs of central sensitization before training, such as higher PPT (R=-0.521*, p = < 0.05), lower PPP sensitivity (R=-0.524, marginally significant effect), and lower TS (R=-0.547, p = < 0.05).
Conclusions: Our findings suggest that central sensitization confers a poorer prognosis for the efficacy of PE training on CLBP.

P061

A COMMUNITY SURVEY TO ASSESS THE PREVALENCE, PAIN INTENSITY AND DISABILITY OF LOW BACK PAIN AMONG THE NORTH INDIAN POPULATION

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Background and aim: Low back pain (LBP) is a common disabling condition that burdens individuals, families and societies in India. To assess the prevalence, pain intensity and disability associated with LBP in north India.
Methods: An observational cross sectional survey was conducted among different strata of community aged above 18 year. We collected information of life time prevalence, point prevalence, recurrent prevalence, one-year

prevalence and knowledge regarding LBP. Numerical rating scale and Oswestry low back pain questionnaire were employed to assess the pain intensity and disability. Binary logistic regression, independent t test and Chi-square test were conducted by using SPSS 22 for statistical analysis.
Results: A total of 1532 subjects were included, among them 47.8% were males, 52.2% were females and mean age of 32±10 years. Lifetime prevalence, point prevalence and one-year prevalence was found to be 57%, 32% and 48% respectively. There was a significant difference observed in males (47%) when compared to females (65%) (p< 0.005) in lifetime prevalence. The mean intensity pain was found to be 4.2±2.6, with significant difference among gender (p< 0.05). Oswestery disability index indicated 67% were suffering with moderate disability and 24% with severe disability. The most significant predictor was 'Age' (OR =1.03, 95% CI: 1.02-1.04, *P* < 0.05), 'Gender' (OR =0.5, 95% CI: 0.4-0.6, *P* < 0.05) and 'Type of activity' (OR=0.7, 95% CI: 0.6-0.9, *P* < 0.05).
Conclusion: LBP is highly prevalent in north India resulting in the enormous disability. Age, gender and physical activity are the significant predictors for LBP prevalence.

P062

DIET-MEDIATED PAIN AND INFLAMMATION: NUTRITIONAL CONSIDERATIONS IN SPINAL PAIN DISORDERS

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Spine-related pain disorders (SRDs), low back and neck pain, relative to disability-adjusted life years, are two of the most significant contributors to the global burden of disease. Diet plays an important role in general health, wellness and the prevention and treatment of various conditions yet is too seldom considered as a contributor or seriously used as a solution for patients with SRDs. Poor diet and the physiological changes that arise because of it may adversely affect underlying mechanisms that contribute to persistent pain. An overview of evidence-informed dietary interventions that address macro- and micro-nutrient intake, pro- and anti-inflammatory foods, glycemic control and obesity can inform healthcare practitioners how to apply nutritional approaches for management of patients with SRDs. Clinical decision-making processes, including patient subclassification relative to nutritional and metabolic parameters, for SRDs may provide healthcare practitioners additional information to improve patient outcomes.

P063

HIGH-DENSITY ELECTROMYOGRAPHY PROVIDES NEW INSIGHTS INTO THE FLEXION RELAXATION PHENOMENON IN PEOPLE WITH LOW BACK PAIN

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Background and aim: People with low back pain (LBP) often do not show the flexion relaxation phenomenon (FRP) of the paraspinal muscles. To date, the investigation of the FRP in LBP individuals has been limited to quantify the electromyographic (EMG) amplitude by using bipolar EMG. This study aims to provide a better picture of the FRP by using High-density EMG (HDEMG) and investigating the spatial distribution of the FRP onset in addition to EMG amplitude in LBP individuals with and without FRP compared to pain-free controls.
Methods: 14 LBP individuals and 14 pain-free controls were requested for performing 3 full trunk flexion repetitions. HDEMG signals were recorded and the EMG amplitude and FRP onset value for each channel of the HDEMG grid was calculated. Smoothing spline Analysis of Variance models and the contrast cycle difference approach using the Bayesian interpretation were used for statistical inference.
Results: All pain-free controls and 64.3% of LBP individuals exhibited FRP. However, the FRP onset was delayed in those LBP individuals, especially in the cranial region of the muscle (peak delay of 0.17 [95% CI 0.11 - 0.26]). Lower

EMG amplitude was observed in pain-free controls compared to LBP individuals without FRP (peak difference of 1.57 [95% CI 1.32 - 1.83]), and LBP individuals with FRP (peak difference of 0.36 [95% CI 0.14 - 0.57]).
Conclusion: people with LBP display heightened activity of the paraspinal muscles during trunk flexion compared to pain-free people regardless of whether or not they displayed the FRP.

P064

DEMOGRAPHIC DATA AND CLINICAL CHARACTERISTICS OF PATIENTS WITH CHRONIC LOW BACK PAIN - RESULTS FROM A GLOBAL 8,990 PATIENT SURVEY: CITIZENS' RESEARCH

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Background and aims: Chronic low back pain (CLBP) is one of the most common chronic pain conditions, affecting 5-10% of people worldwide. Demographics and clinical characteristics of 8,990 patients completing a global (14 country) CLBP survey are presented.
Methods: Patients (≥18y) with self-reported physician diagnosis of CLBP, recruited via online panels, completed the survey March-May 2019. Data were weighted by sample size, CLBP prevalence and pain severity.
Results: 115,779 people started the survey, 95,108 failed screening and 6,984 stopped before finishing.
Data were available for 8,990 patients (mean age 52y; 45% female). Using a 0 (no pain) to 10 (pain as bad as you can imagine) numeric rating scale, 41% reported severe (7-10), 49% moderate (4-6) and 10% mild (1-3) pain.
For severe patients 48% had a degree (mild:55%) and 58% were full/part-time employed (mild:47%).
72% of severe patients were the main income earner (mild:68%); 69% had ≥1 financial dependents (mild:49%).
55% of severe patients started experiencing symptoms ≥5y ago (mild:58%) and 44% diagnosed with CLBP ≥5y ago (mild:51%); on average they were taking 2.1 medications (mild:1.3) for CLBP.
92% of severe patients reported ≥1 co-morbidity (mild:83%), and 23% had a diagnosed psychological condition (mild:13%).
33% of severe patients were registered disabled due to their CLBP (mild:13%), with 15% receiving disability income allowance (mild:4%).
Conclusion: Surveyed CLBP patients were of working age, with over half currently employed. The majority had been suffering pain for at least 5 years, with the most severe taking 2 pain medications to manage their condition.

PAIN SYNDROMES WALK 4

P065

THE NIH MINIMAL DATASET FOR CHRONIC LOW BACK PAIN: RESPONSIVENESS AND MINIMAL CLINICALLY IMPORTANT CHANGE

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Background and aims: The National Institutes of Health (NIH) minimal dataset is a 40-item questionnaire developed to increase use of standardized definitions and measures for chronic low back pain (CLBP). The study aim was to analyze responsiveness and minimal clinically important change (MCIC) of the NIH minimal dataset.
Methods: Total outcome scores on the NIH minimal dataset (0-100) and on the subscale Impact Stratification (8-50) were calculated. Higher scores represented worse functioning. Responsiveness and MCIC were determined with an anchor based method, by calculating area under the receiver operating characteristics curve (AUC) and determining the optimal cut-off point. Smallest detectable change (SDC) was calculated as a parameter of measurement error.
Results: 223 patients with CLBP were included. Mean total score on the NIH minimal dataset was 44±14 points at baseline. The total score was responsive to change (AUC: 0.84). MCIC was 14 points (sensitivity: 72%; specificity: 82%) and SDC was 23 points. Mean score on Impact Stratification (scale 8-50) was 34.4±7.4 points at baseline, with an AUC of 0.91, MCIC of 7.5 points (sensitivity: 96%; specificity: 78%), and SDC of 14 points.
Conclusions: Longitudinal validity of the NIH minimal dataset is adequate. An improvement of 14 points in total outcome score and 7.5 points in Impact Stratification can be interpreted as clinically important in individual patients. However, MCIC depends on baseline values and chosen method to determine the optimal cut-off point. Furthermore, measurement error is larger than the MCIC. This means that individual change scores should be interpreted with caution.

P066

MILD SKIN WARMING SELECTIVELY AGGRAVATES HISTAMINERGIC AND SEROTONINERGIC ITCH - A HUMAN EXPERIMENTAL STUDY

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Background and aims: Chronic itch affect millions of people worldwide, and has a substantial impact on patients' quality of life. It is frequently reported by patients with inflammatory itch disorders, that their itch is severely aggravated from exposure to warm conditions ('warmth hyperknesis'). However, the mechanisms behind this observation is elusive. The aim of this study was to investigate the effect of mild skin warming on itch intensity evoked by three distinct human experimental models of itch.
Methods: 18 healthy subjects (24.9±0.5 y.o., 10 males) were recruited. Three experimental models of itch were applied to forearms of the subjects: histamine (1%, skin prick), serotonin (17 mg/ml, iontophoresis) and cowhage (35-40 spicules manually inserted). Using an infrared lamp the skin temperature of the volar forearm was either not altered (control), raised by 4 °C or by 7 °C. Itch intensity was continuously recorded for 10 minutes after each itch induction using a digital visual analog scale.
Results: Itch intensity was higher when the skin was preheated in histamine- (12.2% increase, +7°C) and serotonin-induced itch (34.3% increase, +4°C), specifically in the onset phase ($p < 0.05$). No differences were observed in cowhage-induced itch.
Conclusions: The present study substantiates in a human surrogate model, clinical observations and rodent data on warmth induced itch aggravation. The data suggest a direct interaction between thermo- and pruriception which involves only select types of itch (serotonergic and histaminergic). The importance of such effects needs to be further investigated in order to be fully understood and potentially utilized.

P067

THE ASSOCIATION BETWEEN BODY IMAGE AND PRESSURE PAIN THRESHOLD: RESTING-STATE FMRI STUDY

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Background and aims: Recent evidence revealed that a negative body image is associated with chronic back pain and pain perception. The body image of a person consists of their perceived physical appearance accompanied by emotions towards that appearance. However, the brain mechanisms underlying these cognitive and affective aspects of body image are still unclear. In the current study, we investigate the neural correlates of three aspects of body image (Self-acceptance, Physical efficacy, Health).
Methods: 24 healthy participants underwent a resting state (fMRI) to explore functional connectivity patterns corresponding to the body image aspects. Furthermore, we applied voxel-based morphometry (VBM) to identify brain regions correlated with body image aspects. Body image was assessed by the German Frankfurt Body Concept Scales [Frankfurter Körperkonzeptskalen (FKKS)]. Pressure pain threshold (PPT) was assessed with a handheld algometer at the hand, back and leg.
Results: Pain threshold was exclusively associated with the body image aspect of physical efficacy. Furthermore, we found a positive correlation between the body image aspect physical efficacy and the functional connectivity between the brain stem and the medial prefrontal cortex (mPFC), which is involved in decisions about self-processing such as personal information. In addition, physical efficacy was negatively correlated with grey matter volume in the supplementary motor cortex (SMC).
Conclusions: These data suggest that functional connectivity between brain stem and mPFC may be a neural correlate of body image. Furthermore, our findings provide functional and structural evidence for inter-individual variability and have potential implications for understanding neural mechanisms underlying body image.

P068

QUANTITATIVE SENSORY TESTING PROFILES OF PATIENTS WITH LUMBAR RADICULOPATHY - DO THEY ASSIST IN PREDICTING CLINICAL OUTCOME AFTER SURGERY?

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Background: Despite successful surgery, 30% of patients with painful radiculopathy complain of persistent pain on long-term follow up.
Aim: To investigate any association between pre-surgical altered sensory nerve function and clinical outcome at 12 months post microdiscectomy.
Methods: Quantitative sensory testing was performed in 53 patients (mean age 38±11years, 26 females) with unilateral L5/S1 radiculopathy in their main pain area (MPA) and affected dermatome. An improvement < 30% on the Oswestry Disability Index (ODI) was defined as ‘no improvement’.

Results: At baseline, compared to healthy controls, patients with lumbar radiculopathy were characterised by a significant loss of function in the symptomatic leg in the MPA (thermal, mechanical, vibration detection, mechanical pain threshold, mechanical pain sensitivity p< 0.027) and dermatome (thermal, mechanical, vibration detection p< 0.002) and by a gain of function (cold sensitivity) in the MPA (p< 0.001). At 12 months, seven out of 48 patients (15%) reported < 30% improvement on the ODI. Logistic regression analysis revealed that the mechanical detection threshold in the MPA was significantly associated with group outcome (OR 2.61, 95% CI 1.19-5.74, p = 0.0170). At baseline the 'improvers' demonstrated a larger loss of function in mechanical detection compared to the 'non-improvers'.
Conclusions: Results seem to suggest that pre-surgical mechanical detection thresholds measured in the MPA may be predictive of clinical outcome after lumbar microdiscectomy.
Acknowledgement: Western Australian Department of Health and Raine Medical Research Foundation; School of Physiotherapy and Exercise Science, Curtin University; Research Advisory Committee, Sir Charles Gairdner Osborne Park Health Care Group

P069

A NON-PHARMACOLOGICAL PREHABILITATION PROGRAM BASED ON A COGNITIVE-BEHAVIORAL APPROACH FOR PATIENTS SCHEDULED FOR LUMBAR SURGERY - A ONE YEAR FOLLOW-UP OF A RANDOMIZED CONTROLLED TRIAL

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Surgery is acknowledged as one of the most frequent causes of chronic pain. Access to adequate pain management is declared a human right by the IASP, but what the non-pharmacological pain management should contain before surgery is unclear. This study investigated whether a non-pharmacological prehabilitation program based on a cognitive-behavioral approach reduces disability and improves functioning after lumbar surgery.
Methods: Patients scheduled for lumbar surgery were recruited from three spine clinics in Gothenburg, Sweden. The patients were randomized to either an active intervention or to a control group. The active intervention utilized a person-centered approach over 5 sessions and focused on promoting physical activity and targeting pain-related fear factors before surgery. The control group received conventional care.
The primary outcome was the Oswestry Disability Index score. Secondary outcomes were back and leg pain intensity, fear-avoidance variables, anxiety, depression, HRQoL, and patient-specific functioning, physical activity, and physical capacity. A linear mixed model was used to analyze the change scores of each outcome.
Results: No statistically significant difference between groups was found on the primary outcome (disability) over time (baseline to 1 year). A statistically-significant interaction effect ("Group x Time") was seen for EQ-5D. Both groups reached a stable plateau of change in primary and secondary outcomes by 8 weeks post-operatively**.**
Discussion: A prehabilitation program leads to clinically important changes in pain variables (pain intensity and fear-avoidance variables), and does not lead to any negative side effects.
Non-pharmacological pain management needs to be incorporated presurgery.
Trial registration: Current Controlled Trials ISRCTN17115599.

P070

ENHANCED PRO-NOCICEPTIVE MECHANISMS ARE PRESENT IN RECURRENT LOW BACK PAIN PATIENTS, BUT ONLY DURING A PAINFUL EPISODE, IN CONTRAST TO ANTI-NOCICEPTIVE MECHANISMS

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Background: Cross-sectional studies report enhanced pro-nociceptive mechanisms in low back pain (LBP) patients. It is unclear if such alterations are causal, consequential or coincidental to pain presence. This study, therefore, aimed to investigate enhanced pro-nociception in recurrent-LBP (RLBP) patients across painful and pain-free periods, compared to controls.
Methods: Thirty RLBP patients were assessed during a painful episode (Day-0), and when pain-free (Day-30), and compared to matched-controls. Pressure pain thresholds (PPTs) were assessed over extensor carpi radialis (ECR), upper trapezius (UT), lumbar erector-spinae (L1 and L5), and gastrocnemius (GAS) muscles. Cuff-algometry was used to assess pressure-pain detection (cPDT) and tolerance (cPTT) thresholds, temporal summation of pain (TSP, 10-inflations, 0.5Hz, cPTT intensity), and conditioned pain modulation (CPM, cPDT test-stimulus, 70% cPTT tonic conditioning-stimulus).
Results: RLBP patients displayed lower PPTs at all sites on Day-0 compared to Day-30 ($P< 0.023$), and at ECR ($P=0.012$), L1 ($P=0.007$) and L5 ($P=0.020$) compared to controls on Day-0. cPDT was reduced in RLBP patients on Day-0 compared to Day-30 ($P=0.008$). TSP stimuli were rated as more painful on Day-0 than Day-30 in the RLBP group ($P=0.010$), and TSP-magnitude was enhanced in RLBP participants compared to controls on Day-0 ($P=0.045$). CPM could not be evoked significantly in RLBP participants, but was present in controls ($P=0.024$).
Conclusions: Enhanced pro-nociceptive mechanisms were observed in RLBP patients, compared to pain-free controls, but only during the painful episode, suggesting these alterations were primarily related to the presence of pain. When pain-free, measures generally returned to similar levels as controls, except for CPM.

P071

SUBCUTANEOUS TANEZUMAB VERSUS PLACEBO OR TRAMADOL IN PATIENTS WITH CHRONIC LOW BACK PAIN: 16-WEEK EFFICACY AND SAFETY RESULTS FROM A PHASE 3 STUDY

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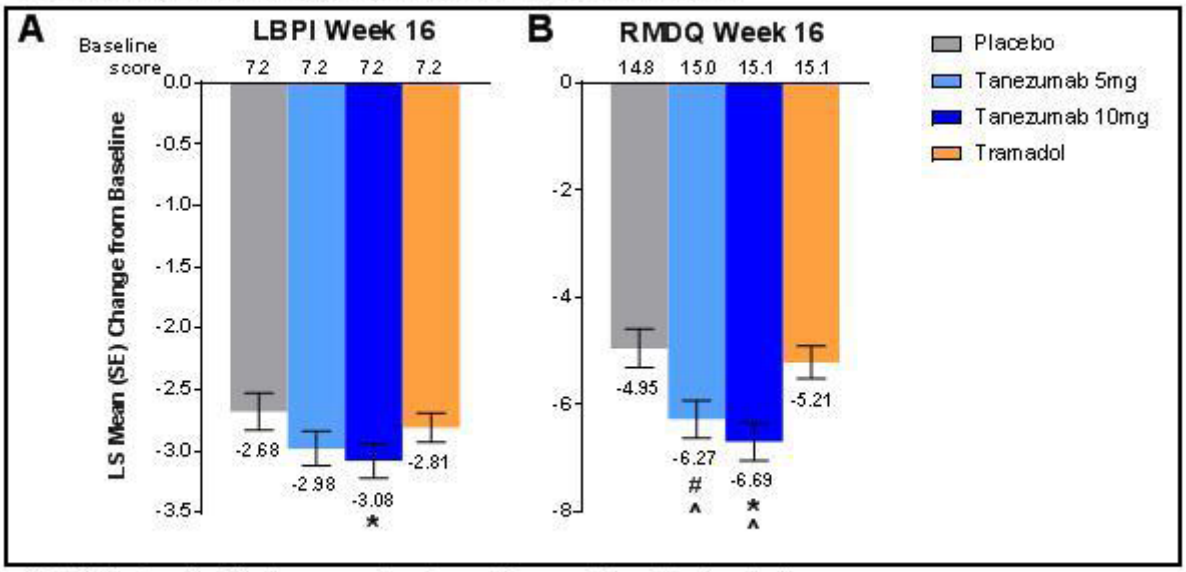
Background: This randomized, double-blind trial assessed tanezumab in patients with Chronic Low Back Pain (CLBP) and history of inadequate response or intolerance to standard of care analgesics.
Methods: Patients received placebo (N=409), subcutaneous tanezumab (5mg [N=407] or 10mg [N=407] every 8 weeks), or oral tramadol prolonged release (100-300mg/day; N=602). Change in Low Back Pain Intensity (LBPI) and Roland Morris Disability Questionnaire (RMDQ) scores were assessed at week 16. Safety, including joint safety, was assessed through week 80.
Results: Tanezumab 10mg significantly improved LBPI (primary endpoint) and RMDQ (key secondary) versus placebo at week 16 (Figure). Changes in LBPI with tanezumab 5mg were not significant versus placebo. Although mean changes in RMDQ were larger with tanezumab 5mg (-6.27) than placebo (-4.95), superiority could not concluded per the pre-defined testing strategy. Changes in LBPI and RMDQ with tramadol (mean dose=203mg/day) were not significant versus placebo. Changes in LBPI for both tanezumab groups were not significant versus tramadol. Both tanezumab groups significantly improved RMDQ compared with tramadol (unadjusted for multiplicity).

Adverse event rates through 16 weeks were 46.2%, 46.9%, 51.8%, and 56.3% in the placebo, tanezumab 5mg, tanezumab 10mg, and tramadol groups, resulting in treatment discontinuation rates of 3.9%, 4.4%, 4.7%, and 8.5%, respectively.
Conclusion: Tanezumab 10mg significantly improved pain and function at week 16 versus placebo, while tramadol did not. The frequency of AEs and treatment discontinuations due to AEs in both tanezumab groups were lower than tramadol, but higher than placebo.

Figure. Change in LBPI and RMDQ scores from baseline to week 16.



* Statistically significant versus placebo per the pre-defined testing strategy
# Statistically significant versus placebo (p≤0.01), but not significant per the pre-defined strategy
^ Statistically significant versus tramadol (p≤0.05; unadjusted for multiplicity)

[Figure 1]

P072

EVIDENCE BASED TREATMENT RECOMMENDATIONS FOR BACK AND NECK PAIN ACROSS EUROPE: A SYSTEMATIC REVIEW OF GUIDELINES

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Background and aims: The EU-funded Back-UP project aims to develop a cloud computer platform to guide the treatment of low back and neck pain (LBNP) in first contact care and early rehabilitation. In order to identify evidence-based treatment options that can be recommended and are accessible to people with LBNP across Europe, we conducted a systematic review of recently published guidelines.
Methods: Electronic databases, including the Guidelines International Network (G-I-N); NICE, SIGN, WHO, Medline; Embase; CINAHL; PsychINFO; PEDRo; Epistemonikos; TRIP; and DynaMed Plus were searched. We searched for guidelines published by European health professional or guideline development organisations since 2013, focusing on the primary care management of adult patients presenting with back or neck pain (including whiplash associated symptoms, radicular pain, and pregnancy-related LBP). The AGREE-II tool was used to assess the quality of guideline development and reporting.

Results: The searches generated 3098 citations that were screened for eligibility. A total of 189 full texts were retrieved, and 31 guidelines were included in the review (from the UK, Germany, France, Italy, Denmark, Poland, Belgium, and the Netherlands). Data extraction showed considerable variation in guideline development processes, especially regarding the methods used for identifying, appraising, and synthesising evidence, and for formulating, agreeing, and grading recommendations.
Conclusions: Recommendations for the management of LBNP cover a wide range of treatment options, with self-management advice, analgesics, and exercise proposed as core treatments by most guidelines. A narrative synthesis, taking into account consistency, strength, and quality of guideline recommendations, will be presented during the conference.

P073

INDIVIDUAL PATTERN OF PAIN-RELATED CORTICAL ACTIVITY IN PATIENTS WITH CHRONIC MIGRAINE AND CHRONIC BACK PAIN

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Aims: Although we know much about which brain regions are involved in the processing of pain, we know less about their specific “weight” for a single subject´s experience of pain. Therefore, the study aims to detect stable individual cortical patterns of chronic pain processing in migraine patients and chronic back pain patients.
Methods: In four separate sessions, functional MRI was recorded from 20 patients with chronic migraine and 20 patients with chronic back pain. Each session lasted 25 min. The patients were asked to continuously rate the intensity of their pain throughout the recording. Statistical analysis has been conducted by computing linear mixed models (LMEs). In order to elucidate which processes in the brain encode the subjective experience of pain in each patient, the time course of subjective pain ratings and pain intensity changes have been related to the time courses of cortical activity.
Results: For both groups, the group statistics exhibited a strong relationship between the perigenual ACC, as well as the right anterior insula, and the experience of pain. However, the topography of the cortical pattern is variable across patients. We found distinct patterns of cortical responses for each patient, reflecting the subjective experience of pain.
Conclusions: The current findings are meant to establish a solid methodological foundation for a future neurofeedback approach to attenuate the suffering from chronic pain. We suggest to go beyond group statistics, for which individually specific patterns were considered as noise and are neglected.

OROFACIAL PAIN

P074

SYMPTOM SEVERITY IN BURNING MOUTH SYNDROME ASSOCIATES WITH PSYCHOLOGICAL FACTORS

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Background and aims: Burning mouth syndrome (BMS) patients are psychologically distressed, but whether this associates with symptom severity is not known. The aim was to investigate the association of psychological factors with pain intensity and interference in BMS.
Methods: 52 women (mean age 63.1, SD 10.9) with BMS participated. Pain intensity and interference data was collected using 2-week pain diaries. Psychological factors were evaluated using Depression scale (DEPS), Pain anxiety symptom scale (PASS) and Pain vigilance and awareness questionnaire (PVAQ). The local ethical committee approved the study.
Patients were divided into groups based on pain severity distribution tertiles: low intensity (NRS £ 3.7) or interference) (NRS £2.9) (tertiles 1-2, n=35) and moderate to intense intensity (NRS > 3.7) or interference (>2.9) (tertile 3, n= 17). T-test, Wilcoxon Test and Pearson's Correlation Coefficient were used in the analyses.
Results: Patients in highest intensity and interference tertiles reported more depression (P = .0247 and P = .0169) and pain anxiety symptoms (P = .0359 and P = .0293), and were more preoccupied with pain (P = .0004 and P = .0003) than patients in low intensity and interference groups. Score of the pain vigilance questionnaire correlated significantly with pain intensity (r= .36567, P= .0090) and interference (r= .48153, P = .0090). Depression (r=. 39940,P = .0034) and pain anxiety symptoms (r= .45234, P = .0008) correlated with pain interference.
Conclusions: Symptom severity in BMS associates with symptoms of psychological distress emphasizing the need to develop multidimensional diagnostics for the assessment of BMS pain.

P075

A NOVEL CYTOKINE AXIS ASSOCIATED WITH NEUROPATHIC PAIN

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Neuropathic pain represents a burden to developed countries' health and economy while being an area of unmet clinical need. Current therapies are often ineffective and associated with adverse effects. Recent findings from our group and others have identified a novel role of a non-promiscuous cytokine ligand-receptor axis in a rodent model of neuropathic pain. This specific interaction could represent a novel therapeutic target with a different mechanism of action from current drugs, hence, circumvent associated adverse effects. Our aim is to investigate the expression of the cytokine axis in human samples with clinical records of neuropathic pain, as well as correlate their expression in a behavioural model of pain in rodents. Human samples from an archive of tissue associated with non-painful and painful clinical records as well as visual analogue scores (VAS), allowed us to correlate the presence and relative magnitude of pain. The cytokine axis was identified by immunohistochemistry and the intensity and position with respect of TUJ1+ve nerve fibres were assessed. Our preliminary data suggest an altered expression of the receptor and It´s proposed that it correlates with pain. Thus, posing this axis as a novel target for neuropathic pain treatments.

P076

OROFACIAL ALLODYNIA IN EXPERIMENTAL AUTOIMMUNE ENCEPHALOMYELITIS IS ACCOMPANIED BY GLIA ACTIVATION IN THE CENTRAL NERVOUS SYSTEM AND BY METABOLIC ALTERATIONS IN THE TRIGEMINAL GANGLION

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Background and aims: Trigeminal pain is common among multiple sclerosis (MS) patients at any disease stage, and often precedes MS diagnosis. Underlying mechanisms are not known, since no direct correlation with demyelinating lesions in specific brain areas has been provided. Thus, we aimed at unveiling the role of glial cells,

and of metabolic changes that might occur in the spinal-trigeminal system in an animal model of MS.
Methods: Experimental Autoimmune Encephalomyelitis (EAE) was induced in Dark Agouti male rats by subcutaneous injection of recombinant MOG_{1-125} protein fragment. Motor symptoms were evaluated daily in parallel to the development of orofacial allodynia. At day 21 post injection (PI) animals were sacrificed, and tissues collected for analyses.
Results: Animals showed typical relapsing-remitting EAE, with disease onset at around day 8 PI. Orofacial allodynia spontaneously developed from day 1 PI, i.e. well before the appearance of clinical signs of the pathology, and progressively worsened over time. Activation of glial cells was observed both in the trigeminal ganglia and in the brainstem, without signs of demyelination. Metabolomic analyses of trigeminal ganglia showed a dramatic reduction in energy production.
Conclusions: Spontaneous orofacial allodynia precedes the onset of relapsing-remitting EAE with no correlation with disease stage, suggesting the existence of different mechanisms driving the development of motor symptoms and orofacial sensitivity. Glial cells and altered metabolic pathways can contribute to neuronal sensitization and pain development.
Supported by: FISM - Fondazione Italiana Sclerosi Multipla - grant cod.2016/R/7 to SC and financed/co-financed with the “5 per mille” public funding.

P077

THE USE OF RADIOFREQUENCY THERMAL DENERVATION OF THE TRIGEMINAL GANGLION FOR MALIGNANT TRIGEMINAL NEUROPATHY: A CASE REPORT

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We report the treatment of a young male who reported facial pain secondary to an oral cancer recurrence involving the trigeminal nerve root with severe facial pain and headache.
Our patient had a surgery for buccal mucosa cancer with primary closure in 2018, and he reported pain in the distribution of the mandibular nerve 2 weeks after the surgery. His reports of pain were dismissed as being secondary to the acute surgical phase, and he was put on analgesics and neuropathic pain medications for pain relief with no change in his pain.
He came to our institution after imaging was done for the pain, which revealed metastasis involving the mandibular division of the trigeminal nerve. We initiated chemotherapy and concomitant radiotherapy for the disease process. We initiated counselling as well for him and his family in view of his distress and frustration. Clinical examination revealed a focal patch of numbness over the right lower jaw and front of the cheek. The masseter reflex was intact. We performed a percutaneous radiofrequency denervation since the Ganglion was intact, and counselled the patient about the possibility of denervation hypersensitivity. We applied three cycles of ablation at 70 degrees for 90 seconds, using fluroscopy to guide the needle position into the foramen ovale. We used sedation and monitoring to help with intraoperative pain.
The patient tolerated this procedure well with complete relief of pain. This abstract discusses challenges in dealing with orofacial malignant neuropathic pains.owing to the innervation of the trigeminocervical complex.

P078

KINESIOTAPING IN RECOVERING OF THE MOVEMENT PATTERNS IN PATIENTS WITH MYOFASCIAL PAIN SYNDROME IN THE CRANIOMANDIBULAR REGION

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Background and aims: Determine the effectiveness of the kinesiotherapy, and possibility of using kinesiotaping in neurological patients with myofascial pain syndrome.
Methods: The study involved 72 patients with myofascial facial pain syndrome. Patients were divided into two groups: group number one received kinesiotaping method and pharmacological treatment (35 patients) and group number two received pharmacological and physiotherapy (37 patients). The following research methods were applied: clinical neurological examination and musculoskeletal testing. The pain syndrome was assessed using a visually analog scale (VAS). Volume and symmetry of lower jaw movement and symmetry of face borders regions were assessed by method of visual-optical analysis. The kinesiotaping method was used for muscular imbalance correction.
Results: The dynamics of pain syndrome, according to the VAS, initially was 7,4±1,2. After the treatment: in the first group on day 3 it was 5,3±1,4, on day 10 - 3,2±1,1, in the second group on day 3 it was 6,8±1,2, on day 10 - 5,4±1,3. The dynamics of increase in the volume of lower jaw movement on the 10th day of treatment: in the first group, the volume increased by 37,1%; in the second group - by 16,2%. Restoration of the symmetry of mouth opening (deviation from the central axis): in the experimental group it was 25.7%, and 10.8% in the control group. The flat palpation revealed that the number of active trigger points significantly decreased in the first group.
Conclusions: According to the results of the study, the high efficiency of the kinesiotherapy procedure was revealed for myofascial facial pain.

P079

ULTRASONIC VOCALIZATION ANALYSIS FOR THE STUDY OF THE AFFECTIVE COMPONENT OF ACUTE OROFACIAL PAIN AND EMOTIONAL CONTAGION OF PAIN IN RATS

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Background and aims: Rats emit ultrasonic vocalizations (USVs) in the range of 22-kHz and 50-kHz to communicate the presence of positive or negative emotional states, respectively. USVs may be influenced by several factors, including the social context. Likewise, pain behavior can be modulated by the social context, as can be transferred to conspecifics. Herein we investigated if acute pain was related to changes in calls' emission and how different social contexts affected the nociceptive behavior and USVs.
Methods: Male and female Wistar rats were used (authorization CEUA # 1151). Formalin (2.5%) was injected into the upper lip followed by recording of USVs and facial grooming for 30 min. The effect of morphine (2.5 mg/kg) was assessed in both parameters. The same protocol was repeated in different social contexts:
1) exposure to cagemates,
2) non-cagemates and
3) female rats.
Results: Formalin induced facial grooming and aversive calls, which were both reduced by morphine. Exposure of formalin-injected rats to familiar cagemates had no effect on the demonstrator's behavior, but the observer showed emotional contagion of pain. Non-cagemates interaction decreased the nociceptive behavior of the demonstrator, but failed to influence the observer's behavior. Females' presence reduced the nociceptive behavior and the emission of aversive calls by the demonstrator.
Conclusions: USV analysis may represent and additional measure in pain studies. We suggest that emotional contagion of pain depends on familiarity and analgesia may be a result of social interaction with a stranger or with a female.
Acknowledgements: CAPES- Brazil.

OSTEOARTHRITIS, RHEUMATOID ARTHRITIS

P080

SENSITIZATION IN PATIENTS WITH CHRONIC PAIN FOLLOWING KNEE OSTEOARTHRITIS OR TOTAL KNEE ARTHROPLASTY

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Background and aims: Patients with chronic painful knee osteoarthritis (OA) or chronic postoperative pain following total knee arthroplasty (TKA) experience different degree of local and widespread sensitization and central sensitization. Temporal summation is considered a hallmark for central sensitization. The objective was to examine sensitization and its influences on pain outcomes.
Methods: An experimental study with assessment of sensitization was performed in 70 patients suffering from knee OA pain and postoperative pain after TKA. Sensitization was defined as facilitated temporal summation. Assessment of average pain intensity during last week, pain during walking or stair climbing, mechanical pain sensitivity, dynamic mechanical allodynia and conditioned pain modulation were conducted.
Results: 52 patients were categorized as having sensitization and 18 patients showed no signs of sensitization. Similar outcomes between groups were observed, though, a tendency towards higher clinical pain ratings and signs of impaired conditioned pain modulation were observed, although non-significant (table 1).

Mean	Sensitization group (n: 52)	Non-sensitization group (n: 18)	Between groups differences (95% CI)
Average daily pain during last week (NRS)	5.3 (1.6)	4.7 (2.1)	0.6 (-0.3 ; 1.6)
Pain during walking (NRS)	5.4 (1.8)	5.3 (2.4)	0.01 (-1.3 ; 1.3)
Pain during stair climbing (NRS)	6.1 (2.1)	4.7 (2.8)	1.5 (-0.02 ; 3.0)
Conditioned pain modulation^ (NRS)	-0.3 (1.1)	0.2 (1.6)	-0.5 (-1.2 ; 0.2)

[Table 1: Values are mean (SD). NRS: Numerical rating scale. ^ Negative value indicate no conditioned pain modulation effect.]

Conclusions: A majority of the patients with osteoarthritic knee pain and postoperative pain after TKA showed signs of sensitization. Yet, no significant differences in pain were observed between groups.
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P081

POSTOPERATIVE PAIN CONTROL AFTER TOTAL KNEE REPLACEMENT IN PATIENTS WITH END STAGE OSTEOARTHRITIS

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Total knee replacement (TKR) is a procedure followed by very strong postoperative pain, which often can lead to moderate result in means of range of movement (ROM) as well as phsychological and emotional status of the patients. This compromises the overall satisfaction of the procedure which in some reports around the world is 20%. Worldwide it is still a struggle for a decision to set a safe ammount of analgesics used in combination with thromboprophilaxis and their risk for postoperative compilactions (bleeding vs thrombembolism vs gastric haemorrhage) We show results of a prospective randomised study of 60 patients that have gone through TKR because of end stage osteoarthritis devided in two groups. All of the patients were operated by senior surgeon. First goup received standard postoperative pain control with i.v combination of NSAIL and tramadol and the second group used self controled injection through epidural catheter. The average hospital stay was 7 days. Mean follow up was 1 year schedulled in following manner: 2 weeks, 3 months, 6 months and 1 year.The results show that the second group experienced less pain, better ROM and overall greater satisfaction.

P082

MIA-INDUCED OSTEOARTHRITIS-LIKE KNEE PAIN IMPACTS ON COGNITIVE FUNCTIONS IN LISTER HOODED RATS

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Chronic pain has been associated with changes in forebrain regions, as well as impairments in related cognitive functions, including memory and cognitive flexibility. Here, we examine the impact of osteoarthritis(OA)-associated chronic pain on selected cognitive functions in a rat model.
First, we adapted the monoiodoacetate (MIA) model of chronic OA-like joint pain to adult male Lister hooded (LH) rats, which are more suitable for cognitive testing than the commonly used albino strains. Then, we used the watermaze delayed-matching-to-place(DMP) test, the novel object recognition test and an operant response shifting task to examine the impacts of MIA-induced OA-like pain on memory and cognitive flexibility in LH. Nociceptive behaviour and sensorimotor activity were also measured at baseline and after model induction. Joint pathology was confirmed.
MIA injection (3mg/50µL,n=8) caused robust pain behaviour, including weight-bearing asymmetry and changes in paw-withdrawal threshold, as well significant cartilage damage and synovitis, compared to saline controls(n=8). MIA-injected rats showed minor motor deficits (reduced rearing and swim speed). Mild PPI disruption was also observed in MIA rats, indicating impact on the forebrain regions involved in sensorimotor gating mechanisms. However, there was no significant impairment in hippocampus-dependent rapid place learning performance in the watermaze-DMP task, indicating that MIA treated LH rats do not have substantially altered hippocampal function. This finding is consistent with previous human imaging findings indicating that the hippocampus may be less affected by OA pain, than in other chronic pain conditions. Effects of this model of OA-like joint pain on cognitive flexibility will also be presented.

PAIN IN THE NECK AND CERVICORADICULAR PAIN

P083

CIRCULATING GLUTAMATE/ANANDAMIDE RATIO DIFFERS AFTER 30 MINUTES ARM-CYCLING IN CHRONIC PAIN SUBJECTS COMPARED WITH HEALTHY CONTROLS

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Background and aims: The acute biochemical effect of physical exercise during chronic pain conditions are not fully understood. However, the endocannabinoid system has been suggested to play a role in exercise-induced reward and pain inhibition.
Altered glutamate levels, but also normalized levels, has been reported after physical exercise in chronic pain conditions. Moreover a linkage between the endocannabinoid system and glutamatergic pathways has been suggested.
The aim of this study was to examine the effect of 30 minutes of dynamic load arm-cycling on plasma levels of lipid mediators related to the endocannabinoid system and glutamate, sampled from chronic pain subjects and controls.
Methods: Pain assessments and plasma levels of arachidonoylethanolamide (anandamide) and 2-aracidonoylglycerol, oleoylethanolamide, palmitoylethanolamide, stearoylethanolamide, and glutamate from 21 subjects with chronic neck pain (chronic pain group) and 11 controls were analysed pre and post a 30 minute dynamic load arm-cycling intervention.
Results: Pain intensity was significantly different between groups pre and post exercise. Anandamide levels were significantly decreased in controls, but not in the chronic pain group post exercise. Correlation existed between anandamide and glutamate in controls post exercise, and in the chronic pain group pre exercise. Moreover, a statistically significant increase in the glutamate/anandamide ratio existed in controls compared with the chronic pain group.
Conclusion: The glutamate/anandamide ratio increased significantly post physical exercise in controls, which resulted in a significant difference between groups post exercise. This might reflect an altered relationship between glutamate and anandamide on systemic level in chronic pain, which needs to be further investigated

P084

THE EFFECT OF A POSTURE CUEING SHIRT ON POSTURE AND PERCEIVED PAIN DURING A COMPUTER TASK IN HEALTHY PARTICIPANTS

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Background and aims: Spine-related pain is the largest musculoskeletal problem on a global scale and with the growing burden of the problem, many treatment strategies have been proposed. A recent intervention that has gained popularity amongst people with spine-related pain is usage of a posture-cueing shirt for self-management of their condition. The aim of this study was to investigate the effect of a posture-cueing shirt on posture and perceived pain during a functional task.
Methods: Thirty, healthy male participants were recruited for this single-session experimental study. Participants were seated at an office workstation and instructed to perform a 15-min computer-writing task under three conditions: wearing a posture cuing shirt, a compression shirt or no shirt. The order of conditions was randomized in a balanced manner. After each task, participants rated any potential pain on a 0-10 NRS scale. At minutes 1 and 15 during the writing task, a still image (lateral view) was taken and used for calculating head and shoulder angles.

Results: Wearing a posture-cueing shirt resulted in significantly lower pain scores (NRS 0 [0-1]) compared to wearing no shirt (NRS 1 [0-2], *P*=0.012). No difference was seen when comparing the posture-cueing shirt to the compression shirt. No significant differences in head or shoulder angles were observed when comparing any of the conditions.
Conclusions: The posture-cuing shirt did not affect posture but it did result in significantly lower pain intensity compared to no shirt. However, the observed difference is small and like clinically irrelevant.

P085

RISK FACTORS FOR NECK PAIN IN YOUNG ADULTS - A SYSTEMATIC REVIEW

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Background and aim: There exist no systematic reviews of risk factors for neck pain in young adults. The aim of this systematic review was to identify risk factors for episodes of non-specific neck pain in young adults (aged 18-29 years).
Methods: This systematic review followed the PRISMA guidelines. Systematic searches were conducted in January 2019 in six databases. Inclusion criteria were prospective cohort studies investigating risk factors for self-reported episodes of non-specific neck pain with a follow-up period of at least six months. Study quality was measured with the Quality in Prognosis Studies assessment tool. Risk factors evaluated in more than one study were summarized.
Results: Of 4221 studies identified through the searches, six were included with a total of 8856 study participants. The overall study quality was low to moderate. Age at baseline varied between 15-18 years, follow-up period ranged from 1-25 years. Fifty-six risk factors covering biological, psychological and social domains were identified. Body mass index, physical activity and psychosocial factors were investigated in more than one study and were not associated with neck pain. Female sex and duration of computer use had inconclusive results in two studies.
Conclusion: This systematic review identified 6 prospective cohort studies, but few potential risk factors were investigated in more than 1 study. There is a need for further studies exploring risk factors for non-specific neck pain in young adults.

P086

IMPAIRED SHOCK ATTENUATION IN PEOPLE WITH CHRONIC NECK PAIN DURING CURVILINEAR GAIT

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Background and aim: Given the importance of neck sensorimotor control during walking and turning (Imai et al., 2001), chronic neck pain can impair the muscular ability to absorbing the ground reaction forces propagating from the legs to the head during gait (Voloshin et al., 1998). This study examined the shock attenuation function of neck, trunk and leg during walking along rectilinear and curvilinear trajectories in people with chronic neck pain (CNP) versus asymptomatic control (AC).
Methods: Twenty-six AC (age: 26±10.6 years) and twenty-one subjects with CNP (age: 28.5±12.4 years, average pain intensity: 4.5±1.9/10) performed three gait repetitions at natural speed, along a rectilinear and curvilinear path (1m radius) clockwise and counterclockwise. Mean shock attenuation index (MSA) at neck, trunk and leg was calculated from the power spectral density of the respective segments during the right gait cycle. The mean MSA indexes were statistically evaluated using a repeated measure analysis of variance (ANOVA) within rectilinear,

clockwise and counterclockwise conditions.
Results: The mean MSA neck index was significantly higher (less shock absorption) in CNP (-0.15±0.19 dB) compared to AC (-0.28±0.18 dB) during counterclockwise direction (*P=0.020)*, while no significant differences were found for the other gait directions or MSA indexes.
Conclusion: The reduced shock absorption at the neck level in people with CNP can be due to impaired control of the neck muscles. The higher speed of the outer (external to the curvilinear direction) part of the body motivates the higher MSA neck for CNP during the counterclockwise condition (outer right gait cycle).

PERIPHERAL NEUROPATHIC PAIN

P087

SMALL CASE SERIES: PELVIC PAIN OUTCOMES AFTER TRANS-VAGINAL MESH REMOVAL SURGERY AT A TERTIARY INTERDISCIPLINARY PELVIC PAIN CLINIC IN SYDNEY, AUSTRALIA

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Background and aims: Despite the large number of women affected by mesh-related complications, there remains little information on the impact of mesh-removal surgery on women´s lives (Crosby et al 2014, Danford et al 2015). This greatly impacts informed consent before trans-vaginal mesh insertion and for the many women who continue to suffer and require removal.
Methods: A retrospective clinical audit was conducted of all mesh removals performed by one surgeon, as a part of a holistic management plan. Data includes symptoms, mesh type, surgical technique. An online survey is underway utilizing the Pelvic Pain Impact Questionnaire (Chalmers et al 2016), the DN4 for Neuropathic pain (Bouhassira et al 2005), patient reported pelvic symptoms, quality of life, mental and general health.
Results: From July 2017 to current, 36 women underwent trans-vaginal mesh removal. Data collection is ongoing with 13 respondents to date. Preliminary results suggest 70% noted improvement in overall quality of life after removal, with almost half (46%) improving in mental and general health. 85% were pleased they had the surgery, the remainder (15%) do not regret it but have found no benefit as yet, with many still in the recovery period. Preliminary results suggest women who continue to suffer pain after removal are likely suffering from post-surgical neuropathic pain and recovery will be slow and must be monitored.
Conclusions: This audit adds weight to Lee and colleagues (2013) suggestion that women should be forewarned that some trans-vaginal mesh complications are life-altering and might not always be surgically correctable.

P088

A NEW METHOD TO ASSESS NERVE AND ENDOTHELIAL DEPENDENT MICROCIRCULATORY BLOOD PERFUSION IN FABRY DISEASE

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Aim: Fabry a lysosomal storage disorder, frequently includes pain as an early disease feature. A possible pathomechanism involves an accumulation of globotriaosylceramide (GL3), potentially causing a change of blood flow. The aim was to explore temperature-dependent endothelial and neural microcirculation by functional laser-Doppler-flowmetry (fLDF).

Methods: The exploration of microcirculation was conducted in a healthy cohort (n=17), in patients with polyneuropathy (n=21) and Fabry disease (n=6), using a laser-Doppler-perfusion imager (PeriScan-PIM3). The skin was heated by a circular thermoprobe (probe 415-339-Perimed) which was regulated by a temperature controlling system (PF5020-Perimed). The measurement was conducted within a timeframe of 40 minutes, consisting of a 15min adaption-/baseline measurement followed by a 25min long period of skin heating.
Results: The results showed characteristic perfusion measurements in the healthy cohort consisting of 3 phases, (1) a constant baseline perfusion, (2a) a rapid increase of perfusion after start of skin heating (till 42C°), (2b) followed by a short decrease of perfusion. (3) The last measurement period is marked by a continuous increase of perfusion. In phase (3) the patients with Fabry disease showed the smallest increase of endothelial dependent perfusion as compared to the others. The C-fiber dependent blood perfusion increase (phase 2a) was highest in the control cohort as compared to polyneuropathy or Fabry disease.
Conclusion: Preliminary results of the fLDF point to an endothelial dysfunction in Fabry disease. Therefore, evidence of an altered perfusion in vasa nervorum could contribute to the dysfunctional processing of somatosensory information, which likely occurs under physical stress.

P089

IS NEUROPATHIC PAIN ASSOCIATED WITH COGNITIVE DECLINE?

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Background and aims: Chronic pain is associated with difficulties in memory and executive functions. Association between neuropathic pain and cognition has not been widely studied. We assessed memory and learning, executive functioning, and processing speed in patients with nerve injury with either definite or unlikely neuropathic pain.
Methods: 251 patients, aged 39-75, had been treated for breast cancer 4 to 9 years earlier and had surgeon-verified injury to the intercostobrachial nerve (ICBN). Neuropsychological examination was conducted by a clinical psychologist using Trail Making Tests A and B, WMS-III verbal learning and delayed recall, Stroop test, WAIS-IV coding, verbal fluency, and CogState subtests Detection, Identification, One Back and Two Back.
Results: There was no difference in neuropsychological test performance among patients with definite neuropathic pain and unlikely neuropathic pain when controlled for age and pain in other areas. Intensity of neuropathic pain associated inversely with semantic fluency, learning and delayed recall when controlled for age. However, the effect didn't stay statistically significant for learning and delayed recall when it was controlled for pain in other areas. Age corrected z-scores of neuropsychological tests ranged from 0.16 to 1.2.
Conclusions: Neuropathic pain might affect verbal fluency when the intensity of pain is severe enough. Overall cognitive ability of the cohort was good. The intensity level of neuropathic pain was mostly low in this cohort and therefore might not affect patients' cognition. The effect isn't clinically very significant and further study on neuropathic pain and cognition is needed.

P090

CORRELATIONS BETWEEN NEUROPATHIC PAIN, QUALITY OF LIFE AND MOOD IN TYPE 2 DIABETIC PATIENTS

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Background and aims: Diabetic peripheral neuropathy (DPN) is one of the most frequent complications of diabetes mellitus. The aim of this study was to investigate the relationship between neuropathic pain (NP), quality of life and mood in patients with T2DM and DPN.
Methods: Twenty patients (mean age: 58,05± 12,28 years) with T2DM and DPN were included in the study. Demographic characteristics and data related to the disease were recorded. The severity of NP by the Visual Analog Scale, quality of life with the Nottingham Health Profile (NHP) and mood by the Beck Depression Invantory (BDI) were assessed.
Results: The severity and duration of NP were associated with mobility sub-domain of NHP (p = 0.010 and p = 0.004, respectively). The sleep sub-domain of the NHP was correlated to the other sub-domain of the NHP which were emotional reaction (p = 0.000), social isolation (p = 0.027), mobility (p = 0.004), pain (p = 0.004). The score of BDI was associated with duration of NP (p = 0.009) and mobility (p = 0.001), sleep (p = 0.002), social isolation (p = 0.038) sub-domains of NHP.
Conclusions: The data obtained in our study shows that neuropathic pain negatively affects the quality of life and mood in diabetic patients. In the presence of neuropathic pain, interdisciplinary treatment approaches will improve quality of life and mood.in patients with T2DM and DPN.

P091

BILATERAL WIRELESS CUBITAL STIMULATOR FOR TREATMENT OF IDIOPATHIC BILATERAL CUBITAL NEUROPATHY

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Background and aims: Chronic neuropathic pain, due to its complex physiopathology and nature, is sometimes markedly refractory to conventional pharmacological analgesic treatments, even to many of the interventional techniques used in Pain units (infiltrations, thermal / pulsed radiofrequency).
Our objective is to report our experience with neurostimulation in a refractory case to several treatments.
Methods: A 45-year-old woman with bilateral ulnar neuropathy of unknown origin, with pain (EVA 6-9) and functional disability in both hands and forearms.
-EMG: Bilateral ulnar chronic neuropathy.
-MRI: Minimal spondylotic changes in levels C3-C4, C5-C6, C6-C7, without repercussion for adjacent neural structures, spinal cord without signs of myelopathy.
She was operated on for “left ulnar tunnel syndrome”.
After surgery she reported short-term improvement, but later, a progressive deterioration process (more pain than before surgery).
Referred to our pain unit, pharmacological treatment was prescribed (gabapentin 300 mg/24h tapentadol 200mg/12h, metamizol) and several techniques were performed with good results, but with limited duration (ultrasound-guided ulnar infiltrations in mediohumeral approach and 4 pulsed radiofrequencies). A wireless stimulator (stimwave) was placed on the left forearm guided by ultrasound. Before the symptoms improvement, (superior to 90%), the same technique was performed three months later in the right ulnar path with identical results.
The patient carries two Freedom4-Stimwave electrodes programmed as follows:
-Frequency: 80Hz
-Pulse width: 220us
-Polarity of the electrodes: -+
Results: An excellent result was observed with bilateral ulnar neurostimulation.
Conclusions: The present case shows the possibility of using this technique to treat refractory neuropathies to conventional treatment.

P092

THE PATIENT JOURNEY IN CANCER/ CHEMOTHERAPY-RELATED NEUROPATHIC PAIN (CRNP): REVEALING GAPS BETWEEN GUIDELINES AND REALWORLD PRACTICE

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Background and aims: CRNP is a major health burden. Guidelines recommend treatment with systemic analgesics and timely referral to specialist pain management. We conducted qualitative research to explore how CRNP is treated in clinical practice to deliver a detailed picture of the patient journey.
Methods: Interviews of 183 healthcare professionals (HCPs: pain specialists [PS], non-pain specialists, primary care physicians, pain nurses) and 70 patients (CRNP, diabetic peripheral neuropathy, post-herpetic neuralgia, post-surgical peripheral neuropathic pain [PNP]; ≥12 months) in Europe (France, Germany, Italy, Netherlands, Spain).
Results: Aetiology was a significant driver of differences in referral pathways and the key HCPs managing PNP. CRNP was seen as the most challenging aetiology as patients typically had pain from multiple sources (tumour, surgery, chemo/radiotherapy). CRNP was usually identified by oncology or surgical teams, and typically managed by the oncology team, secondary to cancer treatment. A minority were referred to a PS. Once referred, patients remained under PS care until improvement, although the oncology team were typically involved in ongoing treatment. CRNP was considered the greatest priority for PS. There were between-country differences in the integration between oncology and PS teams, with a closer relationship and quicker referral in France, Spain and Italy than Germany or the Netherlands. Compared with other aetiologies, CRNP patients were more likely to rely on guidance/recommendations and use additional pain management techniques.
Conclusions: Of all the PNP aetiologies, CRNP is considered by HCPs to be the most challenging to treat and there is a lack of standardisation in care pathways.

P093

SPATIAL DISCRIMINATION ACUITY OF NOCICEPTIVE STIMULI AND BODY REPRESENTATION DISTURBANCES IN POLYNEUROPATHY PATIENTS

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Aim: We assessed the variability of pain perception and discrimination ability of nociceptive stimuli across four body regions in polyneuropathy (PNP) patients and healthy subjects using punctate mechanical versus laser evoked heat pain. Additionally, disease related body representation disturbances were explored.
Methods: We recruited 20 healthy subjects (mean age: 50.6 ± 4.65 years) and 20 PNP patients (mean age: 57.6 ± 13.9). Pain threshold and nociceptive two-point discrimination (2ptDT) were assessed bilaterally at hands, arms, calves and feet. For 2ptDT, painful pinprick and laser evoked heat stimuli were used. Self-reported body representation disturbances were assessed by German translation of the „Bath CRPS Body Perception Disturbance Scale" questionnaire as well as by pictures of in form and size distorted feet.
Results: For healthy subjects, Wilcoxon test showed significant differences in pain thresholds and 2ptDTs predominantly between arm and foot. In contrast, patients displayed differences in all pain parameters between hand and arm as well as arm and foot. Mann-Whitney-U test revealed significant differences between the groups in 2ptDT for pinprick at hands (p=.001), arms (p=.009) and feet (p=.02). PNP patients showed more abnormal changes in 2ptDTs than in pain thresholds compared to healthy subjects. The questionnaire and pictorial material demonstrated body perception and schema disturbances in PNP.
Conclusion: Nociceptive pinprick stimuli appear to be more sensitive in detecting alterations of 2ptDT in PNP than laser evoked heat. Body representation disturbances in PNP indicate ongoing central maladaptive plasticity.
Acknowledgment: The study was supported by a funding from Pfizer Germany to Frank Birklein

P094

5-FLUORO-2-OXINDOLE TREATMENT INHIBITED NEUROPATHIC PAIN AND THE EMOTIONAL DISORDERS ASSOCIATED AND ENHANCED THE LOCAL ANTINOCICEPTIVE EFFECTS OF MORPHINE

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Background and aims: Persistent neuropathic pain is associated with anxiety and depressive-like behaviors which treatment is not completely resolved. Therefore, the research of new treatments is indispensable. We studied if the administration of 5-fluoro-2-oxindole (FLUO) could inhibit the nociceptive responses and emotional disorders accompanying neuropathic pain and increase the antinociceptive effects of morphine.
Methods: In C57BL/6 male mice with neuropathic pain, anxiety- and depressive-like behaviors caused by the chronic constriction of sciatic nerve (CCI) we evaluated the antinociceptive, anxiolytic and antidepressant effects of the intraperitoneal administration of FLUO and its effects on the local antinociceptive actions of morphine. The protein levels of NAD(P)H quinone oxidoreductase 1 (NQO1), heme oxygenase 1 (HO-1) and μ opioid receptors (MOR) in the spinal cord at 28 days after CCI were also evaluated.
Results: Our results showed that FLUO inhibited the mechanical allodynia, thermal hyperalgesia and thermal allodynia induced by CCI as well as the anxiety and depression-like behaviors associated with neuropathic pain. The administration of FLUO also increased the local analgesic effects of morphine. This treatment increased the expression of NQO1 and normalized the down regulation of HO-1 and MOR induced by CCI in the spinal cord.
Conclusions: This study reveals that treatment with FLUO alone and/or combined with morphine might be an interesting strategy for the treatment of persistent neuropathic pain and comorbidities associated.
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PHANTOM LIMB PAIN

P095

NON PHARMACOLOGICAL TREATMENT OF PHANTOM LIMB PAIN: A SYSTEMATIC REVIEW

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Intro: To date we do not have specific guides for the therapeutic approach of Phantom Limb Pain Syndrome. Pharmacological and surgical treatment techniques have shown little benefit. Given the high prevalence of this phenomenon and the growing number of publications, it is of interest to review the scientific evidence available for non pharmacological treatment.
Aims: To review and asses the best current evidence about the use of behavioural movement representation techniques (mirror therapy, immersive virtual reality, motor imagery and phantom movements) in the treatment of post-amputation phantom limb pain.
Search strategy: Review of the literature available in Pubmed, Cochrane Library, Scopus, Wiley Online Library, Web of Science and SPORTDiscus about the usage of these therapies in adult patients with post amputation PLP. Selection of meta-analysis, systematic reviews, controlled clinical trials, and quasi-experimental studies, published full-text in Spanish, French and English, from January 2016 to April 2018, with Jadad ≥3 and PEDro≥4 quality scores.

Results: The selected articles report a significant reduction in pain after the execution of these therapies, with a tendency to acquire prior motor control. The effects are comparable with other non-pharmacological therapies (TENS) and have been shown to last for months.
Conclusions: Behavioral therapies are an alternative of proven analgesic efficacy and few adverse effects, easily applicable in the clinical or home setting as a complement to medical and rehabilitation treatment. Consensus protocols and a greater knowledge of the response conditioning factors is needed.

P096

ROLE OF MIRROR IMAGE THERAPY FOR PHANTOM LIMB PAIN IN BELOW KNEE AMPUTEES

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Background: The pain caused by surgery is usually of transient nature, however the perception of pain in an amputated limb often persists. This prolonged pain, which is often refractory to pain-killing medication, nerve block and surgical treatment may severely affect the patient´s quality of life. Phenomenon of phantom limb pain has been investigated using neurological, neurophysiological and psychopathological approaches. However exact cause of phantom limb pain is still a mystery. We analysed the role of mirror therapy for treatment of phantom limb pain in below knee amputation.
Methods: 96 patients who had phantom limb pain after below knee amputation were included in this study. They visited the hospital four times a week for 15-minute treatment period. They performed movement of unaffected limb while watching its mirror reflection and thus creating a visual illusion of movement of affected limb. The degree of pain relief was measured on visual analog scale (VAS).
Results: 70 patients out of 96 reported an improvement of 4 or more degrees of VAS score after 6 months of the treatment.
Conclusions: Mirror therapy improves pain sensation of amputated part when other treatment modalities fail. It works on principle of mirror neuron system. A mirror neuron fires either when a person acts or when a person observes same action performed by another. Mirror image of the normal body part helps reorganize and integrate the mismatch between proprioception and visual feedback of the removed body. This reorganization decreases the sense or emotion of phantom limb pain in amputated part.

VASCULAR PAIN

P097

ANXIETY-DEPRESSIVE DISORDERS IN WOMEN OF REPRODUCTIVE AGE WITH PELVIC VARICOSE VEINS

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Relevance: One of the causes of CPP is varicose transformation of the pelvic veins (10-15%). Women with CPP complain of increased irritability, depressed mood, with possible development of depressive.
Materials and methods: Since May 2015, more than 4,000 patients with varicose veins of lower extremities have been examined.
All patients underwent duplex ultrasound of lower extremity veins, pelvic ultrasound and 82% of cases confirmed the presence of pelvic varicose veins.

The results of 146 angiographic studies revealed ovarian vein reflux in 86%, bilateral lesion in 4%, and no pathology in 10% of cases. All patients were examined by UPOINT specialists and evaluated by a neurologist according to VAS, Oswestry and DN4, Beck, Hamilton, Spielberger, and HADS scales.
According to VAS, no pain syndrome was revealed in 20.5%, pain up to 4 points-55.4%, pain up to 7 points in 24% of cases.
Hamilton scale assessment results: absent-20.5%, mild-60.2%, moderate-19.2%.
Spielberger anxiety scale: low-32.2%, moderate-43.1%, high-8.9% absent-9.6%.
According to HADS: up to 7 points-13%, subclinically significant-58.2%, clinically significant-28.7%.
Results: During the first stage, 48 patients underwent embolization of the left ovarian vein. The following results were obtained two months after ovarian veins embolization:
- reduction of pain up to 1-2 points in 80% of women (VAS),
- depression decreased to 7 points in 65% of patients, subclinical depression decreased to 11% (HADS).
Conclusion: New tactics in the treatment of venous diseases enables effective and high-tech assistance to women with CPP.

VISCERAL PAIN

P098

SODIUM CROMOGLYCATE IN THE TREATMENT OF ABDOMINAL PAIN IN A PATIENT WITH MAST CELL ACTIVATION SYNDROME

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Background and aims: Idiopathic mast cell activation syndrome (IMCAS) presents with wide multisystem signs and symptoms secondary to the release of mast cell mediators without accumulation of mast cells. This rare, often missed cause of abdominal pain may present with dermatological, GI, respiratory, CVS, neuropsychiatric symptoms and potentially unexplained anaphylaxis. Associated increase in mast cell tryptase following episodes may help make the diagnosis . Exact pathophysiology in IMCAS is unknown, but is presumed to be G-Protein receptor mediated modulation of chloride current. Antihistamines, Cromolyn sodium and antileukotriene agents are commonly used in symptom management.
We present a patient with IMACS complaining of chronic abdominal pain, symptom controlled using mast cell stabiliser sodium cromoglycate.
Methods: A-27-year old female presented to Gastroenterology and pain service with abdomino-pelvic pain and altered bowel habits. The pain was intermittent, dull, aching, burning and severity of 9-10/10 on NRS. Initially presumed Inflammatory bowel disease (IBD) was ruled out by investigation. Various medications were tried to control symptoms had minimal benefit. Eventually, after review by various specialties a diagnosis of IMACS was reached based on weekly episodes of lip, tongue, throat and eye swelling lasting 30 minutes to 2 hours. Hence, She was started on a sodium cromoglycate.
Results: There was a significant reduction in pain severity on NRS from 9/10 to 1/10.
Conclusion: IMACS is an increasingly recognised cause of abdominal pain. These patients may benefit from a trial of sodium cromoglycate. Further research is needed.

WIDESPREAD PAIN

P099

AUTONOMIC DYSREGULATION AND DECREASED HEART RATE VARIABILITY IN FIBROMYALGIA UNDER ACUTE COGNITIVE STRESS

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Background and aims: In fibromyalgia (FM) autonomic nervous system (ANS) function shows sympathetic dominance over parasympathetic activity, reflected as decreased heart rate variability (HRV) . ANS dysregulation has been reported to correlate with FM symptoms. Also stress influences the severity of FM symptoms. We studied how acute stress influences HRV in FM.
Methods: 51 women aged 18 - 65 years with FM and 31 healthy female age-matched controls underwent five four-minute phases of alternating relaxation and cognitive stress (mental arithmetic) in a seated position. We analysed HRV using electrocardiogram recordings. Recordings with >5% artefacts were excluded. 11 time domain, 15 frequency domain and 14 non-linear measures of HRV were explored.
Results: Table: Each arrow represents a HRV measure that is significantly (p< 0.05) increased (↑) or decreased (↓) in FM patients compared to controls.

Phase	FM (n)	Control (n)	Time Domain	Frequency Domain	Non-linear
1. Relaxation	46	29	↓↓↓↓		↓↓↓↓
2. Stress	45	28	↓↓↓	↓	↓↓
3. Relaxation	45	26	↓↓↓↓		↑
4. Stress	44	26			
5. Relaxation	46	29	↓↓↓↓		↓↓↓↓↓

[HRV in FM patients and Controls]

Conclusions: These findings support increased sympathetic/parasympathetic ratio in FM at baseline, and during early acute cognitive stress. Interestingly, HRV in both groups converged to similar levels when the stressor was repeated. This suggests a similar stress response, reached more slowly in FM.

P100

CAN WE IDENTIFY A "PURE" FIBROMYALGIA (FM) PHENOTYPE?

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Background and aims: There is ongoing controversy about the diagnosis of FM. Several protocols based on signs and symptoms have been proposed without any common agreement. This makes research difficult since patient groups in reported studies are not homogeneous. The aim if this study was to use signs and symptoms from several protocols to identify cut points to separate a “pure” FM phenotype from “fibromyalgianess” in a large sample from a general population.
Methods: As part of the HUNT pain examination study, 551 individuals from a general population in mid-Norway were interviewed and examined by a team of a physiotherapist and a pain physician. Tender point examinations were conducted on all subjects as per the ACR 1990 guidelines but using a 0 - 10 VRS scale for pain at each point. Sleep (ISI), fatigue (CFS) and mental health (SF-8) were also assessed. An attempt was made to identify cut points for pain VRS, sleep, fatigue and mental health that could be correlated to identify a “pure” fibromyalgia phenotype suitable for use in research.
Results: No clear cut points could be identified. The data all supported the literature in that the signs and symptoms of FM used for both clinical and research diagnosis indicate a continuum of increasing severity.
Conclusions: The syndrome of FM represents a uniform severity continuum of signs and symptoms and the ability to identify what is and is not “true” fibromyalgia continues to be a problem for both research and the clinic.

ANATOMY AND PHYSIOLOGY SOMATOSENSORY SYSTEM

P101

MORPHINE-INDUCED HYPERALGESIA AND PKCMEXPRESSION IN DORSAL ROOT GANGLION: THE ROLE OF NK1 RECEPTOR

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Background and aims: The interaction between substance P and PKC enzymes have been implicated in inflammatory conditions. PKCε also plays a role in opioid thermal induced hyperalgesia (OIH). Chronic morphine administration also has the ability to increase dorsal root ganglion (DRG) substance P. The aim of this study was to investigate the expression of DRG substance P and PKCε during morphine-induced thermal hyperalgesia. Also by using NK1 antagonist (L-732,138), the effect of substance P on OIH and PKCε expression was investigated.
Methods: Rats received 10µg intrathecal (i.t.) morphine for 8 consecutive days. Behavioral tests were performed on day 1 before the first injection and 48 hours after the last morphine injection (day 10). In the treated group, rats received 25µg of (L-732,138) NK1 antagonist, 10 minutes prior to morphine injection for 8 days. The animals were sacrificed on day 10 and expression of PKCε and substance P were studied by western blotting and immunohistochemistry respectively.
Results: Behavioral tests indicated that animals showed OIH. Also, western blot and immunohistochemistry analysis showed that the expression of PKCε and substance P in DRG have increased. Administration of 25µg (L-732,138) blocked the development of OIH. Rats which received (L-732,138) prior to morphine injections did not develop thermal hyperalgesia. Also (L-732-138) prevented the increase of PKCε expression.
Conclusions: Our study provides further evidence regarding the role of PKCε in development of OIH and interaction between substance P and PKCε during chronic morphine administration. It could be concluded that NK1antagonists might be useful in managing OIH.

P102

THE EFFECTS OF USE-DEPENDENT NEUROPLASTICITY AND CHRONIC PAIN ON SOMATOSENSORY PERIPHERAL AND CORTICAL EXCITABILITY

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Background and aims: Repetitive movements play a major role in the development of musculoskeletal pain in musicians. While they have been widely investigated to understand the mechanisms of use-dependent neuroplasticity, the potential interactions with persistent pain remains unclear. This study used trained musicians with and without chronic pain to investigate the interactions of use-dependent neuroplasticity and chronic pain on the somatosensory excitability.
Methods: Nineteen healthy musicians (9 females), 21 musicians with chronic pain (13 females), and 20 healthy non-musicians (9 females) were included. Pressure pain thresholds (PPTs), electrical perception thresholds (EPTs), and somatosensory evoked potentials (SEPs) were recorded from the dorsum (PPTs) and index finger (EPTs and SEPs) of the right hand. SEP components reflecting activation at subcortical and cortical levels were analyzed.
Results: EPTs were reduced in healthy musicians compared to healthy non-musicians ($P< 0.05$). No significant differences were detected for PPTs. In healthy musicians, the centro-parietal N25 was attenuated compared to healthy non-musicians ($P< 0.05$). Moreover, their frontal and central N60 components were shifted (P60) compared to healthy non-musicians ($P< 0.01$). Conversely, chronic pain musicians showed an increased amplitude of the N67 peak compared to healthy non-musicians ($P< 0.05$).
Conclusions: The changes in early N25, N60 and N67 SEP peak amplitudes may reflect neurophysiological alterations accompanying established use-dependent neuroplasticity in musicians and also the effects of chronic pain. Future studies should explore if the pain neuroplasticity is more readily provoked in individuals with existing extensive use-dependent neuroplasticity.
Acknowledgments: CNAP is supported by the Danish National Research Foundation (DNRF121).

P103

OREXIN POTENTIATES $GABA_A$ RECEPTOR-MEDIATED IPSCS BY ACTIVATION OF POSTSYNAPTIC OREXINERGIC RECEPTOR 1 IN THE RAT INSULAR CORTEX

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Background and aims: Orexin is a neuropeptide regulating multiple physiological functions. For example, orexinergic receptor antagonism for treatment of insomnia is one of the medical applications. Recent studies have reported the suppressive effect of orexin on nociception. The insular cortex (IC), which plays a critical role in processing nociception, receives abundant orexinergic projections and expresses orexinergic receptors. Therefore, orexin possibly regulates IC activities, which may contribute to suppress nociception. We have previously demonstrated both orexin A and orexin B enhance the amplitude of unitary IPSCs (uIPSCs) in fast-spiking cells (FSNs) -> pyramidal cells (PNs) connections via orexinergic receptor 1 (OX_1R). However, intracellular mechanisms of the orexinergic potentiation of uIPSC are still unclear.
Methods: We performed laser photolysis of Rubi-GABA, which releases GABA by application of LD-laser to confirm that the orexin A-induced facilitation of uIPSC is mediated via postsynaptic $GABA_A$ receptors. Second, we performed paired whole-cell patch-clamp recordings to examine whether the second messengers in the downstream of Gq

protein-coupled OX_1R are included in the orexinergic potentiation of uIPSCs.
Results: Laser photolysis of caged Rubi-GABA revealed that orexin A enhanced GABA-mediated currents in Pyrs. Bath application of chelerythrine (a PKC inhibitor), Xestospongin C (an IP3 inhibitor), or intracellular application of BAPTA to postsynaptic Pyr diminished the orexin A-induced uIPSC and laser-evoked GABA current facilitations. Moreover, puff application of PMA, a PKC activator, enhanced GABA-mediated currents.
Conclusions: These results suggest that the orexinergic uIPSC enhancement is mediated via postsynaptic OX_1Rs, which potentiate $GABA_A$ receptors by PKC activation.

P104

INTERACTION OF PAIN-LTP AND PAIN-LTD SUGGEST THE OPERATION OF HIGHER ORDER PLASTICITY (METAPLASTICITY) IN THE HUMAN PAIN SYSTEM

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Background and aims: High or low frequency electrical stimulation can precipitate long-term potentiation and depression of pain sensation (pain-LTP/pain-LTD; Klein et al. 2004). We investigated the interaction of both opposing pain plasticities.
Methods: Pain-LTP and pain-LTD were induced in the forearms of 32 healthy subjects by electrical high-frequency stimulation (5 x 1 s trains at 100 s-1, HFS) or low-frequency stimulation (1000 pulses at 1 s-1, LFS), each followed by the respective other stimulation type 60 min later. Pain was tested by electrical stimuli at the conditioned site (homotopic) and by pinprick stimuli in adjacent skin (heterotopic). Hyperalgesia was tested by electrical stimuli, punctate stimuli and light touch stimuli in the homotopic and heterotopic (secondary) pain areas.
Results: HFS induced homotopic pain-LTP of 150±37% of baseline, and was significantly lowered by subsequent LFS to 116±34% (n.s.). LFS induced homotopic pain-LTD to 64±30% of baseline ($p< 0.001$). Subsequent HFS did not alter it (63±38%, n.s.). HFS induced heterotopic pain-LTP of 197±112% of baseline. Subsequent LFS did not lower it significantly (183±77%, $p=0.23$). LFS induced mild heterotopic pain-LTD to 128±44%, and subsequent HFS further potentiated to 154±66%.
Conclusion: HFS induced homotopic and heterotopic pain-LTP (= secondary hyperalgesia). Preconditioning by LFS fully prevented subsequent homotopic pain-LTP completely and mitigated heterotopic pain-LTP significantly. LFS induced homotopic pan-LTD, but mild heterotopic pain-LTP. Preconditioning by HFS weakened subsequent homotopic and heterotopic pain-LTD. The interaction of pain-LTP and pain-LTD gave evidence of modification of pain plasticity by previous pain plasticity, i.e. of higher order plasticity (metaplasticity).

P105

ENHANCED ATP SECRETION FOLLOWING NOCICEPTIVE STIMULATION AND MODULATION OF NOCICEPTIVE TRANSMISSION VIA P2X RECEPTORS IN THALAMOCINGULATE PATH

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Background and aims: Activation of ATP-gated ion channels have been reported mediates ATP-evoked neuronal excitability. Based on reported significance of P2X receptors in pain and inflammation, we investigate the possible role of ATP and its receptors in the thalamocingulate pathway focus on nociceptive transmission.
Methods: In vivo multichannel recordings with microdialysis and electrical stimulation from the Sciatic Nerve(SNS Sti) were utilized. The flow out dialysate were collected and analyzed by UHPLC for ATP, ADP, Glutamate and GABA. Brain slices containing anterior cingulate cortex(ACC) and medial thalamus(MT) were prepared for whole cell

patch recording and field recording. All data were analyzed using MatLab.
Results: MD application of P2X7 agonist or antagonists reveal promoted or inhibition of ACC neuron activity. SNS sti. along or with P2X7 agonist application reveal an elevated amount of Glu and ATP, ADP in UHPLC.
MEA recordings reveal the ACC upward response with BzATP treatment was larger than the control groups. Application of P2X7 agonist or antagonists influenced the transmission velocity assayed by MultiElec for MEA recordings. Whole-cell patch-clamp recordings from ACC neurons revealed that extracellular BzATP application increased the membrane potential and spike numbers of EPSCs without changing their amplitudes.
Conclusions: Our data reveal in vivo evidence of ATP synergistically increased during nociceptive transmission and obtain valuable information to the controversy regarding the presence of P2X7 in the central nervous system, indicates a clear functional role of P2X7 alone the thalamocingulate pathway. Manipulating of pain transmission via P2X7 may contribute a new insight for further anti-nociceptive applications.

BIOLOGY

P106

GENOME-WIDE ASSOCIATION STUDY REVEALS SEX-SPECIFIC GENETIC INFLUENCE IN CHRONIC WIDESPREAD MUSCULOSKELETAL PAIN

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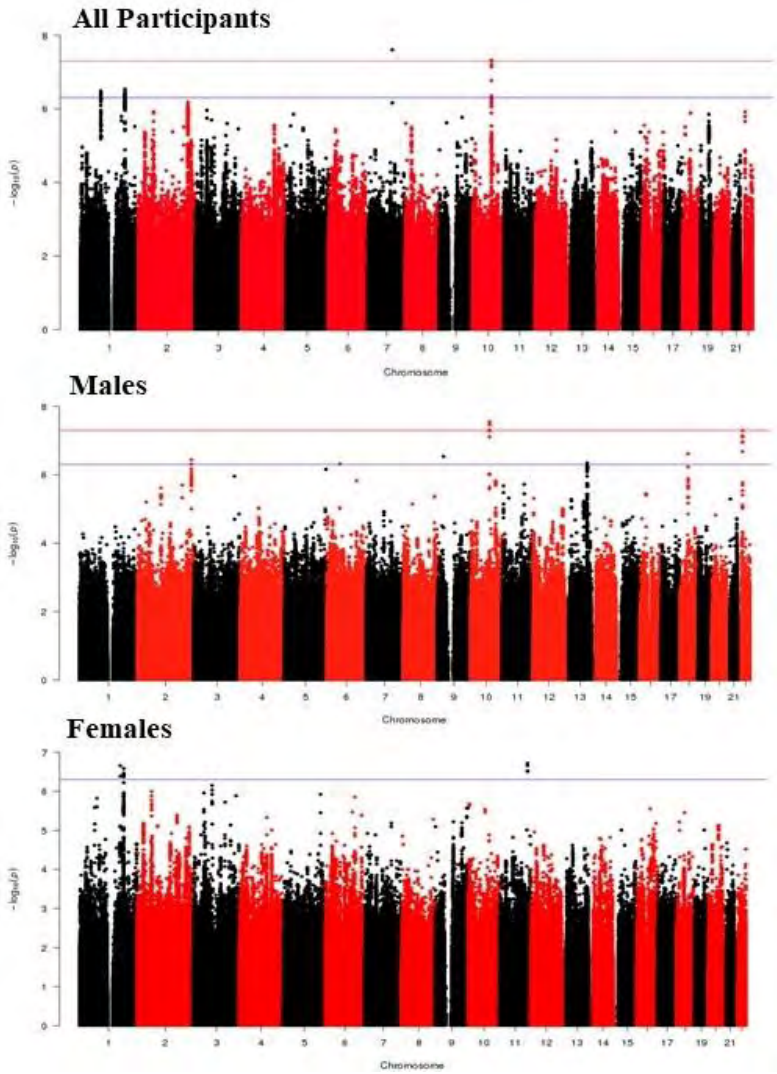
Background and aims: Chronic widespread pain (CWP) has a higher prevalence in females than males. Hypothetically, this in part can be explained by gene-by-sex interactions. To address this question, we performed sex-stratified genome-wide association study (GWAS) of CWP using UK Biobank participants of Northern European descent.
Methods: CWP was defined combining self-reported "pain all over the body lasting for ≥ 3 months" or self-reported diagnosis of "fibromyalgia". Controls were defined if they did not report "fibromyalgia" or CWP lasting for ≥ 3 months or musculoskeletal pain other than facial, headache and abdominal pain. Primary GWAS sample included 198,334 participants (5202 cases). Subsequently, a sex-stratified GWAS was performed (108129 females and 90205 males).
Results: Three genome-wide significant associations were detected in primary GWAS analysis ($p < 5e-8$; Figure). We also identified 39 SNPs with $p < 5e-7$ of which 3 were lead SNPs (independent at $r^2 < 0.1$) locating near the genes *SH3GLB1* (rs112331844), *HNRNPA1P46* (rs1377923) and *ANXA11* (rs7068933). Male-only GWAS identified 3 GWAS significant SNPs and 22 suggestive SNPs. Female-only GWAS identified no SNP at GWAS significant threshold but 26 SNPs passed the suggestive threshold. No significant or suggestive SNPs overlapped in male- or female-only analyses.
Conclusions: These findings provide new insights into genetic underpinnings of the sexual dimorphism of CWP. SNPs significantly associated with CWP in males and female were different, indicating a sex-specific effect in CWP. Attempted replication is underway in unrelated cohorts.

The study was carried out under UK Biobank project #18219.



[Figure : Manhattan plots of summary GWAS of Chronic Widespread Pain.]

BASICS IN PAIN WALK 1

P107

MICROGLIA PROMOTE NEUROPATHIC PAIN VIA ELIMINATING GABAERGIC SYNAPSES IN SPINAL CORD

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Background and aims: Loss of inhibitory synapse and microglia activation play important roles in neuropathic pain. We aimed to investigate whether microglia contribute to the loss of GABAergic synapses in spinal cord.

Methods: Spared nerve injury (SNI) models were established to induce neuropathic pain on rats. CSF1R inhibitor PLX3397 was administrated to inhibit microglia proliferation. Immunofluorescent staining was performed to label microglia and GABAergic synapse by Iba-1 and GAD65/67, respectively.
Results: Mechanical allodynia was developed on day 3 post-injury and persisted for at least 7 days. Microglia were dramatically increased, whereas marker of GABAergic synapses was significantly reduced in the lamina II and III of spinal cord dorsal horn. Microglial engulfment assay revealed that more GAD65/67 signals were localized within active microglia (e.g. bigger soma and shorter branches) than inactive microglia, indicating that reactive microglia might stripped pre-synaptic GABAergic inhibitory synapses via phagocytosis. Intrathecal injection of PLX3397 significantly decreased microglia density and relieved mechanical allodynia. Notably, the loss of GABAergic synapse was completely reversed upon microglia inhibition.
Conclusion: Microglia might enhance neuropathic pain by engulfing GABAergic synapses in spinal cord.

P108

CLASSICAL MOLECULAR DYNAMICS: A TOOL TO SPEED THE PAIN RESEARCH UP

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Molecular dynamics (MD) is a powerful tool to understand molecular behavior in several models. Using software, computers and textual description of atomic structure, it is possible to simulate how atoms interact in cellular environment. In pain researches, it is used to investigate nervous system structures and functioning, and provide useful insights to laboratory experiments. We aim to review the available MD tools, the most recent findings they provided in pain research and which are the main obstacles to their use. Nanoscale Molecular Dynamics (NAMD), Groningen Machine for Chemical Simulations (GROMACS), UCSF Chimera, and Visual Molecular Dynamics (VMD) are some of successful tools used to investigate mechanisms of pain. Through MD, potential enzymes inhibitors, capsaicin interaction, ion channel structure and dysfunctions, calcium channel structure and some insights toward mechanism of human μ-opioid receptor were identified. Nevertheless, MD applied to biological models can be a challenge because simulating all states for every atom requires small timesteps. Most of published data has shown timesteps around 1.0fs - 2.0fs and, using such a small step, lager simulations are required for realistic times necessary to biological scenarios. Some accelerated MD techniques like Hyperdynamics and Green's Functions for MD, can be used in order to achieve more realistic systems. These computational approaches, applied to neurobiology/pain researches, besides providing more precise experimental designs, which means saving money and time, are extremely valuable to investigate structure and mechanisms of targeted molecules and, indeed, to the development of new compounds, once it provides realistic scenarios of drug/receptor interactions.

P109

WHOSE DECISION IS THE BEST DECISION? CLINICAL DECISION-MAKING REGARDING THE MANAGEMENT OF PAIN: DIFFERENCES BETWEEN NOVICE, INTERMEDIATE AND EXPERT NURSES

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Background and aims: Pain management is closely related to decision-making process, which includes assessment, and intervention´s evaluation. It´s generally assumed that education and practical experience increases accuracy in decision-making. Benner´s theory xplains acquisition and development of skills from novice to expert,

but doesn't examine decision-making strategies.
The purposes of the study:
(1) Research of cognitive processes used by nurses during pain management decisions and the factors which may influence on these processes.
(2) Examination of differences in pain management decision-making between novice, intermediate and expert nurses.
Methods: The subjects constitute a non-random sample of 65 registered nurses working in surgical wards in two Israeli medical centers. The study is based on vignettes describing common situations which require nurse´s decision-making, questionnaire examining decisions´ basis and script concordance test evaluating nurses´ decision-making. The tools were designed by the researches and validated by expert judgment.
Results: The decision regarding pain management of expert nurses were mostly based on their experience and intuition, while novices and intermediates relied on guidelines or colleagues´ advises. Master degree and participation in pain management educational programs were the factors with significant influence on nurses´ decision-making. No association was found between seniority in a surgical ward and accuracy in decision-making. The findings were consistent with vignettes and script concordance test.
Conclusions: Well-developed guidelines may assist to novice nurses to improve decision-making. The script concordance test seems to be an effective tool in evaluating nurses´ clinical decisions. This study emphasized the benefit of nurses´ higher education and participation in clinical educational programs.

P110

RECOVER-E - A MOBILE SUPPORT FOR PATIENTS WITH HIP- OR KNEE REPLACEMENT

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Background and aims: Arthrosis is a common joint disease with reduced mobility and quality of life that often leads to joint replacements. Because of shorter hospital stays, education of patients is important, otherwise they are overwhelmed with the following healing process. For this reason, the app RECOVER-E is developed for education, motivation and support of patients around joint replacements of hip or knee.
Methods: The double-armed study will determine the impact of the app on mobility and pain 3 months after joint replacement of hip or knee. The patients are surveyed to their function in daily living, pain and quality of life at 5 occasions (4-6 weeks before surgery; day of admission; 1 day, 7 days and 3 months after surgery).
The intervention encompasses the use of the app RECOVER-E on a smartphone. It supplies information about surgery and the rehabilitation process, guides the patient to exercises after surgery, offers help for everyday behavior and motivates for being active in the rehabilitation process. A documentation of parameters (mobility, sleeping quality, pain, nutritional status) and dispatch to the treating physician is possible for evaluation.
Results: Expected results refer to significantly better function in daily life, lower pain intensity and a higher quality of life in the intervention group after three months and a reduced anxiety before surgery.
Conclusions: The app will support patients in their need for information and support in self-management for securing of an adequate pain management and a good functionality after joint replacement.

P111

THE ROLE OF STRUCTURED PAIN MANAGEMENT EDUCATION TO PREVENT PAIN UNDERESTIMATION AMONG NURSING STUDENTS

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Background and aims: Pain underestimation done by health professionals is one of the causes of insufficient pain management. Nurses who spend the largest amount of time with patients are the key for preventing pain underestimation, while nursing education has an important role for the prevention of the continued pain underestimation tendency among nurses. Therefore, the study aimed to measure the effectiveness of a structured pain management education on preventing pain underestimation behavior among nursing students.
Methods: This randomized controlled-experimental study with a pretest-posttest design included 70 nursing students. The experiment group received the structured pain management education of 4-hours and both groups assessed 4-video simulations of pain. The students were allocated to the groups randomly by simple stratified sampling to avoid bias and to ensure a balanced distribution between the groups regarding the year of study.
Results: The education and control groups were similar regarding characteristics. The groups both underestimated the pain at various levels. There was no significant difference between the groups for Video 1 and 2. The education group less underestimated the video 4 however, more underestimated the Video 3.
Conclusions: The results demonstrate that 4-hours of structured pain management education did not have a significant impact on pain estimation among nursing students. Behavioral changes in practice might be achieved by longer and repetitive training sessions. It can be said that social interaction with patients is a key component in pain estimation. These results emphasize the importance social interaction with patients in pain estimation.

P112

CURRENT TREATMENTS FOR CHRONIC PAIN MANAGEMENT: EFFECTS OF ONLINE EDUCATION ON RHEUMATOLOGIST AND PRIMARY CARE PHYSICIAN KNOWLEDGE AND CONFIDENCE

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We sought to determine if online continuing medical education (CME) could improve the knowledge and confidence of rheumatologists and primary care physicians related to current management of chronic pain, including optimal clinical pain evaluation and available therapeutic options as well as potential future therapeutic interventions.
Methods: The educational initiative consisted of an online video-based CME discussion between 4 internationally respected experts. Educational effect was determined via a repeated pairs pre-/post-assessment study that compared responses to 4 identical pre- and post-assessment questions. A chi-square test identified differences between pre- and post-assessment responses related to knowledge/competence (P< .05 significance level). Cramer´s V was used to calculate the impact of education on the outcomes. Data from the participants were collected between November and December 24, 2018.
Results: For rheumatologists (n=39), and primary care physicians (n=174) the data showed statistically significant increases in correct responses from pre- to post-assessment (P< .05). Post-assessment, there was an extensive educational impact among rheumatologists (V=0.412), and primary care physicians (V=0.328) including a noticeable increase in knowledge (V=.469 for rheumatologists and V=.382 for primary care physicians) of the site of action and route of administration of novel anti-nerve growth therapies. The average confidence shift regarding tailoring therapy for chronic pain according to each individual patient´s needs was 19.8% for rheumatologists and 18.7% for primary care physicians.
Conclusion: Participation in video-based online educational discussion between 4 experts was effective in improving the knowledge and confidence of rheumatologists and primary care physicians regarding the management of patients with chronic pain.

P113

KNOWLEDGE AND PRACTICE OF PAIN ASSESSMENT AND MANAGEMENT AMONG NURSES IN SERBIA

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Background and aims: Poorly controlled acute postoperative pain is correlated with poor patient satisfaction, increased the length of stay in the hospital, increased cost, and it can progress to chronic pain. The aim of the study was to explore the knowledge and practices of nurses in the surgery unit in a tertiary care hospital in Belgrade, Serbia.
Methods: A cross-sectional study involved 41 (48.2%) randomly-chosen nurses of both genders worked fulltime in the surgery unit in KBC"Dr. Dragiša Mišović"in Belgrade.The data were obtained using the unstandardized questionnaire regard to pain.
Results: The mean duration of experience at the clinics was 15.2 years. In everyday practice about 34.1% (14/41) of nurses do not record pain. Only 7.3% (3/41) nurses report pain in special pain list. About 30% (12/41) of participants consider that fentanyl in form of patch is use for acute or both acute and chronic pain. About 66% (27/41) of participants believe that ``coxibe often cause ulcerations or haemorrhage in stomach.`` For 56.7% (22/41) nurses hepatotoxicity is a side effect of ibuprofen or acetylsalicylic acid. About 12.2% (5/41) of nurses believe that adjuvant analgesics are used only for the treatment of severe pain, and about 10% (4/41) of nurses consider that in postoperative pain analgesics should be given only when a patient request or when a nurse estimate pain.
Conclusions: Current results indicate that it is necessary to develop education on pain treatment for health professionals in Serbia. Development of multidisciplinary pain teams could be beneficial for patients with pain.

P114

EUROPEAN KNOWLEDGE ALLIANCE FOR INNOVATIVE MEASURES IN PREVENTION OF WORK-RELATED MUSCULOSKELETAL DISORDERS

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Background and aims: Work-related musculoskeletal disorders (WMSDs) compose an increasingly prevalent problem across Europe, disclosing the limitations of the current approaches for the management of WMSDs. Musculoskeletal complaints are present in more than 40% of European workers and are associated with excessive direct and indirect costs for the society, private companies, families and the individuals living with disability due to WMSDs. The European Knowledge Alliance "Prevent4Work" (P4W) was created to develop and implement new innovative digital tools to improve prevention and current management of WMSDs.
Methods: P4W is a 3-year Erasmus+ Project is a collaboration of higher education institutions and enterprises from Spain, Denmark and Italy. The aim of the project is to develop a mobile-health application, which collects large amounts of data directly from patients with WMSD. Data will be collected from several domains (physical activity, sleep quality, psychosocial factors, work and environment conditions) and connected to a virtual learning platform. Pilot projects with >1500 workers from Denmark, Spain and Italy will be carried out to test the platform.
Results: Big data analysis and machine learning will be used to recommend an individually-tailored educational program, taking into account multifactorial risks for extended sick-leave and chronification.
Conclusions: P4W aim to create an innovative and easily accessible tool to improve management of WMSDs.

Funding acknowledgements: P4W is founded by EU, Erasmus+ Programme (Agreement n. 2018-2381/001-001 600920-EPP-1-2018-1-ES-EPPKA2-KA).

P115

RESULTS OF THE WHO FIELD TESTING FOR THE CLASSIFICATION OF CHRONIC PAIN FOR THE ICD-11

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Background and aims: Because of the unsatisfactory representation of chronic pain in the International Classification of Diseases (ICD-10), an IASP Task Force developed a new classification of chronic pain for ICD-11. The aim of the present study was to test - prior to the classification's implementation - the coding process and whether the diagnoses are regarded clinically useful.
Method: Participants were 177 professionals (57.6% men; 43.8±11.1 years) who work with patients affected by chronic pain. The participants had to provide the correct diagnostic codes for particular diagnoses (line coding) or brief vignettes (case coding), reported whether they had encountered any problems and rated the clinical utility. The ICD-11 codes were measured against a gold standard and coding problems compared between ICD-10 and ICD-11.
Results: In the line coding, ICD-11 diagnoses were more often assigned correctly than ICD-10 codes and fewer difficulties and ambiguities were encountered in the coding process. The specificity of the new diagnoses and their utility was judged to be very high: 4.3±0.90 on a scale from 0 (not at all) to 5 (very useful).
Conclusion: The new ICD-11 diagnoses outperformed the old ICD-10 codes in all respects and were uniformly judged to have a very high utility for communication, treatment management and documentation. Thus, the new diagnoses have shown themselves to be integrated easily in the coding process, possess satisfactory characteristics and were regarded as clinically useful by the relevant professionals. Further studies investigating their validity in clinical settings will be the next step.

BIOLOGY

P116

WHAT DO PATIENTS LIVING WITH CHRONIC PAIN THINK ABOUT THE NEW ICD-11 CLASSIFICATION OF CHRONIC PAIN? A EUROPE-WIDE ONLINE SURVEY

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Background and aims: The International Classification of Diseases (ICD) is the most important diagnostic coding standard. To improve the representation of chronic pain in the ICD-11, an international task force developed a new classification of chronic pain. It comprises seven categories of chronic pain, which were included in the ICD-11 version for preparing implementation. Given the importance of a clinically useful classification system for communication and treatment choice, the new classification affects physicians and patients with chronic pain alike. The aim of the present study was assessing the opinions of patients with chronic pain about this new classification.

Methods: The Pain Alliance Europe (PAE) distributed the online survey among its members. Participants gave their informed consent prior to completing the questionnaire. After the assessment of the pain history, a video introduced participants to the ICD-11 classification of chronic pain. Patients were asked for their opinion about this new classification, i.e., what they expect of it (e.g., regarding facilitated communication, better access to treatment).
Results: Descriptive statistics are reported for the following variables: expectations regarding self-concept, treatment, disclosure of pain, understanding, talking about pain, stigma, and overall views. Differences between countries were evaluated with a multilevel analysis. A multiple regression was computed with overall opinion as criterion and pain intensity, distress, and interference as predictor variables.
Conclusions: The ICD-11 classification of chronic pain aims at improving the situation of patients with chronic pain. A favorable patient opinion contributes to the clinical utility of the new classification and can facilitate its implementation.

P117

MACHINE LEARNING - FROM ARTIFICIAL INTELLIGENCE TO PAIN RESEARCHES: DELINEATING LABORATORY EXPERIMENTS

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Machine learning (ML) is a set of techniques for data analysis used to investigate and predict results from a set of data using algorithms and statistical tools. In pain researches, a lot of data are generated after in vitro and in vivo experiments that, combined, broaden the knowledge about mechanisms and molecular targets for pain control. Behavioral test is one of the most important tools used on pain studies. In animal models, for example, paw withdrawal thresholds and mechanical allodynia are measured with a von Frey equipment before and after a painful stimulus or its treatment. Many of these tests require months of experimentation and involve high-cost drugs and animals. Based on above-mentioned, this work aims to demonstrate how ML techniques could be used to predict how a determined dose of an antagonist would work in a model of neuropathic pain targeting the purinergic signaling. In vivo, experimental test was done using the following antagonist doses: 0.001, 0.01, 0.1, 1.0, and 3.0 mmol. Mean of mechanical allodynia was assessed with electronic von Frey. ML approach was based on Linear Regression and Knn algorithm using scikit-learn implementation; the data set training was configured without 0.01 mmol measures. The resulting ML value was 8.9 g, inside the experimental standard error, and Knn confirmed the data class. ML could successfully predict the mean of animal mechanical threshold. In this context, ML is a very useful tool to guide behavioral experiments, concentrating efforts to predict experimental results and prevent costly tests.

P118

ASSESSMENT OF RODENT-SPECIFIC WELFARE-BEHAVIOR AS A SURROGATE MARKER FOR PAIN AFTER INCISION INJURY

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Background/aims: In preclinical pain research, the role of complex, multidimensional behaviors are increasingly recognized to facilitate the translation[1]. Hence, this study aims to assess rodent-specific, voluntary welfare-behaviors representing different level of needs - nest consolidation test (NCT) as an indicator for well-being and grooming transfer test (GTT) for primal needs[2] - in a model of incisional pain.
Methods: Male adult C57BL/6 (n=20) underwent a plantar incision (PI) or PI with muscle (PIM) injury; sham (only

isoflurane anesthesia) and naive mice represented the control groups. The NCT and GTT were scored by 5 blinded observers at 6-time points (within the first 48 hours after incision). The performance score for NCT and GTT was calculated as a ratio to untreated group.
Results: The NCT was significantly decreased 1 h after incision in the PI, PIM and sham group ($p < 0.05$ vs naïve animals); it remained decreased until 4h after incision in the PI group and increased in PIM group 2 h after incision ($p < 0.05$ vs PI). Significant changes in the GTT after surgery were not detected.
Conclusions: Incision influenced the NCT but not the GTT indicating an affection of well-being but not primary needs by an surgery. The differences in NCT performance between skin-muscle incision and skin incision only could be explained by increased or distinct tissue trauma. Assessment of complex behaviors may enhance translatability of preclinical findings into the clinic.
[1] Pogatzki-Zahn et al., Pain Reports, e588, 2017
[2] Oliver et al., J Am Lab Anim Sci, 57, 2, 2018

P119

PHARMACOKINETIC AND PHARMACODYNAMICS ASSESSMENT OF THE ANTI-NOCICEPTIVE EFFECT OF PROPOFOL AND THIOPENTHAL IN RAT

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Introduction: Propofol and thiopental are common medicines as the anesthetic agent, although there is controversy on the analgesic effect of them.
Material and methods: This study performed on 80 male wistar rat in range 220 ±50. Determination method were set up for measurement of thiopental and propofol by UV and Fluorescent detector, respectively in first step. Then in second step each rat was cannulation under jugular vein micro surgery for repeated sample collection. After 24 hours pass from surgery, 4 different dose of thiopental and propofol were administrated. Pain assessments were done by tail flick latency test in different time. In each pain assessment time 500 micro litter blood samples were collected. After the amount of drug determination pharmacodynamics and pharmacokinetic modeling was done by monolix software.
Results: Calibration curve for determination of thiopental and propofol were fit by power equation. Thiopental and propofol were fit 3 and 2 compartment in pharmacokinetic modeling with 212 and 142 AIC (akaike information criterion) respectively. With effect compartment model hysteresis loop has vanished. Analgesic response and effect compartment concentrations of methadone were related by the sigmoidal Emax model.
Conclusion: This study showed propofol and thiopenthal have analgesic effect and there is no evidence of hyperalgesia.

P120

EFFECT OF PH AND OXYGEN TENSION ON DORSAL ROOT GANGLION CALCIUM RESPONSE TO BRADYKININ AND NEURITE SPROUTING

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Background and Aims
Intervertebral disc degeneration is associated with multiple stresses such as hypoxia and acidosis which are hypothesized to cause chronic pain, but how these stresses influence peripheral neuronal structures remains unknown.

Methods

The dorsal root ganglia (DRG) derived cell line ND7/23 was cultured under different oxygen tensions (2% and 20%) and pHs (6.8 and 7.4) for 3 days in DMEM supplemented with 10% fetal calf serum. Calcium imaging was performed at the end of culture to study nociception using bradykinin as stimulus and Fluo-4 as indicator. The longest neurite outgrowth per cell was quantified in calcein AM stained cells using ImageJ. SPSS was used for statistical analysis and $p< 0.05$ was considered significant.

Results

Low pH decreased area under curve (AUC), peak of the curve ($\triangle F_{max}/F_0$), and duration of the bradykinin-stimulated calcium influx. In hypoxia, although AUC and peak of the calcium influx curve were reduced, the duration was extended (Fig. 1). Both low pH and hypoxia contributed to a higher proportion of cells with outgrowth longer than 30 µm, a subpopulation which showed a higher AUC of calcium influx responding to bradykinin (Fig. 2).

Conclusions

While hypoxia increased duration of calcium response to bradykinin, both acidosis and hypoxia enhanced sprouting of neurite outgrowth, the two stresses may be involved in different mechanisms of peripheral sensitization.

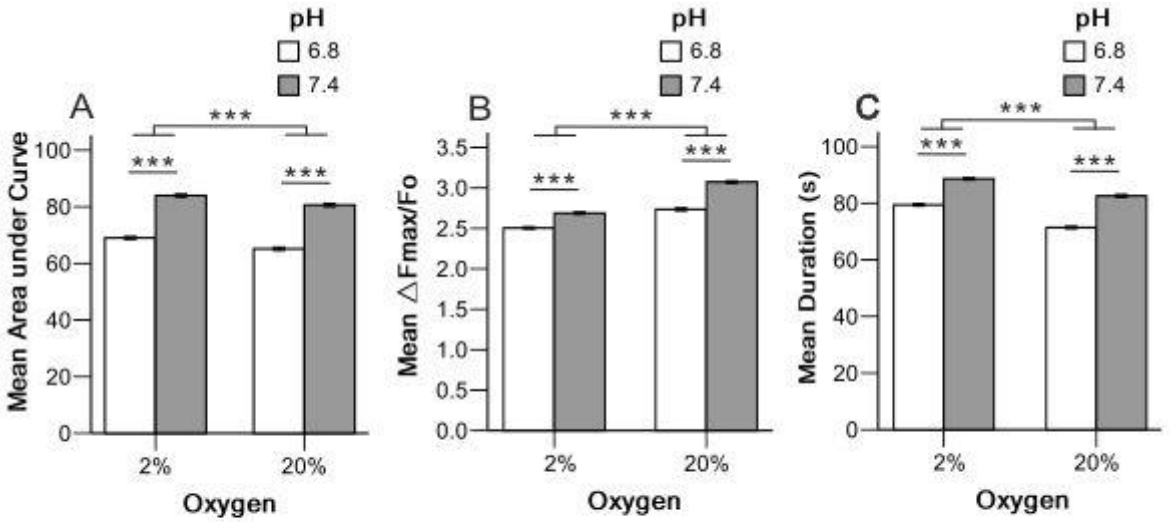

Fig. 1. Calcium imaging responding to bradykinin after primed by low pH and hypoxia stress. A. Area under curve for the calcium response was increased by hypoxia, but decreased by low pH. B. Both hypoxia and low pH significantly decreased maximum intensity of calcium influx. C. Hypoxia prolonged the duration of bradykinin- induced calcium response, which was reduced by low pH. For A, B and C, error bars equal standard error, ***: p<0.001 by Mann-Whitney test.

[Fig. 1]

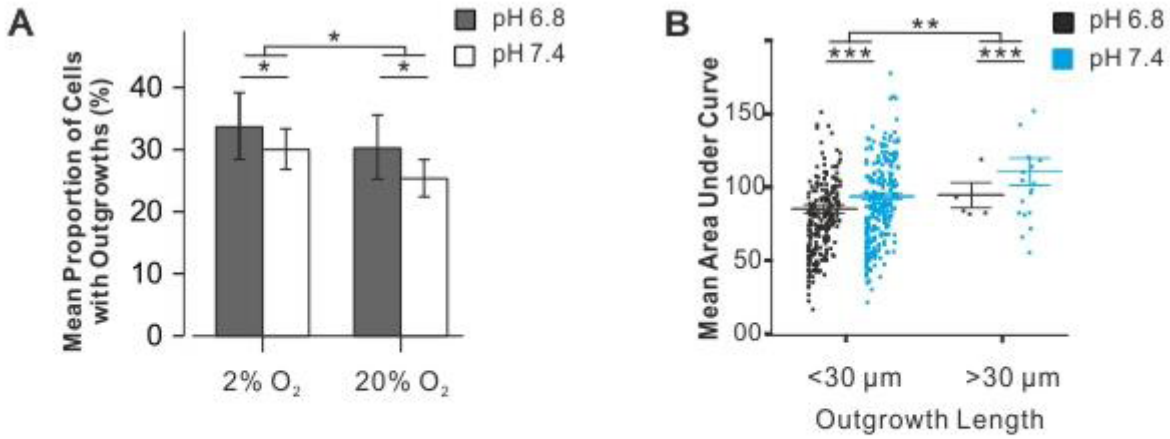

Fig. 2. The influence of different oxygen tension and pH on neuronal outgrowth sprouting and its correlated change in calcium influx responding to bradykinin. A. The proportion of cells with outgrowths longer than 30 µm is significantly higher in pH 6.8 than pH 7.4. Error bars equal 95% confidence interval, * : p<0.05 by Chi-square test. B. In both pH 6.8 and 7.4, cells with outgrowth longer than 30 µm have a higher area under curve in calcium response to bradykinin. Error bars equal standard error, ** : p<0.01, *** : p<0.001 by Mann-Whitney test.

[Fig. 2]

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CLUSTERING PATIENTS WITH FIBROMYALGIA USING THE FIBROMYALGIA IMPACT QUESTIONNAIRE REVISED (FIQR): DIFFERENCES IN CLINICAL OUTCOMES, ECONOMIC COSTS, INFLAMMATORY MARKERS AND GRAY MATTER VOLUMES

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Background and aims. The main objective of this study is to identify fibromyalgia syndrome (FMS) clusters using the Revised Fibromyalgia Impact Questionnaire (FIQR); and to examine whether the clusters differ in demographic data, clinical measures, direct and indirect costs, levels of inflammatory markers and brain morphometry.
Methods. A hierarchical cluster analysis was performed to classify a large, pooled Spanish sample of patients with FMS (N= 947) using the FIQR as clustering variable. A latent profile analysis was subsequently conducted to confirm the optimal number of FMS clusters. To examine external validity, a battery of clinical measures, economic costs, inflammatory markers and gray matter volumes of relevant cortical and subcortical areas were analyzed. We also compared the discriminant validity of the clusters with the original FIQR severity categories. To promote the implementation in real-world clinical practice, we built a free online cluster calculator.

Results. Our findings indicated that a four-cluster solution more clearly captured the heterogeneity of FIQR data and provided the best fit. This cluster solution allowed detection of differences for most clinical outcomes and economic costs. Regarding the inflammatory and brain-based biomarkers, differences were found in C-reactive protein, and tendencies were found in the right medial prefrontal cortex, the right parahippocampal gyrus, and the right middle cingulate cortex; brain regions associated with executive functions and pain processing. The original FIQR categories presented similar results, although their precision in discriminating among the non-extreme categories was not sound.
Conclusions. These findings are discussed in relation to previous research on FMS clustering.

DIGITISATION IN PAIN MANAGEMENT

P122

DIGITAL BIOMARKERS OF GAIT AND ASSOCIATIONS WITH FUNCTION IN KNEE OSTEOARTHRITIS AND LUMBAR SPINAL STENOSIS

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Introduction: Objective and disease specific biomarkers of function in pain populations are needed. This study aims to establish objective measures of physical function using wearable sensors by identifying novel spatial and temporal gait features that differentiate knee osteoarthritis (OA) and lumbar spinal stenosis (LSS) from healthy controls.
Methods: A prospective study of 30 participants, 10 in each of 3 groups: LSS, OA, and controls. Main outcome measures included gait features derived from an IMU sensor on each foot while performing the 6 min walk test, the self-paced walking test, and 40-meter walking test. Spatial and temporal gait parameters were analyzed using descriptive statistics (mean, standard deviation, interquartile range and coefficient of variation). Differences between healthy and disease populations were evaluated by Wilcoxon rank sum test, with $p < 0.05$. Candidate gait features were selected by cumulative distribution function and loess regression. Effect size was computed by the partial omega-squared.
Results: The best IMU-derived gait features to distinguish from controls were: for OA minimum toe clearance, (ES) = 0.61, $p< 0.0001$; and for LSS %pushratio, ES= 0.61, p=0.0001.
Discussion: IMU-derived gait features can significantly distinguish disease vs. healthy states during waling tests. For knee OA this was more prominent during the early phase of the test (1stmin of 6-min walk test) while for LSS it was more prominent in the latter phase of the test (last-min of 6-min walk test). These results suggest that sensor-derived spatiotemporal gait features are objective digital biomarkers to discriminate between healthy and disease populations.

P123

EFFECTIVENESS OF SELF-MANAGEMENT APP FOR CHRONIC LOW BACK PAIN: A PILOT RANDOMIZED CONTROLLED TRIAL

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Background and aims: Chronic low back pain (CLBP) is a major leading cause of disability, and its socioeconomic burden is vast. Recently, pain management utilizing IT like App gathers social attention, but its evidence is scarce. We therefore aimed to preliminary investigate feasibility and short-term effectiveness of the self-management App on CLBP.
Methods: We conducted a pilot randomized controlled trial. 19 eldercare workers joined the study (median age: 47 years old, female: 89%). Eligibility were 1) LBP lasting for 3 months or more, 2) available internet, 3) non-specific LBP, 4) not pregnant. Intervention group (N=10) used the App, "Pocket Therapist" (BackTech Inc.). The App has several functions; 1) man-to-man chat support by physical therapist, 2) red & yellow flag screening, 3) LBP phenotype assessment, 4) self-monitoring by pain & physical activity log, 5) tailor-made exercise program, 6) pain education. Control group (N=9) was the waiting-list. We analyzed data from baseline to 3 months usage. Primary outcome was pain intensity by brief pain inventory (BPI). We performed multilevel analysis to investigate the effectiveness of the App.
Results: 17 participants answered follow-up survey. The median number of chat and pain log were 88 [Interquartile range: 54, 181] and 0 [0, 22]. Total and maximum pain intensity was significantly improved in intervention group compared to control group (β [95%CI] = -1.35 [-2.27, -0.43], -2.38 [-4.22, -0.53]).
Conclusions: The study showed the short-term effectiveness of App on CLBP. In the future, we will perform the RCT with large sample size.

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OPIOID CALCULATORS: QUALITY OR JUST QUANTITY?

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Background and aims: There are a vast number of opioid calculators available to use online. These calculators have been demonstrated to lack consistency in opioid equivalence. The aim of this project was to assess the quality of the most commonly used online opioid calculators and whether their use can be recommended.
Methods: Online opioid calculators were found using the Google search engine, searching for the terms "opioid calculator" and "morphine conversion". The searches were performed for the 6 main English language speaking regions, United Kingdom, United States, Ireland, Canada, Australia and New Zealand. The first 10 opioid calculators that were found in each region using each of the search terms were considered. The AGREE II instrument was applied to the calculators in order to assess the quality of the calculators. To assess whether a calculator could be recommended for use in clinical practice, the calculator would have to score at least 75% across all domains.
Results: 13 online opioid calculators were found. Using the AGREE II instrument, the scores across the domains ranged from 0% to 72.2%. No calculator scored greater than 50% across all domains for quality.
Conclusions: The commonly used calculators available have now been shown to lack quality and well as consistency. This study has found that online opioid calculators cannot be recommended for use in clinical practice.
Acknowledgements: I would like to thank Prof. M. Underwood and Dr. J. Yeung, PhD supervisors for their help and guidance with this work.

P125

CLINICAL MANAGEMENT OF NECK AND LOW BACK PAIN THROUGH PERSONALISED PROGNOSTIC MODELS: THE BACK-UP PROJECT

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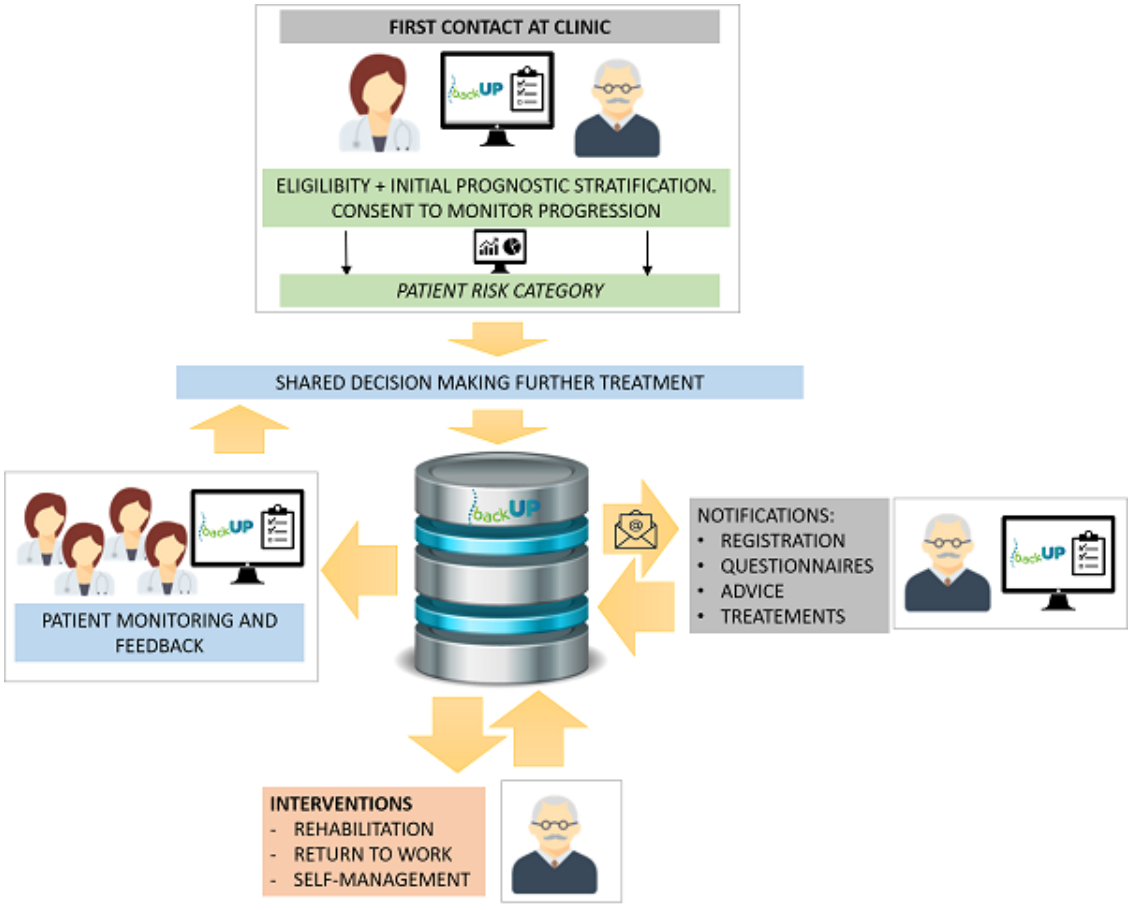
Back-UP is an IT system that is being developed to support a personalised management of nonspecific neck and low back pain, using digital clinical data, prognostic models and knowledge of evidence-based treatments.
The data processed by the platform comprises multiple health dimensions, from the smallest scale (glycomics), through biomechanics, to psychosocial factors assessed by validated questionnaires and psychological tests. The knowledge-based system will estimate the most likely future outcomes, quantified by standard pain and disability scales (e.g. RMDQ for low back pain and NDI for neck pain), measures of time off work, and probability of recurrence. It will also provide information about matched treatments, costs, adaptation to the workplace, or insurance-related issues.
The system is addressed to three broad types of users: the professionals that treat the patient, the patients themselves, and researchers. Back-UP's infrastructure comprises three platforms specifically oriented to those users, which interact with each other through the trajectory of a patient, in the recovery and return-to work process. Nine modules are associated to different scenarios that involve potentially different people and data. Each module provides a user interface whose functionality is focused on one scenario:
(1) stratification and treatment selection;
(2) patient registration and baseline questionnaire;
(3) self-management;
(4) rehabilitation;
(5) return to work;
(6) insurance and integrity;
(7) feedback;
(8) follow-up surveys at 3 weeks, 6 weeks and 3 months; and
(9) reporting and management.



[Interaction workflow between Back-UP and users]

EPIDEMIOLOGY

P126

INJURY RELATED PAIN IN COLLEGIATE ATHLETES IN ONE REPORTING SEASON

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Background and aims: Participation in sport is beneficial, yet athletes are exposed to risk of injury and pain. This study examined
(i) incidence of injury-related pain in collegiate athletes
(ii) interference in sport associated with pain.
Methods: A longitudinal study (weekly reporting 2016/7 season) was carried out with 4 university teams; 1 rugby union (n=26), 1 field hockey (n=28) and 2 Gaelic football (n=68). Injury was defined as 'any physical complaint resulting from sport participation, irrespective of need for medical attention or time-loss from sport'. Pain severity was measured with a numerical rating scale. Interference was measured by perceived decrement in performance and days lost from sport in the concurrent week. Percentages, means and confidence intervals summarised data. One-way ANOVA compared average weekly time-loss across pain severity categories.
Results: In total, 1097 complete weekly reports were received (n=122 individuals). Within these, 88 athletes (73.2%; 95% CI 63.2-79.7) reported incidence of injury on 271 occasions. Pain was associated with injury in 94% of incident reports; 41.7% mild, 43.2% moderate, 9.1% severe. This equated to 66.4% players (95% CI 57.2-74.5) reporting injury-related pain. Pain was associated with decrements in sport performance; 88.2% of players with mild, 94.7% with moderate and 100% with severe pain reporting limitations. There was a significantly higher average time loss from sport each week with increased pain severity (mild =2.39, moderate=3.08, severe=4.13 days, p=0.003).
Conclusions: Injury-related pain is reported by 2/3 college team athletes, associated with short-term limitations. Further exploration of severity, longer-term effects and chronicity is warranted.

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IS THE HIGH BURDEN IN CHRONIC LOW BACK PAIN IN FACT RELATED TO PRESENCE OF CHRONIC WIDE-SPREAD PAIN?

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Background and aims: The prevalence of chronic pain is about 20% in general populations. One of the most common pain sites is chronic low back pain (CLBP).
Our aim was to investigate whether CLBP is most prevalent as a localized pain or as part of chronic widespread pain (CWP), and to determine whether an association to pain spread explains the burden of CLBP.
Methods: This study uses the cross-sectional (year 2016) material from a Swedish population cohort, started in 1996. It includes 1184 respondents to a questionnaire, regarding pain, Quality of life (SF-36), medication, healthcare consumption and sick leave.
Results: The prevalence of CLBP as local pain was 10% (95% CI: 8.6 ; 12.0), and 15% as part of CWP (95% CI: 12.8 ; 16.9). That is, of those having CLBP 60% also had widespread pain.
Low physical status (SF-36) and high drug use was associated both with having CLBP and with increasing number of pain site. Low mental statues (SF-36) and high health care use were only associated with increasing number of pain site. Those with CLBP and those without were close in these measures.
Conclusion: Chronic low back pain was prevalent both as a local pain and in connection with widespread pain. Both the spread of pain and the presence of chronic low back pain explained low physical function and drug use.

However, low mental statues and high health care use was explained by the spread of pain, and not by the presence of chronic low back pain.

P128

SWITCH TO STRONG OPIOIDS IN CHRONIC OPIOID USERS: ANALYSIS OF THE FRENCH NATIONAL HEALTH INSURANCE DATABASE. THE FRANTALGIC STUDY

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Background and aims: In the midst of the "opioid" epidemic in America, question is raised about the risk of such an epidemic in Europe. The aim of the FRANTALGIC study is to identify the characteristics of chronic opioid users (COU) in particular the distinction between non-cancer and cancer pain, and treatments´ trajectories.
Methods: Retrospective cohort study from the generalist sample of beneficiaries (EGB) of the French national healthcare insurance. The EGB is a representative sample of the French adult population. Subjects initiating weak or strong opioid from 2012 to 2014 and being issued at least 6 consecutive months of treatment were selected and followed for 2years or until death. These preliminary results describe the first switch of treatment in the cohort.
Results: A cohort of 2,081 patients (0.5% of the EGB) COU was found of which 14.8% with cancer. Mean age and women distribution were respectively in the non-cancer (NCG) group 61.4years and 60.3% and 66.6years and 50.5% in the cancer group (CG). At inclusion 93.8% of the CG and 96.9% of the NCG patients received a weak opioid.
If 82.6% and 59% of the NCG and CG patients kept weak opioids, an intensification from weak to strong opioids is observed for 14.3% and 34.9%, respectively.
Conclusions: In patients under chronic opioid therapy, more than 14% have an intensification of treatment in non-cancer pain after already 6 months of weak opioid treatment. The upcoming survival analysis and patients´ characterization will provide new insights about treatment trajectories.

P129

TRENDS IN PRESCRIBING OPIOID DRUGS IN THE UNITED KINGDOM FROM 2011 TO 2016

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Background and aims: Opioids may provide a valuable role in alleviating chronic pain for some patients but they are associated with adverse events and they have potential for addiction. We characterised trends in opioid prescribing in the UK between 2011 and 2016.
Methods: Patients were selected from the Clinical Practice Research Datalink (CPRD); a large, routine primary care data-source in the UK. Incident episodes of opioid exposure between 2011 and 2016 were extracted and classified as either strong, weak or a combination. Opioid exposure episodes were defined as incident if the patient was either opioid naïve or there was a minimum of 365 days between a prior opioid prescription. The rate of overall opioid exposure and rate of strong opioids as a proportion of total opioid prescribing was calculated and presented by year.
Results: Between 2011 and 2016, the total rate of incident opioid episodes decreased from 72.2 to 64.9 per

1,000 patient years (PKPY). However, the rate of incident strong opioid episodes increased from 1.7 to 2.8 PKPY. The proportion of prescriptions for strong opioids increased from 2.3% to 4.3% over the six-year study period. Extrapolated to the UK as a whole, it was estimated that the number of patients initiating strong opioid increased from 106,032 to 183,078 over the study period.
Conclusion: This study found that whilst opioid prescribing in the UK had reduced overall, the frequency of strong opioid prescribing had increased. This should be reflected upon in the context of adverse events

P130

THE ASSOCIATION BETWEEN CHRONIC PAIN AND PHYSICAL ACTIVITY AT WORK AND IN LEISURE TIME - THE TROMSØ STUDY 7

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Background and aims: The aim is to describe the association between chronic pain (CP) and different levels of physical activity in leisure time (LTPA) and at work (WPA).
Method: Participants are from the 7th Tromsø study (T7, 2015-2016). Pain characteristics were obtained through a digital body map, the Graphical Index of Pain (GRIP). CP was defined as pain experienced within last 4 weeks, with ≥3 on a visual analogue scale (0-10), and duration of ≥3 months. Four levels LTPA and WPA were assessed through a questionnaire (*LTPA*-sedentary, low, moderate or vigorous; *WPA*-sedentary, walking, walking and lifting, manual labour). To test the association between PA (exposure) and CP (outcome), complete case logistic regression was applied, adjusting for covariates with sedentary as reference group in both WPA and LTPA.
Results: A total of 20,844 subjects completed GRIP (52.5% women, 47.5% men). The prevalence of CP decreased with levels of LTPA in both men and women. Higher levels of WPA was associated with more CP, except for chronic head pain. The prevalence was highest for chronic back and neck pain in both sexes. CP decreased in moderate and vigorous levels of LTPA with OR 0.89 (95%CI=0.79-1.0) and 0.74 (95%CI=0.6-0.91), respectively. CP were highest in WPA among manual labours with OR 1.55 (95%CI=1.22-1.97).
Conclusion: Higher levels of WPA were directly related to CP, while levels of LTPA were inversely related to CP.
Acknowledgement: Mats Fjeld is financial supported by the Norwegian Fund for Post-Graduate Training in Physiotherapy.

P131

PREVALENCE AND CHARACTERISTICS OF CHRONIC PAIN IN PATIENTS ATTENDING PRIMARY CARE UNITS IN CONTINENTAL PORTUGAL: AN OBSERVATIONAL STUDY

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Background and aims: Chronic pain is a major health problem, yet information regarding the burden of chronic pain in Portugal is scarce. The aim of this study was to assess the prevalence and the characteristics of chronic pain among patients attending primary care units in continental Portugal.
Methods: A cross-sectional, multicentric, observational study was carried out at primary care units in continental Portugal. Adult patients (≥18 years-old) attending primary care appointments from September 2017 to November 2018 were screened for chronic pain. Data including demographics, pain duration, time to diagnosis, physician

diagnosing the pain, pain intensity (0-10 scale), and pain location were collected from medical records and by interviewing the patients.
Results: A total of 8445 patients were screened at 58 primary care units. The prevalence of chronic pain was 34% (95% CI, 32.6-34.6%; 2834/8445 patients). In total, 578 patients with chronic pain were included for further characterisation. The age of this population ranged from 20 to 94 years and 51% were part of the labour force. Most patients had been diagnosed with chronic pain by a general practitioner (61%). The median (first quartile-third quartile) pain duration was 5.6 (2.3-10.0) years and the median time to diagnosis was 12.0 (5.7-48.1) months. The mean (SD) pain intensity in the past week was 5.1 (2.2). The main pain locations were lower back and limbs (66%).
Conclusions: Chronic pain is highly prevalent. In this study it affected more than one-third of the patients attending primary care units in continental Portugal.

HISTORY

P132

ANALYSIS OF THE BATTEY OPERATION: INDICATIONS, OUTCOMES AND CHRONIC PELVIC PAIN

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Background and aims: In 1872 Dr. Robert Battey removed the normal ovaries from a 39 year old woman theorizing menopause would reduce her severe pelvic pain. The normal ovariotomy (or Battey operation) was received enthusiastically initially but subsequently it fell out of favour from his peers. Recent criticism has been severe on the basis of poor indications such as hystero-epilepsy and ovaralgia. The object of this study was to explore the indications and outcomes of the operation.
Methods: Scopus searches were reviewed sources describing the reported indications. Battey's report of the International Medical Congress in 1881, summarized the outcomes of 51 identified surgeons and 216 normal ovariotomies. Pain indications were identified by "hystero-epilepsy", "ovaralgia" and "dysmenorrhea"; bleeding indications by "myomas" and "menorrhagia".
Results: Surgery for pain (N=133) was more frequent than surgery for bleeding (N=57). Surgery for pain had a lower mortality (11.3%) than surgery for bleeding (29.8%). The term "hystero-epilepsy" appears to describe the acute on chronic viscero-somatic pain referral in detailed cases reports.
Discussion: This study was intended to give a broader understanding of the "normal ovariotomy". It was not intended to reject the previous criticisms that were focused on the removal of normal ovaries, ill-defined indications, menopausal complaints and mortality rates. This study does indicate the indications were relevant to the time and suggest severe chronic pelvic pain from as yet unrecognized pelvic visceral disease was treated with a positive outcomes in many instances.

PSYCHOLOGY

P133

THE PAIN ALARM RESPONSE - HOW CONSCIOUS AWARENESS SHAPES PAIN

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Background and aims: Pain is a subjective sensation that is largely shaped by context, yet, little is known about the boundaries for such influences, in particular in relation to conscious awareness. In this novel approach to the human perception of pain we investigated processing of noxious stimuli during sleep.
Methods: Four experiments were performed where healthy participants (*n*=116, 69 women) were exposed to repetitions of noxious heat either when awake or during sleep. After repetitions of noxious heat to the lower leg, a test-phase followed where all participants were awake and exposed to a series of identical painful stimuli and rated pain on a 0-100 Numerical Rating Scale. Two control experiments included only the test-phase, without any prior exposures to painful stimuli.
Results: Participants in the awake condition rated all test-phase stimuli the same. Conversely, participants who had been sleeping prior to the test-phase, and thus not aware of getting noxious heat, displayed heightened pain ratings during the first part of the test-phase. This initially heightened reaction to noxious stimuli—a pain alarm response—was further pronounced in the two control conditions where participants were completely naïve to noxious heat.
Conclusions: Results suggest that the pain alarm response is partly dependent on conscious awareness. Yet, the difference between the sleep and naïve conditions demonstrates that basic forms of learning occur during sleep. Noxious threats to our tissues are thus evaluated by the sleeping organism, demonstrating that pain adaptation represents a simple form of learning that takes place outside conscious awareness.

P134

"*I WISH I NEVER STARTED THEM*": INVESTIGATING THE EXPERIENCES OF UK HEALTH CARE PROFESSIONALS AND PATIENTS OF USING OPIOIDS TO TREAT CHRONIC NON-CANCER PAIN

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Background and aims: Community Health Care Providers (HCP), such as General Practitioners (GPs) are usually the first primary care contact for many people experiencing chronic pain in the UK. This initiates a care pathway for Chronic Non-Cancer Pain (CNCP), whereby opioids are the most commonly prescribed treatment. However, an increasing body of evidence suggests that an existing number of patients under the care of HCPs already receive more than the recommended 120mg of morphine equivalent a day. This research is part of a programme of work that aims to understand the experiences of both HCPs and patients with respect to experiences of opioid treatment in CNCP.
Methods: Semi-structured interviews with N=15 HCP and N=13 patients were thematically analysed using an inductive approach.
Results: The complexity of treating chronic pain emerged throughout all participant interviews and levels of care (i.e. primary, secondary, and tertiary). The diffusion of responsibility was a key theme; particularly around opioid maintenance, weaning and patient referral. Early diagnosis of chronic pain was crucial, alongside building trust and rapport and having a comprehensive understanding of a treatment plan prior to initiating it. Better communication was also commonly discussed between HCP and patients to make timely and informed treatment decisions.
Conclusion: Managing inappropriate opioid treatment for CNCP in the community presents a significant challenge for both GP's and patients. To optimise patients' treatment, these themes suggest critical features that should be explored in the development of an opioid reduction intervention within a primary care setting.

P135

THE EFFECT OF PAIN AND STIMULUS SALIENCE ON TEMPORAL ATTENTION- A MULTI-STUDY EXAMINATION USING THE ATTENTIONAL BLINK TASK

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Pain disrupts attentional processing across a range of tasks and pain types. This effect is changed by stimulus salience, such that stimuli such as pain-related words or emotional expressions are attended to differently. This study aimed to further explore this effect using the attentional blink across two studies.
In the ABT, participants are presented with a stream of stimuli and asked to identify two targets. T1 is presented in a different text colour to the stimulus stream, and participants are asked to identify and remember T1. In half of trials, participants are also asked to identify a second target (T2), which appears after T1 and remains consistent throughout. T2 is presented in one of three positions in the stimulus stream; immediately after T1, 3 places after T1, or 7 places after T1. Typically, T2 is detected with high accuracy when presented in position 1 or 3, but accuracy drops at position 2. This deficit is the attentional blink effect. This research consists of two studies using the ABT; one using letter stimuli, the second using affective words. In both studies, participants completed the ABT twice, once normally and once whilst experiencing a headache.
Results show that, in the standard task, the blink window is shifted whilst in pain such that accuracy is poorer in position 1 compared to no-pain. In the emotional-word task, there was no effect of stimulus salience, although the same effect on blink performance was present, suggesting a top-down, rather than bottom-up, influence of pain on attention.

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PAIN CATASTROPHIZING: "WHAT IF…?" CATASTROPHIC WORRY IS AN OVERLOOKED ASPECT?

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Background and aims: Research has shown pain catastrophizing is an important psychological factor in relation to chronic pain. Conversely, its theoretical underpinning has been less disputed. Recently, there is a renewed interest in exploring the concept in the light of contemporary psychological literature. Flink et al. (2013) introduced the term catastrophic worry, as an integrated aspect of a pain catastrophizing process.
The study investigates whether pain catastrophizing and catastrophic worry are related concepts. Additionally, since the theory proposes that pain catastrophizing is a process and therefore capable of modulation, the study investigates this aspect.
Methods: Twenty young female participated in the study. Vasey and Borkovec's (1992) catastrophizing interview (CI) was used to investigate the catastrophic worrying process, by making participants generate a number of pain catastrophizing steps. CI was followed by a cold pressor task (CPT). Pain tolerance threshold (PTT) was measured as the time duration until the subject withdraws the hand. Pain Catastrophizing Scale (PCS) was administered at baseline and after CPT.
Results: PCS at baseline could significantly predict the number of pain steps generated during the CI ($P< 0.05$). PCS scores significantly increase after CPT as compared with baseline ($P< 0.05$). A significant increase of Rumination ($P< 0.05$) and Helplessness ($P=0.03$) subscales was found. No significant correlation was observed between pain catastrophizing steps and PTT.
Conclusions: The results support a relationship between pain catastrophizing and catastrophic worrying. Furthermore, the study shows a modulation of pain catastrophizing by the catastrophizing-worrying interview. Underlying the sensitivity of Rumination and Helplessness dimensions.

P137

WAYS TO COMPENSATE FOR MORAL PAIN IN VISUAL IMPAIRMENT

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Background: Visual disability and neuropathy, along with chronic neuropathic pain in poorly controlled diabetes mellitus amplify sensitivity to rejection, making it possible to construct non-bizarre delirium, favoring the development of an Organic Personality Disorder that overlaps an organic delusional disorder.
Presentation of a 74-year-old patient at first admission to psychiatry for bizarre expansive behavioral manifestations, due to the paranoid clinical picture, comorbid with chronic pain due to diabetic polyneuropathy and retinopathy of the same etiology.
The vulnerable structure (early strength myopia) and the transgenerational stigma make, with the advancing of visual impairment and with the accentuation of neuropathic pain, the patient disorganizes his thinking and behavior, becoming delusional. In the alternative, there is major depression, doubled by suicide risk.
Methods: Clinical Interview, Hetero-anamnesis, Cerebral CT and Computerized EEG (which confirm organicity), psychological testing, psychiatric monitoring, assays of diagnostic assumptions, psychodynamic interpretations.
Results: The diagnosis of organic delusional disorder with differential diagnoses of Organic Personality Disorder and Parafrenia is explained and supported. From psychodynamic point of view, the patient´s functioning is marked by immature denial defense mechanisms and psychotic projection, along with black humor. The patient presents suspiciousness, delirious interpretativity, emotional ambivalence, tangential thinking and circumstantiality, a delusional idea of relationship, persecution and prejudice that alters his or her attitudes and reporting to the world and life.
Conclusions: Defensive mechanisms that have once been beneficial and have facilitated acceptance of the vision deficiency condition (from the Hyperstezia Register and other senses area) have now escalated to sensory delirium phenomenology of relationship.

SOCIETAL IMPACT

P138

SOCIETAL IMPACT OF PAIN (SIP) - EXPERIENCES FROM A SIP NATIONAL PLATFORM IN FRANCE

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Background and aims: Under the umbrella of the European Societal Impact of Pain (SIP) platform, a SIP national platform has been established in France. It aims at improving pain policies by gathering a coalition of multi-disciplinary organizations.
Methods: SIP France strategy was first to build a pain position paper endorsed by medical societies, patient associations and healthcare professional organizations involved in pain care. Second step was to put pain as a health priority by spreading the position paper through a national event. Regional round tables were the third step to involve local physicians, patients and politicians, and share local positive experience on pain patient care pathway improvement.
Results: Eighteen representatives from medical societies (pain, rehabilitation, geriatrics, emergency, anesthesiology, rheumatology), patient organizations (pain, fibromyalgia, rheumatology) and healthcare professional organizations (general practitioners and pharmacist) came together in May 2018 to provide concrete measures to improve pain

care pathway by focusing on 5 axes: integration, prevention, participation, protection and mobilization . SIP France obtained the patronage of the Minister of Health for a national meeting in October 2018 at the Ministry of Health and diffuse the guidelines to a hundred participants,heathcare professionals, national health authorities and politicians. A first regional round table was organized in February 2019 with fifty representatives .
Conclusions: SIP France demonstrated that all stakeholders involved in the healthcare system worked closely together. This is a significant milestone to advocate for a better pain management to national policy makers in France. Two additional regional round tables are scheduled in 2019.

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HOW TO BUILD MULTI-STAKEHOLDER PLATFORMS TO TACKLE THE SOCIETAL IMPACT OF PAIN AT NATIONAL LEVEL

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Background and aims: Pain puts a serious burden on individuals and society Following the success of the Societal Impact of Pain platform at European level (SIP Europe), its partners started supporting the launch of SIP national platforms (NP).
Methods: The first was to identify national allies of SIP representing different national stakeholder groups like patient, healthcare professionals and others. Under the guidance of SIP Europe, country-specific evaluations have been performed to identify gaps and needs to improve management of pain. SIP NP members were trained to efficiently address these topics with policy makers.
Results: Six SIP NP have been established so far: Malta, France, Spain, Portugal, Belgium and the Netherlands. The platforms already reached important milestones, e.g. a multi-stakeholder policy events in Spain and a common policy position paper developed in France. Activities continue at national level, laying the foundations for establishing new NPs.
Conclusions: SIP Europe proved to be able to replicate its methodology at national level and tailor it to the stakeholder environment in various countries to initiate policy change.

P140

A HYPOALGESIC EFFECT OF TOUCHING A SOCIAL ROBOT

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Background and aims: Positive social connections between humans that include emotional touch are crucial for well-being and were found effective in improving mood and in alleviating pain. However, it is unclear whether a similar effect can be produced in human-robot social touch. Thus, the aim of this study was to examine the effect of touching the robot PARO on happiness and on pain perception.
Methods: Eighty-three healthy adults participated in the study - 63 in the PARO-interaction group and 20 in the control group. The PARO-interaction group underwent measurements of their happiness state and perceived pain in three conditions: Baseline (PARO is not present), Touch (touching PARO) and No-Touch (PARO is present in the room, without physical contact). The control group underwent the same measurements without ever encountering PARO.

Results: Among the PARO-interaction group, there was an increase in happiness ratings and a decrease in pain ratings compared to baseline and compared to the control group. Furthermore, the Touch condition yielded a larger decrease in pain ratings compared to the No-Touch condition and compared to the control group. These effects were correlated with the participants' empathic concern and their positive perceptions of the interaction with PARO. Moreover, participants with higher perceived ability to communicate with PARO experienced a greater hypoalgesic effect when touching PARO.
Conclusions: Human-robot social touch is effective in improving mood and reducing pain. The level of empathic concern may predict the quality of the interaction as well as the hypoalgesic effect of touching the robot.

DIAGNOSIS AND MEASUREMENT IN PAIN WALK 1

P141

AWARENESS OF AND ADHERENCE TO CONCUSSION GUIDELINES AMONG COACHES IN HANDBALL IN DENMARK

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Background and aims: Coaches play a pivotal role in acute management of sports-related concussion. Insufficient awareness may increase the risk of concussion or post-concussive symptoms. The aim of this study was to survey the awareness of concussion-management guidelines in Denmark among handball-coaches.
Method: An online questionnaire was distributed between September and October 2018 to all registered Danish coaches in Handball (n=9500). Differences between coaches who reported to be aware of compared to those who reported to be unaware of guidelines for return-to-play (Mann-Whitney) and risk-factors (Chi-Square) were analyzed.
Results: A total of (n=834, ~9%) handball-coaches answered the questionnaire. 81% (n=675) of the coaches were unaware of the guidelines. Significant differences between groups was found for ´years of experience´ ($p< 0.01$) and ´age´ ($p< 0.05$) with more older and more experienced coaches being the most aware. Most of the unaware-coaches(80%) considered a concussion to be equal to a brain-injury, while 66% of the aware-coaches reported that they understod the difference($p< 0.005$). Significantly less unaware-coaches knew the recommendations for return-to-play, compared to aware-coaches(40% vs 50%, $p=0.039$). Coaches who are unaware of guidelines are less likely to use gradual return-to-sport, compared to aware-coaches(20% vs 30%, $p=0.01$). Significantly less unaware-coaches considered headache as a risk-factor for concussion-related symptoms, compared to aware-coaches(56% vs 67%, $p=0.038$).
Conclusion: Results show that coaches who are aware of the guidelines are more likely to adhere to them. Unfortunately, the majority of the respondents were unaware of the guidelines. Awareness of concussion-guidelines should be prioritized in the education of coaches.

P142

DEFINING THE THERAPEUTIC WINDOW (TW) FOR SPINAL CORD STIMULATION (SCS) USING EVOKED COMPOUND ACTION POTENTIAL (ECAP) RECORDINGS - RESULTS FROM THE EVOKE STUDY

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Background and aims: Spinal cord stimulation (SCS) is an established treatment for chronic pain; however, long-term success remains suboptimal.[1,2] Current SCS therapies are fixed-output and do not account for large variation in electrical field strength due to changes in distance between the electrode and SC.[3] We report data from two prospective studies: Evoke and Avalon.
Methods: In Avalon, 50 subjects were implanted and programmed in closed-loop; in Evoke, 134 subjects were randomized into open-loop (OL-SCS) or closed-loop (CL-SCS). ECAPs, a measure of SC activation, are recorded following each stimulation pulse in both groups (Figure 1). Each subject's therapeutic window (TW) is determined individually as the ECAP amplitude range between sensation perception threshold and discomfort. Without measure of SC activation (eg, ECAPs), TW can only be based on perception of intensity; however, stimulation can produce variable SC activation (ECAP amplitude) as the electrode to SC distance varies with movement (Figure 2).
Results: In Evoke, each subjects' TW was determined in the clinic, along with the clinician prescribed level. There was no statistical difference between the two groups' TWs (Figure 3); however, CL-SCS subjects spent significantly more time in the TW despite having equivalent therapeutic ranges (Figure 4). Long-term data showed similar percentages of stimuli in the TW (83%-97%; Figure 5).
Conclusion: TW can be individually defined by ECAP amplitudes (measure of SC activation), removing the need to rely on subjective reports of intensity, which can vary over time and with movement.

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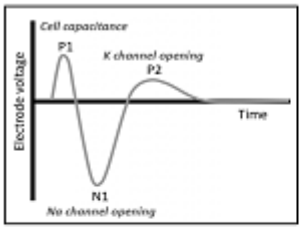

Fig. 1: Schematic representation of an ECAP.

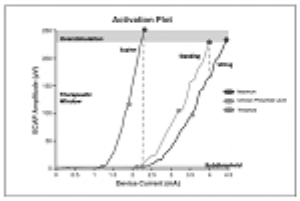

Fig. 2: SC activation plots – human data from the Evoke Study in 3 postures.

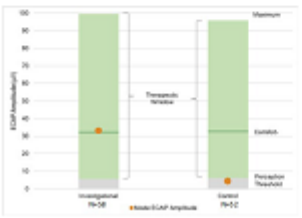

Fig. 3: SC activation plot from Evoke; shows parts of TW (perception to discomfort) for 3 postures.

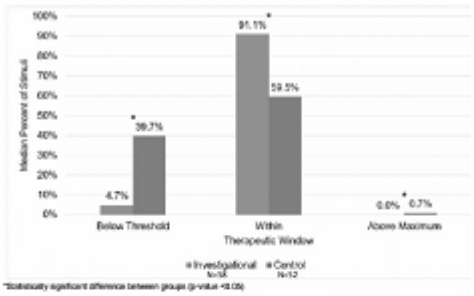

Fig. 4: Comparison of CL-SCS (investigational) and OL-SCS (control) in Evoke at 3 months.

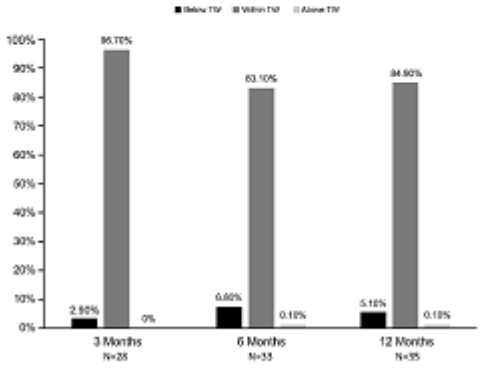

Fig. 5: Median % stimuli below, within, and above the TW (3-mo to 12-mo visits) in Avalon.

[Refs_Figures 1-5]

P143

ACUTE POST-OPERATIVE PAIN AFTER ORTHOGNATHIC SURGERY COULD BE PREDICTED BY CONDITIONED PAIN MODULATION (CPM) AND PAIN CATASTROPHIZING SCALE (PCS)-MAGNIFICATION

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Background and aims: Previous study suggested that severity of chronic post-operative pain could be predicted by conditioned pain modulation (CPM) examined before surgeries. The aim of the study was to investigate the relationship between pre-operative CPM, pain catastrophizing scale (PCS), and the severity of acute post-operative pain.
Methods: Thirty patients scheduled for orthognathic surgery (age range: 18-52 years) participated and had the CPM and PCS assessed prior to the surgery. Pressure pain threshold was measured as test stimulus at dominant forearm. Tonic cold-heat pulse stimulation (pulse duration of 40 seconds, -10 to 47 °C) was applied to the contralateral forearm with pain intensity of 70 at visual analogue scale (VAS 0-100) as conditioning stimulus. The period of consumption for post-operative analgesics (AP) and pain area under the VAS curve (VASAUC) were measured for one month after surgery. The relationships between CPM effect and AP, VASAUC, PCS were analyzed with Pearson correlation coefficient and multiple regression analysis.
Results: Positive CPM effect (21.8 [7.6-29.2] %) was detected in 16 patients. In the patients with positive CPM effect, a significant negative correlation was detected between CPM effect and AP (R=-0.59, p=0.016) and between CPM effect and VASAUC (R=-0.50, p=0.047). A significant positive correlation was detected between PCS-magnification and AP (R=0.53, p=0.035). Multiple regression analysis showed; AP=(-0.10xCPM effect)+(0.48xPCS-magnification)+7.21 (R=0.74, p=0.002, CPM effect; p=0.005, PCS-magnification; p=0.010).
Conclusions: Acute post-operative pain after orthognathic surgery could be predicted by CPM and PCS-magnification.

P144

DIFFERENCES IN PRESSURE PAIN THRESHOLDS IN COMPUTER WORKERS WITH CHRONIC TRAPEZIUS MYALGIA, NON-SPECIFIC CHRONIC NECK PAIN AND HEALTHY WORKERS

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Background and aims: The annual prevalence of chronic neck pain ranges between 20-40% in computer workers (CW) and is a leading cause of disability globally. CW with higher levels of pain have signs of widespread hypersensitivity and impaired descending pain modulation. This study aimed to assess pressure pain thresholds (PPT) in CW with different levels of pain and explore differences between patients with chronic trapezius myalgia (CTM-CW), non-specific chronic neck pain (CNP-CW) and asymptomatic workers (CON-CW).
Methods: A clinic examination was performed to classify CW CNP-CW and CTM-CW. PPTs were assessed over upper trapezius (UT) muscles bilateral, extensor carpi ulnaris (ECU) and tibialis anterior (TA) muscles on the most painful side or dominant side.
Results: A total of 109 participants were divided into three groups: CNP-CW (n=36), CTM-CW (n=31), and CON-CW (n=42). Pain intensity in the last 7 days, were 3.23±1.78cm for CTM-CW and 2.94±1.67cm for CNP-CW). CTM-CW demonstrated significantly lower PPTs over UT on most painful side for CTM-CW compared with CNP-CW (p=.023) and CON-CW (p< .001) and for CNP-CW compared with CON-CW (p=.017). Bilateral PPTs over UT and ECU were significantly lower for CTM-CW compared with CNP-CW (p=.015; p=.014) and CON-CW (p< .001; p=.001).

Conclusion: This preliminary analysis suggests pressure hyperalgesia in UT in CW in the most painful/dominant side with chronic pain. In addition, CTM-CW demonstrated extrasegmental hyperalgesia compared with asymptomatic controls.

P145

MONITORING ELECTRICAL BRAIN RESPONSES AROUND NOCICEPTIVE DETECTION THRESHOLD

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The search for objective measures providing insight into key neural mechanisms underlying chronic pain, such as central sensitization, still continues. Recently, we combined psychophysical Multiple Threshold Tracking (MTT) with evoked potentials (EPs) to study neurophysiological activity related to processing of single- and double-pulse electronociceptive stimuli. Results from pain-free subjects measured at the Technical Medical Center of the University of Twente suggest that the MTT-EP method might be a promising step toward a diagnostic tool for chronic pain patients. A next step is exploration of its replicability in a hospital environment and its behavior in chronic pain patients.
We explored the replicability of the MTT-EP method in twenty pain-free subjects (Central Sensitization Inventory (CSI)-score 14.6 ± 8.8) at St. Antonius Hospital. Secondly, we measured nociceptive detection thresholds (NDTs) and EPs from seven failed back surgery syndrome (FBSS) patients (CSI-score 49.0 ± 15.5).
Preliminary results show values of NDTs and EPs, habituation and paired-pulse facilitation, which are in line with results from the University of Twente. Again, EPs are modulated by stimulus detection and amplitudes. Strikingly, we found higher NDTs in FBSS patients and EPs appeared modulated by stimulus detection, but not by amplitudes. Since similar phenomena in NDTs and EPs were observed during nociceptive stimulation in pain-free subjects at St. Antonius hospital, it can be concluded that results of MTT-EP method can be replicated. Secondly, the observed altered behavior of NDTs and EPs in FBSS patients showing signs of central sensitization allows further hypotheses regarding responsiveness to mechanisms underlying chronic pain.

P146

PRECLINICAL AND CLINICAL MEASUREMENTS OF DESCENDING CONTROLS: A TRANSLATIONAL STUDY

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Background and aims: For efficient back and forward translation between bench and bedside it is vital to know the predictive value of animal and human paradigms. Diffuse noxious inhibitory controls (DNIC) are measured in the rat and conditioned pain modulation (CPM), the supposed clinical paradigm of DNIC, is measured in humans. In the normal situation activation of functional DNIC or CPM by a distally-placed noxious conditioning stimulus inhibits pain responses. Researchers are still uncovering the precise nature of factors that influence the expression of both inhibitory controls. This study aimed to certify the translational worth of the two paradigms.
Methods: Using electrophysiology in naïve rats we recorded the responses of deep dorsal horn neurons to a range of innocuous and noxious von Frey filaments, or cuff pressure applied to the hind paw, in the presence of a conditioning stimulus (painful cuff pressure on the contralateral leg). In healthy human volunteers, we repeated the cuff algometry procedure in a CPM test-retest study.
Results: We demonstrate that cuff algometry induces significant inhibition of neuronal responses in the rat which correlates with the results obtained in healthy human volunteers; functional CPM or DNIC expression is evident using cuff algometry with a fixed cuff-pressure conditioning stimulus.

Conclusions: Cuff algometry, used to activate functional CPM/DNIC, is a valid tool when considering translational output between rat and human. It is crucial to link preclinical research data with clinical findings such that new therapeutic targets can be revealed. This way prescribed analgesic potential can be optimised.

P147

EVOKE COMPOUND ACTION POTENTIAL (ECAP) RECORDINGS PROVIDE INSIGHT INTO THE VARIABILITY OF SPINAL CORD (SC) ACTIVATION DURING SPINAL CORD STIMULATION (SCS)

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[1]St. Antonius Hospital, Nieuwegein, Netherlands, [2]Cleveland Clinic, Cleveland, United States, [3]Neurosurgical Associates of Lancaster, Lancaster, United States, [4]Rijnstate Hospital, Velp, Netherlands

Background and aims: The Evoke Compound Action Potential (ECAP) is the measured sum of action potentials from multiple nerve fibers, elicited by stimulation of the spinal cord (SC). Normal movement and physiological activity, with fixed-output stimulation of the SC, lead to inconsistent fiber activation and, thus, variable inhibition of pain processing pathways. ECAPs, a measure of SC activation, can be utilized to control this variability during SC stimulation (SCS). Results of a multicenter, prospective, randomized, double-blinded study comparing closed-loop SCS (CL-SCS) with fixed-output, open-loop SCS (OL-SCS) show differences in SC activation and clinical outcomes (clinicaltrials.gov #NCT02924129).
Methods: 134 subjects with chronic back and leg pain were enrolled, with the primary composite endpoint as percentage of responders in overall pain without an increase in medications. ECAPs were recorded and used to characterize electrophysiological differences between CL-SCS and OL-SCS.
Results: At the primary endpoint, CL-SCS is superior to OL-SCS in overall pain responders (Figure 1). Additionally, the CL-SCS group clearly showed higher activation levels during daily-use (Figure 2) and less variability during physiological changes and movement (Figure 3). The variability in perceived changes in intensity was also significantly different between the cohorts (Figure 4).
Conclusions: Subjects with CL-SCS show more-consistent SC activation and sustained clinical outcomes, with minimal changes in sensation. Improved outcomes when utilizing detection and compensation for physiological changes illustrate the importance of closed-loop SCS. This may lead to future developments in activity/physiological monitoring, furthering understanding and improving long-term outcomes.

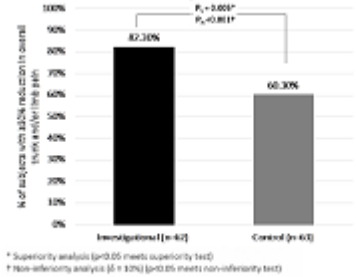

Fig 1. Primary outcome from Evoke Study demonstrating CL-SCS met superiority endpoint over OL-SCS.

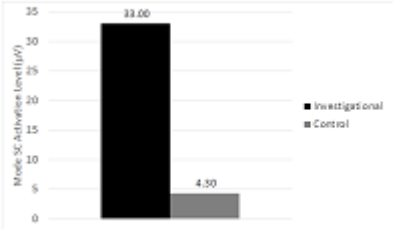

Fig 3. Activation levels of CL-SCS versus OL-SCS.

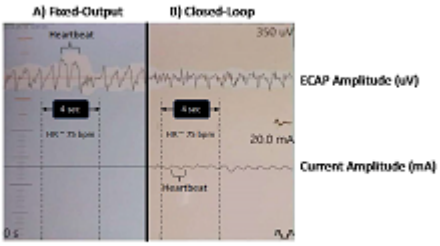

Fig 2. Heartbeat detected in ECAP amplitude changes (activation) in OL-SCS (a) versus CL-SCS (b).

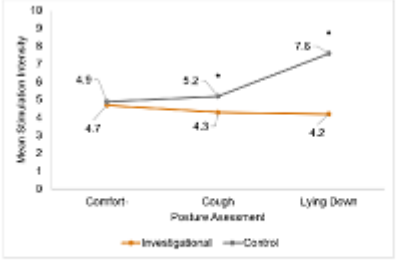

Fig 4. Perceived stimulation intensity changes across postures. CL-SCS (investigational) is stable.

[Figures 1-4]

P148

ASSESSING CHRONIC PAIN HEALTH LITERACY: A SCOPING REVIEW OF PAIN-SPECIFIC INSTRUMENTS

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Background and aims: Successful management of chronic pain includes patients' active participation, and their adequate health literacy is an important prerequisite. Health literacy can be defined as the ability to obtain, process, and understand health information (i.e. to attain knowledge), and to critically evaluate it to make better health decisions. Health literacy is measured using various generic and condition-specific instruments. The aim was to conduct a scoping review of studies that have included adult patients with chronic pain and to explore what pain-specific instruments were used to assess their chronic pain health literacy.
Methods: After establishing clear inclusion and exclusion criteria, eight electronic databases were searched for relevant studies. Of the 56 identified studies, two were included for data abstraction.
Results: Each study used a different pain instrument that assessed chronic pain health literacy; both focused on knowledge concerning chronic pain. One instrument, the Low Back Pain Knowledge Questionnaire, contains 12 multiple-choice questions concerning symptoms, causes, and the management of low back pain. The second instrument is a true/false test that addresses knowledge concerning six chronic conditions with a 4-item subscale on chronic pain and that addresses prevention, warning signs, diagnostics, and management.
Conclusions: There is a paucity of pain-specific instruments that assess chronic pain health literacy. Furthermore, they focus on only a narrow aspect of health literacy: knowledge. Such instruments do not measure patients' ability to critically evaluate health information that would guide their decisions concerning the management of their pain. Further research in this area is recommended.

CLINICAL DIAGNOSTICS FOR THE ASSESSMENT OF PAIN

P149

EVOKED COMPOUND ACTION POTENTIAL RECORDING TO FURTHER UNDERSTAND EFFECT OF TITRATING MEDICATION WITH SPINAL CORD STIMULATION - CASE STUDY

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Background and Aims: Evoked compound action potential (ECAP) recording during spinal cord stimulation (SCS), to measure neural recruitment (Aβ mechanoreceptor fibers) and correlation of ECAP amplitude with paresthesia coverage, has been reported.[1] A new SCS system, with ECAP recording, can measure patients' therapeutic window (TW) for SCS.[2] Maintaining ECAP amplitude within the TW could improve efficacy with fewer side-effects.[3,4] We present data from a patient undergoing SCS for chronic pain, while reducing medication.
Methods: Data collection occurred during set medication adjustments (Table), encompassing ECAPs (including conduction velocities), TW (threshold, comfort, maximum), and strength-duration curves (chronaxie, rheobase).
Results: As gabapentin and oxycodone dose decreased, so did TW size. The patient's ECAP amplitudes decreased without gabapentin and decreased further without oxycodone; stimulation amplitude required appeared independent of medication dose. New data, 7 months later, remain consistent (Figure). No observable correlation with medication dose existed between conduction velocity or chronaxie and rheobase.
Conclusion: Data correlate with previous work showing ECAP amplitude decreased with pregabalin dose

reduction.[5] Once off medication, ECAP amplitude may need maintaining within a smaller TW. Closed-loop SCS continuously measures ECAP amplitude, maintaining it within the TW. ECAPs may facilitate titration and optimized dosing of anticonvulsants and opioids. No correlation between stimulation amplitude and medication dose indicates measuring neural recruitment (eg, ECAP) is necessary to monitor effects. Data imply stimulation duration and/or concomitant medication could affect SCS outcomes. If reproducible (research ongoing), this could impact understanding of SCS mechanisms of action.

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2. Russo, Marc, Michael J. Cousins, Charles Brooker, Nathan Taylor, Tillman Boesel, Richard Sullivan, Lawrence Poree, Nastaran Hesam Shariati, Erin Hanson, and John Parker. "Effective Relief of Pain and Associated Symptoms With Closed-Loop Spinal Cord Stimulation System: Preliminary Results of the Avalon Study." *Neuromodulation: Technology at the Neural Interface* 21, no. 1 (January 2018): 38–47. https://doi.org/10.1111/ner.12684.
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Table: The medication dose status, including baseline, and dates data were collected

Evoke Subject Date	Medication Status. At Baseline: Gabapentin 600 mg/day, Oxycodone 30 mg 1x/day	Neurophysiology Collection
27 Feb 2018 (3 Month Visit)	Gabapentin **600 mg**/day Oxycodone **30 mg** 1x/day	27 Feb
28 Feb – 09 Mar 2018	**Off** Gabapentin Oxycodone **30 mg** 1x/day	02 Mar 09 Mar
10 Mar – 16 Mar	Gabapentin **600 mg**/day Oxycodone **30 mg** 1x/day	16 Mar
17 Mar – 28 Mar	**Off** Gabapentin Oxycodone **30 mg** 1x/day	28 Mar
29 Mar – 04 Apr	**Off** Gabapentin Oxycodone **20 mg** (10 mg 2x/day)	04 Apr
05 Apr – 11 Apr	**Off** Gabapentin Oxycodone **10 mg** 1x/day	Not captured
12 Apr – Present	**Off** Gabapentin **Off** Oxycodone	20 Apr 04 May 11 Dec

Note: there were no other changes to medication over this time period. All data were collected with the patient sitting, at rest.

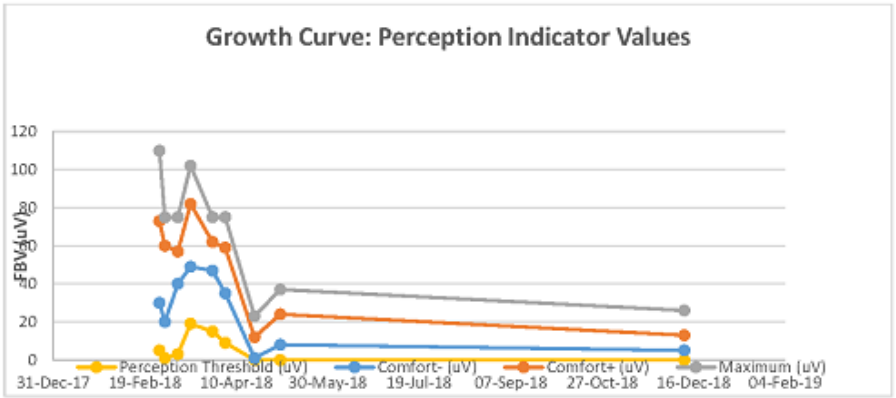

Figure: Activation levels for full range of therapeutic window collected while medications reduced.

[Refs_Table_Figure]

P150

MULTIDISCIPLINARY STUDY PROTOCOL FOR FIBROMYALGIA DIAGNOSIS: CIRCULATING LYMPHOCYTES OPIOID RECEPTORS AS INNOVATIVE BIOMARKERS

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Background and aims: Fibromyalgia (FM) is a severe female chronic pain syndromes. FM pathogenesis is not clear yet but it seems to be characterized by the combination of familiar, environmental, psychological and physical factors. Considering pain as the main symptom, recent studies underline a correlation between immune, nervous and opioid systems because of the presence of opioid receptors on the surface of circulating lymphocytes.
Here we show a diagnostic trial, by proposing lymphocytes opioid receptors as FM markers. Biological data were correlated with psychological and anthropological analysis to define new rehabilitation strategy.
Methods: FM patients and healthy people, as control group, were enrolled. Blood samples were done to apply molecular analysis. Lymphocytes opioid receptors immunophenotyping, genes and proteins expression and functional analysis were run. All the patients were subjected to psychological and anthropological tests. The collected data were correlated with the biological ones.
Results: Our preliminary data have shown a modulation of μ opioid receptor (MOR) in FM patients. In particular we found MOR over-expression on circulating B-lymphocytes (LB) surface in contrast with the control group. Considering the % of MOR on LB surface, we found two specific FM patients subgroups. Psychological and anthropological analysis will help to understand the meaning of these two FM patients groups. Functional analysis of MOR are still running.
Conclusion: The combined results will be pivotal to consider MOR receptor modification as FM marker, easy to check with a simple blood sample.
Acknowledgements:
ISAL Foundation and Nando and Elsa Peretti Foundation, PON03PE_00078_2, PON03PE_00078_1/F1, PON03PE_00078_2/F1

P151

RISK FACTORS PREDICTION OF PAIN TO PREVENTION OF OXALIPLATIN-INDUCED PAINFUL NEUROPATHY: AN EXPLORATORY STUDY

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Background and aim: Patients with colorectal cancer (CRC) receiving oxaliplatin (OXA) develop acute and chronic painful oxaliplatin-induced peripheral neuropathy (OXAIPN) at a high proportion. Acute and chronic OXA-related neuropathies have different pathophysiological bases. The aim of this study was find variables capable to predict the occurrence of pain after 12 months of chemo start using baseline clinical and QST data.
Methods: Pain-free, chemotherapy-naïve CRC patients receiving at least one cycle (eg, 2 months) of modified-FLOX [5-FU(500 mg/m2)+leucovorin(20 mg/m2)/week for] 6 weeks+oxaliplatin(85 mg/m2) at weeks 1-3-5 every 8 weeks] participating in a negative trial to prevent OXAIPN1 were included. Clinical assessments and QST were performed at baseline and the occurrence of OXAINP-related neuropathic pain was assessed after follow-up (5-12 months, IASP criteria).
Results: After multiple regression analyses, we found that warm detection threshold increases at baseline (each increase of 1oC of WDT increases the odds of pain in 60.2%) and female sex (increase the odds of pain by 3.18 compared to male sex) predicted pain at longterm. The area under the curve of the model with these two variables was 73,9%.
Conclusion: This study may help select patients at higher risk to developing long-term neuropathic pain after oxaliplatin use and propose tailed prophylactic strategies for these patients

INSTRUMENTS FOR THE ASSESSMENT OF PAIN

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MTBI AND WHIPLASH DISABILITY VARIANCE 6- MONTHS POST- MOTOR VEHICLE COLLISION EXPLAINED BY DIFFERENT FACTORS

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[1]Technion Faculty of Medicine, Haifa, Israel, [2]Rambam Health Care Campus, Haifa, Israel, [3]University of Haifa, Haifa, Israel

Background and aims: Collision-related physical injuries are associated with negative physical and psychological sequelae which may result in long-term functional impairment and disability.
Study aim- to determine which psychological, psychophysical and clinical pain factors can explain head and neck disability variance at 6 months post-injury.
Methods: 53 mTBI post-MVC participants, with neck pain, participated in follow-up visit at 6m (age range 19-64, mean±SD 37 ±12, 24F).
Head/neck pain, painful body areas; static and dynamic QST measures, psychological and disability-related questionnaires (NDI, Rivermead Post Concussion, PTSD) amassed.
Initial correlations performed between mean pain scores and disability questionnaires. Correlation analysis also performed between disability measures and clinical, psychophysical and pain-related psychological factors.
Initial regressions performed separately for each group of factors (clinical, psychophysical, psychological) and disability measure. Significant factors added to final regression model per disability measure.
Results: Numerous significant correlations found with disability measures, e.g. number of painful body areas ($p < .001$) and stress ($p < .001$).
Final Regression Analysis found NDI variance ($r = .87$, $p < .001$) explained by neck pain (ß=.26, p=.035) and painful body areas (ß=.47, $p < .001$); Rivermead Head ($r = .76$, $p < .001$) by head pain (ß=.26, p=.033) and PTSD (ß=.34, p=.005); Rivermead General ($r = .80$, $p < .001$) by painful body areas (ß=.27, p=.018) and PTSD (ß=.37, p=.006).
Conclusion: Post-whiplash (somatic) component of collision disability explained only by clinical factors, while post-mTBI component explained by both clinical and post-traumatic factors. Additionally, whole body pain strongly contributes to both forms of disability.
Acknowledgment: Supported by US Department of Defense, Health Affairs Office, No.W81XWH-15-1-0603

P153

BELIEFS OF WEATHER INFLUENCE AND CHRONIC PAIN: A PILOT STUDY WITH AN APP WITH GEOPOSITIONING TECHNOLOGY

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Background and aims: The extent to which weather influences pain symptoms has created great interest over the past decades. Yet,results in this regard are still inconclusive (Macfarlane et al., 2010; Bossema et al.,2013; De Blecourt et al., 1993; Fors& Sexton, 2002; Smedslund et al., 2013; DelirHaghighi et al., 2017), arguably due to methodological shortcomings (i.e., cross-sectional and non-ecological research). Additionally, Redelmeier&Tversky (1996) suggested that this widespread belief that weather influences pain is partly explained by people´s tendency to perceive non-existing patterns of associations between variables. The aim of this pilot study is to investigate the influence of weather on Fibromyalgia using an ecological momentary approach. The individuals' beliefs about the

relationship between weather and pain will be calculated and used for discussion.
Method: The “Emotional Monitor”, which includes geopositioning technology, was used to monitor pain levels, beliefs, and weather outcomes(temperature, pressure, and humidity) in real time. Participants were 13 fibromyalgia patients and 12 control individuals, who used the app daily during 6 weeks.
Results: The correlation between pain and weather outcomes was non-significant in both groups. However, the belief that pain was influenced by weather was high for both groups.
Conclusions: The findings confirm Redelmeier conclusions indicating strong beliefs about the relationship between weather and pain. Despite the extent to which these beliefs are associated with poor functioning (i.e., avoidance of activity when the weather is poor) was not investigated here, we suggest that the modification of such beliefs should be addressed in clinical practice.

P154

HOW WILL TECHNOLOGY CHANGE ASSESSMENT AND MONITORING OF CHRONIC PAIN? THE CASE OF DOLORTIC, THE PATIENT APP AND THE PROFESSIONAL'S PLATFORM

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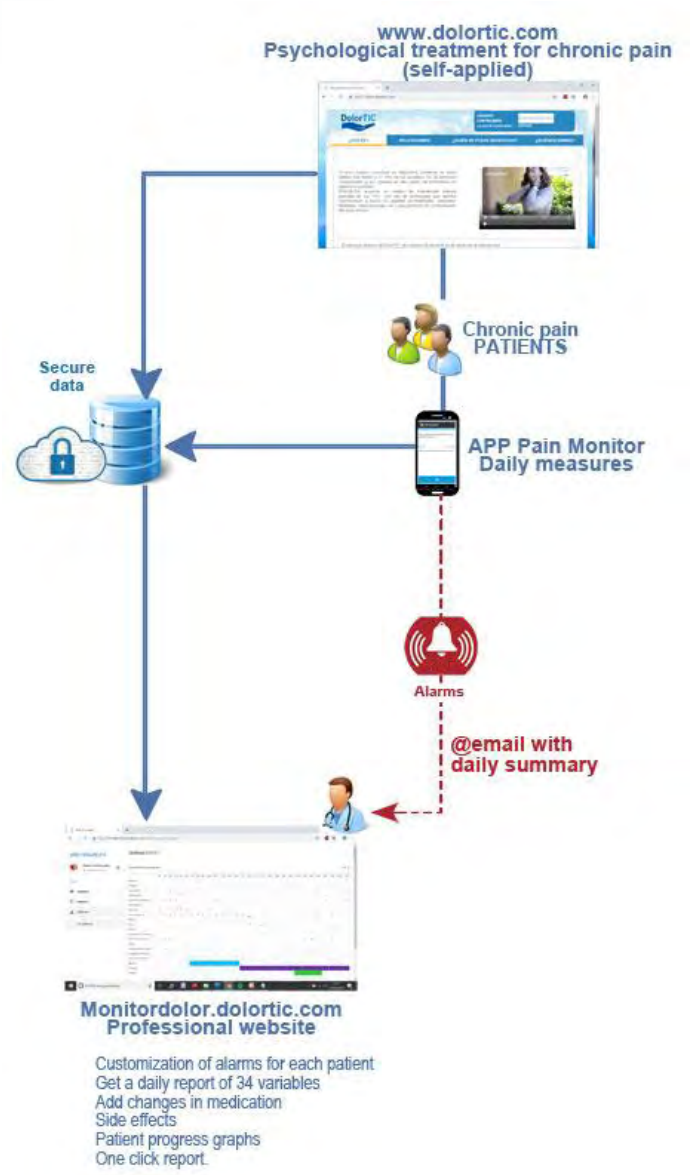
Background and aims: Technologies are changing the world we know, including the measurement and diagnose in pain settings (Jiang et al., 2017). The new data collection methods, such as sensors or ecological momentary assessment, offer a new opportunity to better understand the complexity of pain by means of complex clinical and experimental data analysis (Lötscha&Ultsch, 2018). The aim of this work is to present DOLORTIC, an application ecosystem that includes 3 technologies designed for chronic pain.
Methods: The ecosystem is composed of an APP (Pain Monitor) that evaluates pain levels and another 34 pain-related variables daily. The professional has a websitewhere he/she can customize different alarms (e.g. in presence of secondary effects or high level of pain during long time) and check the patients' progress. Finally, a web platform for self-applied psychological treatment is available (See figure “dolorTIC ecosystem).
Results: This work presents, for the first time, a case study with an integrated ecosystem for telemonitoring in chronic pain using technology.
Conclusions: The results of this case study showed how alarms and different methods of data visualisation can help practitioners to improve the management of pain patients.



[DOLORTIC APPLICATIONS ECOSYSTEM]

P155

THE INFLUENCE OF FATIGUE ON THE NOCICEPTIVE FLEXION REFLEX: A RANDOMIZED CROSS-OVER STUDY

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Background and aims: The nociceptive flexion reflex (NFR) is a withdrawal reflex occurring in response to noxious stimuli. The NFR is considered to be an objective physiological correlate of spinal nociception. Although it is well documented that the NFR is subject to powerful modulation of several modifiable and non-modifiable factors, the effects of experimentally induced fatigue on the NFR have not yet been examined. Hence, this study aimed to characterize fatigue-related changes in spinal nociception in healthy adults.
Methods: Fifty-eight healthy people their NFR threshold was measured prior and following a rest period (control condition) and two fatigue inducing tasks performed in randomized order. The NFR was elicited by transcutaneous electrical stimulation of the sural nerve and objectified by electromyographic recordings from the biceps femoris muscle contraction. The stimulus intensity at which the NFR was elicited was used as outcome measure. An isokinetic fatiguing protocol was used as the physical task aimed at inducing muscular fatigue of the hamstrings. The cognitive fatiguing task intended to provoke mental fatigue existed out of a modified incongruent Stroop-word task. A linear mixed model analysis was used to assess the influence of fatigue on the NFR.
Results: Experimentally induced fatigue led to an inhibition in NFR thresholds. Post-hoc analysis revealed that this inhibition was similar in both fatiguing tasks.
Conclusions: Spinal nociception is modulated by muscular and mental fatigue in healthy adults. These results highlight the importance of considering fatigue levels when evaluating nociceptive processing given the modulation of spinal nociception by fatigue.

P156

A SINGLE-DOSE, PLACEBO-CONTROLLED, CROSS-OVER STUDY TO EVALUATE LPS-INDUCED HYPERALGESIA IN HEALTHY VOLUNTEERS

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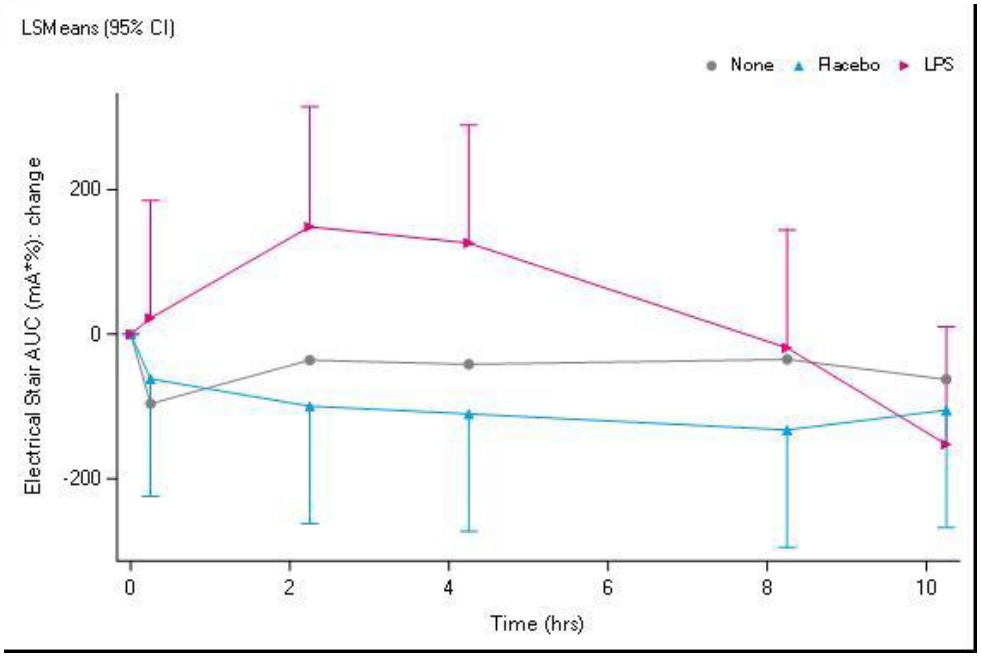
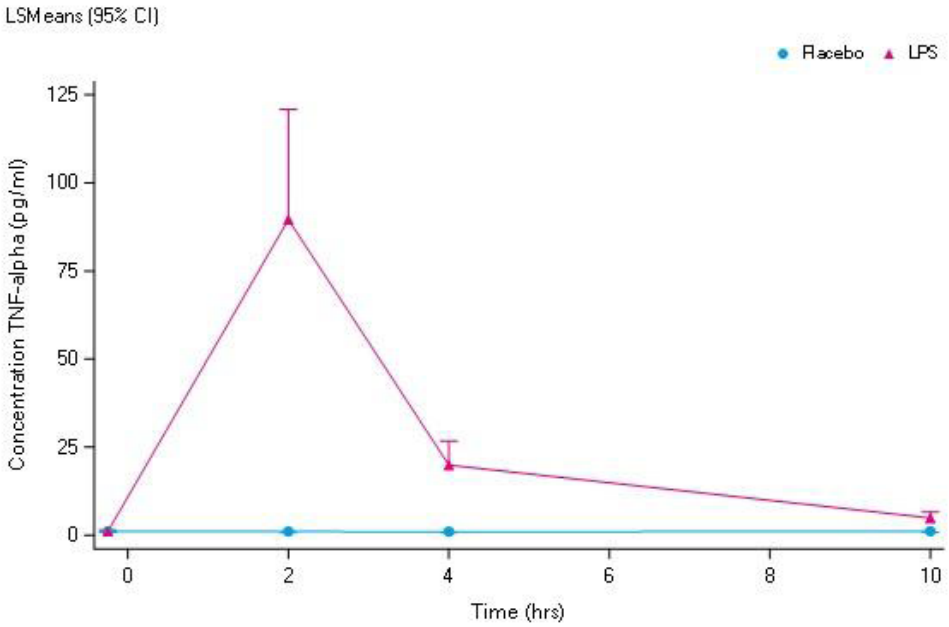
Background and aims: PainCart®, our comprehensive, validated, nociceptive test battery, is used in early-phase clinical studies investigating the analgesic effect of novel compounds. This study investigated whether intravenous administration of lipopolysaccharide (LPS), when combined with evoked pain tests, is suitable as a pharmacological model to study treatments for inflammatory pain.
Methods: This was a placebo-controlled, randomized, cross-over study in 24 healthy males. Twelve subjects were administered a bolus of 1ng/kg LPS intravenously, and twelve subjects 2ng/kg LPS. Before the days of placebo/LPS administration, subjects completed a full study day without any administration, but with identical pain threshold testing. PainCart® (Electrical burst and -stair, Heat, Pressure and Cold pressor test) and blood sampling were performed pre-dose and up to 10hr post-dose. Data were analysed with a repeated measures ANOVA.
Results: Mean age was 30.8 ±9.5 years. Overall, no significant effect on pain detection- or tolerance thresholds (PDT, PTT) or Area Under the Curve (AUC) was found in any of the PainCart® modalities. Results suggest that LPS solely has a subtle hyperalgesic effect around 2-4hrs post-LPS administration in selected PainCart® modalities (Figure 1), corresponding with the cytokine and stress hormone concentration peaks (e.g. Tumor Necrosis Factor alpha (TNF-α): Figure 2).
Conclusions: This study found that the human endotoxemia model is not suitable for studying inflammatory hyperalgesia in healthy volunteers.



[Figure 1: Electrical Stair test results: AUC after 2ng/kg LPS administration]



[Figure 2: TNF-α concentration after 2ng/kg LPS administration]

P157

IS THE HOSPITAL ANXIETY AND DEPRESSION SCALE A GOOD MEASURE OF EMOTIONAL DISTRESS IN PATIENTS WITH CHRONIC PAIN?

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Emotional distress plays such a central role in the lives of chronic pain patients that it was recently added to IASP's definition of chronic pain. One of the most frequently used instruments for measuring domains related to emotional distress is the Hospital Anxiety and Depression Scale (HADS). However, a questionnaire's capability to capture a trait of interest is only as good as its measurement properties, which, in turn, are context-specific, and the chronic pain population has not yet been systematically addressed. The issue is further complicated by the existence of several competing theories that split the factor structure of HADS into variations of one to four emotional distress domains. As a response, we analyzed HADS properties based on data from more than 30,000 patients within the item response theory-framework. Cross-validation was used to guide the selection of the factor structure with the best measurement properties, while the internal consistency was computed as proxy of HADS precision. Of nine evaluated factor structures, a bifactor configuration differentiated itself by its robust parameter estimates and particularly good fit to the data. However, instead of the originally defined domains of anxiety and depression, it showed that HADS was a strong measure of overall emotional distress, with good internal consistency. Our results provide evidence for that HADS is a valid and precise measure of emotional distress in chronic pain patients. This information is useful as a questionnaire's properties determines its discriminating ability in patient status assessment.

P158

PAIN MEASUREMENT AND ANALYSIS : A BIOMETRIC APPROACH TO THE CHRONICIZATION OF PAIN

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Context and objectives: The objectification of pain measurement is an important issue for monitoring patients with chronic pain. But it is complex because chronic pain is the pain of illness that uses first-rate systems that depend on the CNS and that integrates personal components related to the individual in himself. It is something more complex that goes beyond the mere sensory processing of the nociceptive message from a biological and biochemical point of view.
Facial recognition has promising results in identifying and measuring the intensity of acute pain induced outside physiological and psychological adaptations that exist in the process of chronicizing pain (bilateral asymmetry, key-time intervals, frequency of micro-expressions…).
This study analyzes non-invasive markers specific to chronic pain. The challenge is to see the differences in the expression of pain and the variations according to the biological variability (sex, age…). Understanding these differences allows a more objective approach to measuring pain.
Methodology: The protocol is based on behavioral and biometrics data (morpho-geometry of maxillofacial structure and body posture) to obtain subconscious responses. These data will be mixed with anthropological interviews on the pain experience (sensory evaluation) to obtain self-reported conscious responses.
The study is realised in conjunction with clinical tests on endometriosis and neuropathy which include 100-130 patients for each pathology. Cohorts of healthy patients (pain induced by electrode / cold bath) will serve as a reference to understand the phenomena of adaptation and expression related to the chronicization of pain.
Results and conclusions: Study in progress

P159

COMPARISON OF ELECTRODES DESIGNED FOR PREFERENTIAL ACTIVATION OF CUTANEOUS NOCICEPTORS VIA EXPERIMENTAL ASSESSMENTS AND COMPUTATIONAL MODELING

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Background and aims: Conventional surface stimulation lacks nerve fiber specificity. To overcome this limitation and to enable preferential activation of nociceptive fibers, special electrodes, have been developed. The performance of these electrodes has been highly debated, but not directly compared. Consequently, the present study aims at comparing the electrical field generated in the tissue and the resulting activation of cutaneous nerve fibers.
Methods: The strength-duration relationship was evaluated for five electrodes: intra-epidermal, planar array, pin, planar concentric, and a conventional patch electrode. Reaction times were recorded during determination of perception thresholds for rectangular pulses of 0.1, 0.5, 1, 10, 25, and 50ms durations. A finite element model of the skin and two nerve fiber models (Aδ- and Aβ-fiber) were developed to compare the generated electrical fields and resulting nerve fiber activity.
Results: Significantly shorter reaction times were observed for the patch electrode ($p < 0.05$), while the longest reaction times were observed for the intra-epidermal electrode ($p < 0.05$). The model likewise predicted the intra-epidermal electrode to be more preferential for thin fibers, as this electrode generated the largest difference in current density between the epidermis and dermis.
Conclusions: The high current density generated in the epidermis and the longer reaction times for the specially designed electrodes may suggest they target slower conducting Aδ-fibers. The intra-epidermal electrode appears to be more preferential for thin fibers, compared to the pin and planar concentric electrode.
Acknowledgements: Funded by Center for Neuroplasticity and Pain (CNAP). CNAP is supported by the Danish National Research Foundation (DNRF121).

P160

VALIDITY AND RELIABILITY OF THE EUROPEAN PORTUGUESE VERSION OF THE FUNCTIONAL DISABILITY INVENTORY

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Background and aims: The prevalence of chronic musculoskeletal pain in adolescents is high and functional disability has been reported in a large percentage of these adolescents. The aims of this study were to translate the Functional Disability Index (FDI) to European Portuguese language and assess its validity and reliability in adolescents with chronic musculoskeletal pain.
Methods: International guidelines guided the process of translation and cultural adaptation. Following 1730 adolescents from 4 high schools, aged between 13 and 18 years, were asked to complete an online questionnaire with the following instruments: the final version FDI, the numeric pain rating scale, the Depression, Anxiety and Stress Scale for Children, the Pain Catastrophizing Scale, the Tampa Scale of Kinesiophobia and the Basic Scale on Insomnia Complaints and Quality of Sleep. The same questionnaire was applied 4-weeks later to a subsample of adolescents (n=63). Structural validity and hypothesis testing and internal consistency were assessed for the whole sample and reliability and measurement error were assessed for the subsample.
Results: The final version of FDI in European Portuguese showed good internal consistency ($\alpha = 0.82$ to 0.88) and test-retest reliability (ICC =0.86; 95%CI=0.77;0.92); the standard error of measurement was 5.81; the minimal detectable difference was 16.10. Moderate to strong correlations were obtained between the FDI and the variables mentioned above. FDI was able to distinguish between adolescents with and without chronic pain and factor analysis

suggested a two-factor solution.
Conclusions: The European Portuguese FDI is valid and reliable for measuring functional disability in adolescents with chronic pain.

P161

RELEVANCE OF VAPAIN CORE OUTCOME DOMAINS WERE CONFIRMED BY PATIENTS - RESULTS OF FOCUS GROUP DISCUSSIONS

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Background and aims: The international VAPAIN Initiative aims to develop a Core Outcome Set (COS) for Interdisciplinary Multimodal Pain Therapy (IMPT) by following the existing recommendations as described by COMET. The VAPAIN panel (5 patient representatives, physicians, psychologists, physical therapists and methodologists), consented on eight Core Outcome Domains. Given the small number of patient representatives in the panel, VAPAIN conducted focus groups to confirm the consented Outcome Domains by patients undergoing IMPT.
Method: A total of 10 focus groups (FG) were conducted with German patients undergoing IMPT (N=67) following an a priori approved guideline. During the focus groups, the participants were asked to indicate relevant outcomes that are necessary to assess treatment effectiveness of IMPT. In a second step, the domains consented by the VAPIN panel were introduced to the participants and they classified them into their outcome nominations (visualized at a presentation wall). Finally each participant had 8 points to weight the relevance of the collected outcomes.
Results: There are substantial overlaps between the domains indicated by the panel and the weighted nominations of the patients. Each outcome domain of the Vapain panel was confirmed as relevant.
Conclusion: The relevance of the VAPAIN domains is given for patients undergoing IMPT and indicates content validity of the VAPAIN Core Outcome Domain Set, even though the number of patient representatives within the VAPAIN panel was small compared to other outcome initiatives. The selection of relevant outcome domains depends on expertise of panel and not only on the number of panel members.

P162

DOES CONDITIONED PAIN MODULATION (CPM) CORRELATE WITH CLINICAL PAIN? A SYSTEMATIC REVIEW OF THE LITERATURE

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Background and aims. Patients with chronic pain consistently show deficits in Conditioned pain modulation (CPM) relative to healthy controls. Nevertheless, it is unclear to what extent CPM assessed experimentally is correlated with clinical manifestations of pain.
Methods: To clarify this, we performed a systematic review of papers studying the correlation between CPM responses and 1) pain intensity; 2) pain duration; 3) disability due to pain and 4) number of painful areas, in patients with different chronic pain conditions.
Results: We included 32 studies that altogether encompassed data from 1958 patients and provided 62 correlations. Although some studies reported significant association between CPM reduction and worse clinical pain symptoms, the majority of the results (69%) reported non-significant correlations between CPM efficiency and clinical pain. The

modality of stimulation (thermal or non thermal), the type of pain (idiopathic, nociceptive or neuropathic), and the stimulation site (painful or non-painful areas) are critical variables that influenced the pattern of results.
Conclusions: Given that most of the studies were conducted with highly heterogeneous methodologies (both in terms of CPM and clinical pain assessment) and unclear risk of bias, the findings highlight the need of future studies using standardized measures of clinical and experimental pain before considering CPM as a valid biomarker of pain. We discuss some guidelines to overcome the constraints in this promising line of research.

MEASUREMENT OF PSYCHOSOCIAL ASPECTS OF PAIN

P163

FEAR OF MOVEMENT AND PAIN CATASTROPHIZING AT BASELINE PREDICT TREATMENT OUTCOME ONE YEAR AFTER A PAIN MANAGEMENT PROFRAM

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Background and aims: Chronic non-malignant pain is common and difficult to treat. The aim of this study was to investigate whether fear of movement and pain catastrophizing at baseline predicted changes in pain intensity and disability one year after participation in an outpatient group-based pain management program.
Methods: Self-reported questionnaires were collected before and one year after a group-based pain management program at a Multidisciplinary Pain Center in Denmark. Logistic regression models were used to investigate if a low fear of movement score (< 38) based on the Tampa Scale of Kinesiophobia (TSK) and a low pain catastrophizing score (< 30) based on the Pain Catastrophizing Scale (PCS) at baseline predicted clinically relevant reductions (>30%) in pain intensity (Numeric Rating Scale, NRS) and disability (Pain Disability Index. PDI)
Results: In total 117 chronic pain patients completed the questionnaires at baseline and one year after the intervention. The odds of having a clinically relevant reduction in disability were four times as high in patients who both had a low TSK score and a low PCS score compared with patients with high TSK and PCS scores (OR:3.91(95% CI:1.03-14.90)). A clinically relevant reduction in pain intensity was not predicted by baseline TSK and PCS scores. Moreover, a low score on either TSK or PCS did not predict clinically relevant changes in NRS and PDI.
Conclusions: Screening for fear of movement and pain catastrophizing may be relevant in order to assess which patients are likely to benefit from an outpatient group-based pain management program.

P164

PAIN INTERFERENCE TYPE AND LEVEL GUIDE THE ASSESSMENT PROCESS IN CHRONIC PAIN

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The assessment process of chronic pain patients may improve from knowing early on which patients are likely to have a less or more problematic condition. We assigned 320 patients entering tertiary pain treatment into four categories based on whether they scored low or high on activity and affective pain interference dimensions in the Brief Pain Inventory (BPI). To determine whether this categorization suggests issues that should be assessed further, the categories were compared on three domains: variables affecting physical well-being (body mass index, exercise, substance use), psychological resources (mood), and pain-specific psychological factors (pain anxiety, pain acceptance).
The results indicated that subjects who scored low on both interference dimensions compared similarly in overweight and exercise to the general population, had no depressive symptoms on average, and had the most favorable psychological reactions to pain relative to the other categories. In contrast, when interference was high on activity, more problems appeared in weight, diminished exercise, and avoidance behavior. With high affective interference, more depressive symptoms and cognitive pain anxiety emerged. Having high interference on both dimensions indicated accumulated risks for reduced physical well-being, mood problems, and most negative psychological reactions to pain.
We conclude that low interference on both dimensions may allow faster assessment, high interference on either dimension may call attention to distinct issues, and high interference on both dimensions highlights the need for a full multidisciplinary assessment.

P165

SELF-ASSESSMENT AND ATTITUDES TO SELF-CARE OF PATIENTS WITH CHRONIC BACK PAIN

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Background and aims: To evaluate self-assessment of chronic back pain (CBP) patients and self-reporting quality-of-life measures in relationship with suggestions of occupational, physical and psychological influences on pain origin, care and prognosis
Methods: During the cross-sectional study 67 patients (M/F - 26/41, mean age 53 y) with CBP were interviewed using Brief Pain Inventory (BPI) and Back Pain Attitudes Questionnaire (Back-PAQ).
Results: The average duration of CBP was 63 months with mean 2 exacerbations per month. The worst pain in last 24 hours and on average during last week were indicated as moderate - 5,78 (SD-2,40) and 4,86 (SD-1,89) by NRS although 89,6% of patients received medicines. 85,1% with CBP noticed difficult to enjoy life. The main cause why hurts the back was mentioned the occupation by 40,3% of respondents (13,4% did heavy physical job) and other 38,8% showed sedentary lifestyle and forced posture, but only 7,5% accepted role of psychological factors. However in 30% of CBP patients degenerative spine disorder was diagnosed, in 19% - disk disease, but muscle strains - only in 7%. Half of patients with CBP (53,8%) were afraid from exercises, especially vigorous (76,1%) and only 2 of all recognized physiotherapy as important relevant treatment.
Conclusions: The knowledge and education of patients about CBP are insufficient, and expectations and prognosis are pessimistic in high proportion. Multimodal approach for care of this biopsychosocial phenomenon - world's leading cause of disability, is not introduced in every day practice, especially physiotherapy is not recognized.

STRUCTURAL AND FUNCTIONAL IMAGING IN PAIN

P166

ASSESSING THE SPECIFICITY OF ALPHA FREQUENCY IN PREDICTING PAIN

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Background and aims: Research suggests electroencephalography (EEG) alpha oscillations show potential as a clinical biomarker for sensitivity to pain. In particular, researchers claimed the slowing of peak alpha frequency (PAF) could be an objective marker of pain intensity during prolonged nociceptive stimulation. However, there has been limited effort in assessing the robustness of this claim.
Methods: Here, [VE1] we recorded EEG on healthy volunteers during exposure to consecutive 5-minute sessions of painful hot-water immersion, innocuous warm-water immersion and an aversive, non-painful auditory stimulus, matched by unpleasantness to the painful condition. Participants rated stimulus unpleasantness throughout each condition. We also asked participants sit still with eyes-closed and eyes-open right before and after the three experimental conditions.
Results: While confirming the already reported negative relationship between PAF and pain we also observed a positive relationship between PAF and the unpleasantness reported during prolonged auditory stimulation.
Conclusions: Our findings demonstrate that while alpha frequency is significantly associated with both painful and non-painful aversive experiences, the nature of the relationship differs between painful and pain-free conditions, thus supporting the claim that velocity of alpha oscillations may provide a sensitive index of prolonged pain.

P167

PRIOR COGNITIVE INFORMATION DIFFERENTIALLY MODULATES THE INSULA ACTIVITIES DURING PAIN AND TACTILE PROCESSING

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Background: Pain is a subjective unpleasant sensory and emotional experience. Several fMRI studies have reported that the sensorimotor cortex, insula and cingulate cortex are involved in pain processing. However, the specific pain activities in the brain have not been yet fully determined because the similar activations are induced by touch sensation.
Aims: We hypothesized that prior cognitive information differently modulates the brain activities in response to pain and tactile stimuli. To prove this hypothesis, a 306-ch magnetoencephalography (MEG) was used because it has high spatial and temporal resolution.
Methods: We recorded the MEG responses to pain and tactile stimuli in 20 healthy subjects while watching three cognitive movies (Needle penetration, Q-tip or Static to the left hand). A distributed source analysis was performed to obtain the source localization maps, focusing on SI, SII and insula as ROIs based on our previous study.
Results: The early activations (80-170 ms) in all ROIs were unchanged under cognitive information. However, the late activations (200-350 ms after the sensory stimuli) in the insula were differently modulated by pain and tactile stimuli. More specifically, the MEG responses to pain were not affected by three types of the movie patterns, while the MEG responses to tactile input were only modulated by the Needle movie.
Conclusions: The late activations in the insula may be associated with the cognitive information on pain.

P168

DIAGNOSTIC MUSCULOSKELETAL ULTRASOUND IN PHYSIOTHERAPY ON PATIENTS WITH SHOULDER PAIN

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Background: Diagnostics of shoulder pain is difficult as physical examination alone is not valid to differentiate between various disorders. Diagnostic musculoskeletal ultrasound (DMUS) is increasingly used by physiotherapists (PTs).
Purpose: To assess the agreement between radiologists and PTs. First, we assessed the agreement on traditional diagnostic labels (full thickness tear, partial thickness tear, subacromial bursitis and calcification) as the psychometric properties of DMUS when used by radiologists is good. Next, we assessed the agreement when a new stratification approach was used (based upon treatment related categories).
Methods: 1. A cohort study included patients with shoulder pain from physiotherapy. Patients that received DMUS visited a radiologist within one week. Agreement was assessed using Cohen's kappa statistics. Subgroup analysis was performed on education and experience.
2.A literature search was performed to assess which traditional diagnostic labels could be recoded into new treatment related categories(referral to secondary care, corticosteroid injections, physical therapy, watchful waiting). Next, kappa values were calculated for these categories between PTs and radiologists.
Results: 1. A total of 65 patients were enrolled and 13 PTs and 9 radiologists performed DMUS. The overall kappa of all four diagnostic categories was 0.36, indicating fair agreement. 2. We found a kappa of 0.60 to stratify patients into treatment related categories between the two professions.
Conclusion(s): Clinicians should be careful when using DMUS. Our results indicate that the agreement between radiologists and PTs is moderate to substantial when labelling is based on treatment effectiveness. DMUS might be facilitate PT treatment guidance.

COMPLEMENTARY MEDICINE

P169

MODIFIED BUYANG HUANWU DECOCTION FOR ANTI-INFLAMMATION

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Buyang Huanwu decoction (BHD) is a traditional Chinese and Korean herbal medicine prescription that has been widely used to treat various diseases including cerebral ischemia and neurological disorders. BHD is commonly used as a variable modified combination, however, the mechanism by which modified BHD (mBHD) produces anti-inflammatory effects has not been elucidated yet. The purpose of this study was to develop mBHD to diminish its potential side effects and to verify the anti-inflammatory effects.

A cytotoxicity assay for BHD was performed using the MTT assay. Following treatment with BHD, mBHD-1, and mBHD-2 in the presence of lipopolysaccharide (LPS), nitric oxide (NO) secretion was detected in cell supernatants using an NO detection kit. To verify the mechanism of mBHD, specific inhibitors of JNK (SP600125) and p38 (SB203580) were used for co-treatment with BHD, and then the changes in NO and nitric oxide synthase (iNOS) were measured.
Both mBHD-1 and mBHD-2 showed greater anti-inflammatory effects than BHD. Both mBHD-1 and mBHD-2 inhibited NO secretion and decreased the expression of IL-1β, IL-6, TNF-α, and iNOS. Treatment with a p38 inhibitor in mBHD-1 and mBHD-2-treated cells resulted in inhibition of NO and iNOS.
In conclusion, we provided the first experimental evidence that mBHD may be a more useful anti-inflammatory than BHD. High concentrations or long-term use of BHD may be harmful to inflammatory status. Therefore, the length of treatment and concentration should be considered depending on the targeted disease.

P170

A COMPARISON OF FIBROMYALGIA REGISTRY PATIENTS AND UNITED STATES RESIDENTS ON VITAMIN D AND ITS RELATION WITH SOCIO-DEMOGRAPHIC AND HEALTH VARIABLES

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Background and aims: This study compared vitamin D levels in individuals with fibromyalgia syndrome (FMS) enrolled in a patient registry to a national sample of United States adults. The study further examined associations between socio-demographic variables and vitamin D in both FMS and national samples, and associations of vitamin D with FMS-related health outcomes in individuals with FMS.
Methods: Data from a FMS patient registry and the National Health and Nutrition Examination Survey (NHANES) was used to address the study aims. Both samples contained vitamin D levels and socio-demographic data. The patient sample included measures of anxiety, depression, physical and mental health, fibromyalgia symptoms, fatigue, sleep problems, and cognitive problems. Average age of the patient and NHANES samples was 47 and 38, respectively. Patients were 91% female, and the NHANES sample was 51% female.
Results: Average vitamin D level for FMS patients was higher (37.46) than for the NHANES sample (25.85) ($F = 653.86$, $P < 001$, $\eta^2 = .07$). Socio-demographic variables were all correlated ($rs = -.06 - .31$, $Ps < .001$) with vitamin D in the NHANES sample, but only body mass index was inversely correlated ($r = -.09$, $P < .05$) with vitamin D in the FMS sample. In the patient sample vitamin D was not associated with FMS-related health outcomes (Betas -01 - .07, $Ps > .05$).
Conclusion: FMS patients show higher levels of vitamin D than individuals from the general United States population. Even so, vitamin D levels are not related to FMS-related health outcomes.

INTERVENTIONAL BLOCKADE THERAPIES

P171

MULTIDISCIPLINARY TEAM (MDT) SIMULATION IN REMOTE SITE PAIN THEATRES

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Background: Pain interventions are frequently performed in remote sites where there are inherent difficulties when providing resuscitation.(1) In St Helens' NHS Trust, UK, a need to improve safety was identified. To do this, the environment was tested with standardised MDT simulations to unearth latent errors in the system.(2) We also conducted a survey to ascertain the extent of this issue in Mersey Deanery, UK.
Methods: Three high fidelity simulations were run twice by the hospital simulation team in the radiology suite during morning lists between 2017-18. Three simulations were tested: anaphylaxis, local anaesthetic toxicity and cardiac arrest. A full MDT was present: consultant, operating department practitioner, healthcare assistant and radiographer. The environment was unadapted. Structured video-assisted debriefs were then conducted. The scale of the problem in Merseyside, was determined with a survey of the 8 other Merseyside hospitals.
Results: A number of key issues were identified: an absence of emergency drugs, a radiology table not suitable for immediate chest compressions and an inability to use the wall mounted oxygen port. This led to the institution of an equipment checklist, drugs bag, metal table support and freestanding oxygen cylinder. The survey of local departments highlighted 3/7 performed procedures in remote sites, 1/7 hospitals run simulation, 2/3 of those with remote sites do not. 6/7 of respondents thought that simulation would improve safety and all advocated a checklist.
Conclusions: We have found in-situ simulation particularly advantageous for testing systems, processes and uncovering latent errors and knowledge deficits in remote environments.

P172

USING PERCUTANEOUS ELECTRICAL NEUROSTIMULATION (PENS) TO TREAT REFRACTORY NEUROPATHIC PAIN POSTHERNIORRHAPHY

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Background and aims: Describing the efficacy of PENS in the control of neuropathic pain refractory to conventional treatment.
Methods: The presented case is a 37-year-old male patient with a medical history of right herniorrhaphy 2 years ago due to indirect inguinal hernia. Despite the surgical treatment, pharmacological therapy and infiltrations of local anesthetics and corticosteroids, he has been suffering pain in the herniated zone extended to the testicle since 3 years ago.
It has been decided to perform PENS. Percutaneously, a needle with electrodes was inserted in the painful area with a 2 cm depth or less, and it was connected to a stimulator that alternates electrical pulses of 2 and 100 Hz every 3 seconds, intensity of 0.5 V for a period of 20 minutes. Previously, a stimulation test was performed, creating a paresthesia in the usual pain area.
Results: A significant improvement of the pain was observed, with a VAS reduction of about 70% in 15 days, considering the therapy successful.
Conclusions: PENS therapy facilitates the release of different neuropeptides due to the combination of two frequencies of stimulation. It has been used successfully in the treatment of postherpetic neuralgia, trigeminal or occipital neuralgia, among others, with excellent results (Rossi et al., Pain Physician 2016; 19: E121-E128).
This technique is considered minimally invasive and safe, inducing analgesic effects. Therefore, its application is very promising.

P173

ULTRASOUND GUIDED INJECTION TECHNIQUE FOR TRIGGER FINGER AS A NON SURGICAL ALTERNATIVE

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Stenosing tenosynovitis with mechanical impingement of the flexor tendons at the A1 pulley is a common condition affecting the digits . According to the literature, there is an emerging number of cadaveric and clinical studies investigating the use of ultrasound in hand and wrist tendinopathies. It is a promising method that represents excellent results without major complications, so that it could be possibly be established as a first-line treatment in the trigger finger's disease.
This report aims to describe de ultrasound guides technique for the trigger finger injection.
Methods: USG trigger finger injection can be performed under dual approach, transverse and longitudinal with an in-plane or out of plane technique. Injection volume should not exceed 1 ml, and one could use steroids and local anesthetics, but also hyaluronic acid.

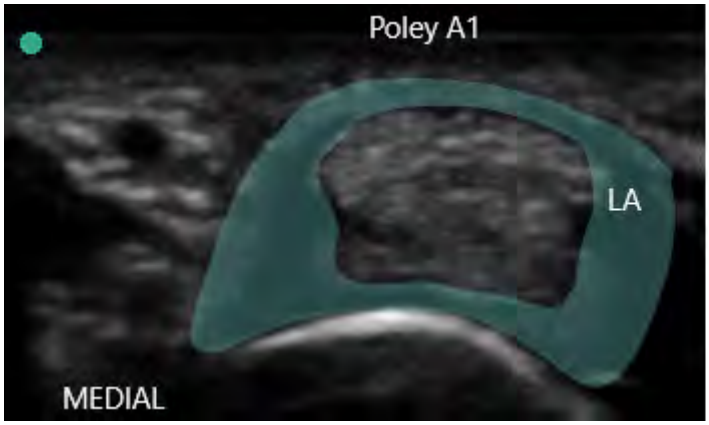

Figure 1. Trigger finger USG injection. transverse view. **LA**, local anestesthetic and steroid spread

[Figure 1.]

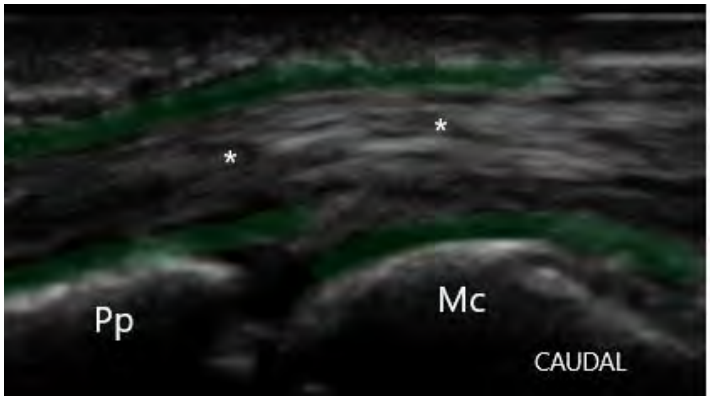

Figure 2. A1 pulley injection with methylprednisolone acetate under local anesthetic Longitudinal view. * Flexor digitorum tendons. **Pp**, Proximal phalanx; **Mc**, methacarpal. Green; injection spread.

[Figure 2.]

P174

RANDOMIZED CONTROL STUDY TO EVALUATE EFFECTIVENESS OF PECTORAL NERVE BLOCK FOR POST OPERATIVE ANALGESIA IN PATIENTS UNDERGOING MASTECTOMY

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Background and aims: To evaluate the efficacy of Pectoral Nerve Block for post-operative analgesia in breast surgery patients.
Methods: This single blinded, randomised controlled trial was conducted after obtaining approval from the institutional ethical committee (Reg. No. 1810) dated 01/02/2017, and CTRI registration CTRI/2017/04/008289. Sixty ASA grade I-II female patients undergoing unilateralmodified radical mastectomy under general anaesthesia, were recruited in two groups. PECS group (n= 29) was given ipsilateral Pectoral nerve block I & II while the CONTROL group (n=29) directly proceeded to surgery. Our primary outcomes were immediate post-operative pain scores at rest and movement Immediately after surgery and then 2 hourly till 6 hours and time to rescue analgesia. Secondary Outcomes were total intraoperative fentanyl consumption, postoperative pain scores at 12, 18 and 24 hours or at discharge whichever is earlier, post-operative nausea vomiting and complications, if any.
Results: The post-operative pain scores in two groups were comparable at 0, 4, 6, 12, 24 hours,and statistically significantly lower in Pecs group at 2 hours (p=0.052 rest, p=0.011 movement)and 18 hours (p=0.039 rest, p=0.029 movement). Only 9 patients in Pecs group ascompared to 22 patients in Control group required rescue analgesia (p=0.001), though the time to rescue analgesia was comparable (166.67 min vs 167.5 mins). Total intraoperative fentanyl consumption was reduced in Pecs group (p=0.009). The block did not affect post-operative nausea vomiting incidence and no complications were encountered.
Conclusions: Pectoral nerve block is a safe, easy to perform, less time consuming alternative regional anaesthesia technique with benefit of opioid sparing effect.

PAIN THERAPIES WALK 1

P175

2 YEARS FOLLOW-UP RESULTS OF COOLED VERSUS CONVENTIONAL RADIOFREQUENCY DENERVATION FON SACROILIAC JOINT PAIN: A RETROSPECTIVE EVALUATION

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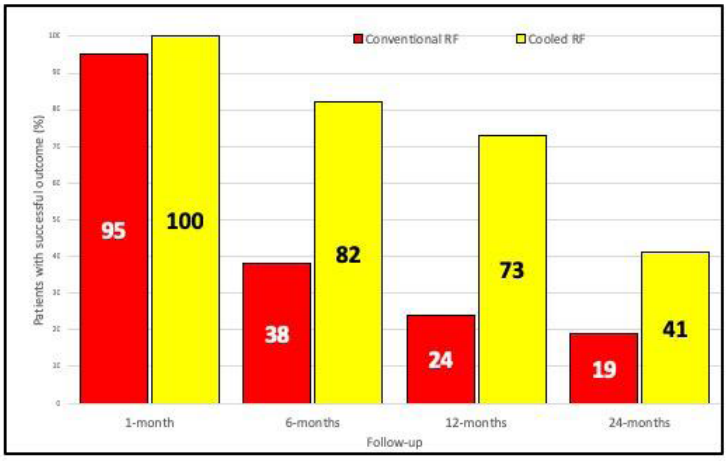
Background: Radiofrequency (RF) denervation of S1,S2,S3 and L5 dorsal Ramus has been showed to be effective in reducing pain from sacroiliac joint (SIJ).Cooled RF is a novel modality of RF which works at lower tip temperature creating bigger lesions compared with conventional RF.We compared a single probe conventional RF (CRF) with Cooled RF device for SIJ denervation.
Methods: Retrospective study including 43 consecutive patients:21 treated with CRF(Group A) and 22 with Cooled RF(Group B).
Follow-up at 1-6-12-24 months analyzing pain score (NRS) and Oswestry Disability Index. Patients had severe pain (mean basal NRS >7) resistant to conventional treatment.
Results: Successful outcome (pain relief >50%) was achieved in >90% of all patients without differences between the two groups at 1 month.Even if both groups showed significantly lower pain and disability scores at all follow-ups compared to baseline, Cooled RF showed a longer pain relief compared with CRF at all follow-ups both for pain and disability. At 24 months 41% of patients treated with Cooled RF had a successful outcome compared to 19% of patients treated with CRF.

	NRS			OSWESTRY		
	Group A (CRF)	Group B (Cooled RF)	p value	Group A (CRF)	Group B (Cooled RF)	p value
Basal	7,6	7,6	0,97	48,5	53,9	0,17
1 Month	1,5	0,9	0,16	13,1	15,8	0,23
6 Months	4,3	2,7	<0.01	20,7	29,3	0,01
12 Months	5,1	3,5	<0.01	22,4	32,6	<0.01
24 Months	5,8	4,6	0.01	38,6	29,7	<0.01

[Fig.1: NRS and Oswestry scores in the two groups at different follow-up]



[Fig.2: Percentage of patients with successful outcome at different follow up in the two groups]

Conclusion: Both devices are effective in treating SIJ pain in the short term in the majority of patients.Cooled RF produces significantly longer pain relief which persists 24 months after procedure.SIJ has a complex and variable innervation. Cooled RF creates more accurate lesioning of the target nerves, which could explain the longer pain relief.

P176

THE OPTIMAL VOLUME OF LOCAL ANESTHETICS FOR TEMPERATURE INCREASE ON THE UPPER EXTREMITY IN ULTRASOUND-GUIDED STELLATE GANGLION BLOCK: A PROSPECTIVE RANDOMIZED AND COMPARATIVE STUDY

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Background: There has been no evidence in regards to the ideal volume of local anesthetics (LA) to obtain a temperature increase on the ipsilateral face, upper extremity, or both for the successful SGB. Therefore, we investigated how much volume of LA was optimal to accomplish successful SGB in the ipsilateral upper extremity by comparing temperatures in different body locations.
Methods: A total of 102 patients who were diagnosed with chronic neuropathic pain at upper extremity or face were randomly assigned to either the group A (SGB with 4 mL of 1.0% lidocaine), group B (SGB with 6ml of 1.0% lidocaine), or group C (SGB with 8ml of 1.0% lidocaine). The temperature of the face, hand, and axilla were measured before SGB, 10, 20, and 30 minutes after SGB. The severity of pain and ptosis, and side effects of the local anesthetics were all documented.
Results: The temperature changes on the ipsilateral hand occurring in each group 30 minutes after SGB, were 1.56°C ± 1.77°C, 1.84°C ± 1.47°C, and 2.00°C ± 1.40°C, respectively. The non-inferiority of 4ml volume of local anesthetic for increasing upper limb temperature compared with 6ml volume and 8ml volume in the US guided SGB was not proved. The adverse effects were only seen in Group C, and the incidence of adverse effects differ significantly between 3 groups (p=0.043).
Conclusion: The temperature increase with 4ml of local anesthetic might not be sufficient volume in US guided SGB with upper limb pathology.

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THERMAL VERSUS SUPER VOLTAGE PULSED RADIOFREQUENCY OF STELLATE GANGLION IN POST MASTECTOMY NEUROPATHIC PAIN SYNDROME: A PROSPECTIVE RANDOMIZED TRIAL

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Background: Post-mastectomy pain syndrome (PMPS) is one of the chronic post-surgical pain disorders (CPSP) of neuropathic character.
Objective: The aim of this study is to evaluate and compare the efficacy and safety of thermal versus super voltage pulsed radiofrequency (RF) application of stellate ganglion.
Study design: A prospective, double-blind, randomized, and controlled trial.
Methods: Eighty patients with PMPS, visual analog scale (VAS) ≥ 40 mm, and not responding to oxycodone and pregabalin for at least 4 weeks. neuropathic pain (GSNP; score of 3 or 4). were allocated into
Group A: Pulsed RF; super voltage pulsed RF was applied with a time of 360 seconds at 42º C, with a pulse width of 20 m/sec and voltage of 60-70 v.
Group B: Thermal RF; patients were assessed for pain relief by change in VAS score, functional improvement, and the analgesic concomitant medicationconsumption prior to block and at 1, 4, 12, and 24 weeks thereafter.
The impact of treatment on quality of life were also recorded.
Results: The percentage of patients who had successful response was significantly higher in the thermal RF group compared to the pulsed RF group at the first week and first, third, and sixth months, with significant difference in post-mastectomy pain intensity, functional improvement, and less rescue analgesia. There was no significant difference in quality of life or patient functional capacity.
Conclusions: Thermal RF of the stellate ganglion is a safe and successful treatment for PMPS.

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HEALTH PROFESSIONALS' EXPERIENCE OF WORKING WITH PAIN REHABILITATION FOR IMMIGRANTS WHEN LANGUAGE INTERPRETER ARE NEEDED, A QUALITATIVE STUDY

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Background and aims: Cultural diversities among patients are connected with different dilemmas and influencing health care. People not speaking the dominant language often are excluded from pain rehabilitation as well as research studies. The efficacy of multidisciplinary pain rehabilitation amongst immigrants with language difficulties (MMRI) is therefore not known. Two specialized pain rehabilitation centres in Sweden started adapted MMRI for these patients having need of language interpreter. Studies have shown that healthcare professionals need support to identify the needs of immigrants with pain, and doubt whether health care resources are sufficient for these patients.
The aim of the present study was to explore personnel experiences of working in MMRI and working with an interpreter.
Methods: A qualitative study with emergent design. Interviews was performed with 12 health-care professionals working in the MMRI and analysed according to grounded theory.
Results: The main theme ”Frustration” including the themes ”ability adopting a MMRI process”, “implementation of helpful MMRI strategies”, “difficulties to assess improvements during MMRI ”, “need of cooperation with authorities after MMRI” and “language, cultural and ethical dilemmas” emerged during analysis. A process is described through which the informants increased professional skills and awareness of patients' needs and practical implementation of MMRI, use of language interpreter and different approaches to benefit the patients' complex needs.
Conclusions: Health professionals working with interpreter and patients with complex negative consequences of pain need sufficiently time, skilled team collaboration, experience of MMR and team work. MMRI programs need to be adapted and specialized for the population.

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MULTIDISCIPLINARY BACK PAIN APP IMPROVES PAIN AND SLEEP SYMPTOMS IN INDIVIDUALS SUFFERING FROM BACK PAIN - RETROSPECTIVE STUDY

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Medical apps seem to be promising treatment measures for patients with unspecific lower back pain (LBP). Yet, in the previous studies, especially pain intensity and functional parameters, but not sleep quality, were investigated. Since pain symptoms and sleep quality affect each other we investigated how the use of a multidisciplinary back pain app (Kaia) affects both symptoms.
User data of two user cohorts (using different Kaia app versions) with LBP werecollected (cohort 1: N= 180; cohort 2: N= 159). Pain intensity and sleep quality were assessed on a 11-points numeric ratings scale (NRS; 0-10) at the beginning of use (baseline: BL) and at the last day of use (follow-up: LU) within a 3-month training program. Substantial pain reduction was found in both cohorts (cohort 1: M_{BL}= 4.80; SD= 1.59 to M_{LU}= 3.75; SD= 1.76/cohort 2: M_{BL}= 3.65; SD= 1.98 to M_{LU}= 3.65; SD= 1.78). Additionally, sleep quality improved (cohort 1: M_{BL}= 5.76; SD= 2.12 to M_{LU}= 6.56; SD= 1.72/cohort 2: M_{BL}= 6.08; SD= 2.08 to M_{LU}= 6.76; SD= 1.55). Interestingly, improvement of sleep quality was not fully mediated by pain reduction in both cohorts (ANCOVA).

The relationship of pain (relief) and sleep (improvement) is well established. Improvement of sleep quality comes along with pain reduction and vice versa. Since the effect of the app use on sleep could not be explained solely by pain reduction, multidisciplinary elements of the app, probably especially relaxation (mindfulness) and the education units, may facilitate sleep quality.

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CYP2D6-METABOLIC PHENOTYPE INFLUENCE IN PRESCRIPTION OPIOID USE DISORDER

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Understanding the risk of developing addiction among chronic non-cancer (CNCP) pain patients exposed to prescribed opioids during the process of medical care may be an important primary prevention strategy.
To analyze the influence of *CYP2D6* metabolic phenotypes in a deprescription plan for prescription opioid use disorder (POUD) patients.
Observational prospective study following-up an individualized deprescription plan (n=120, along 6 months) with tappering of morphine equivalent daily doses (MEDD) and opioid rotation (to buprenorphine and tramadol). Pain intensity and relief, quality of life and adverse events (AEs) were collected. Patients were classified as responders to deprescription (30% MEDD reduction without opiate abstinent syndrome (OAS). Genetic analysis of *CYP2D6* *2, *3, *4, *6, *10, *17, *29, *35, *41 (n=67) was performed by real-time PCR, as well as number of copies, grouping the subjects as poor (PM), extensive (EM) or ultra-rapid (UM) metabolizers.
Study population (53±13 years old, 60% female) showed a moderate pain intensity and relief, with 71% of responders to deprescription with a median of 7 (4-9) AEs per patient. Dry mouth (66%) and sleep disruption (53%) were the most frequent. Metabolic phenotypes frequencies were 6% PM, 84% EM and 10% UM without any influence on clinical or drug prescription variables. Different phenotypes frequency (PM, EM and UM) were found in AEs: headache (50, 33 and 100%), dry mouth (0, 63 and 100%) and depression (0, 46 and 83%) distribution, with a significant higher prevalence in UM patients.
UM-*CYP2D6* phenotype CNCP patients with POUD, showed a different opioid security profile.

P181

A META-EPIDEMIOLOGICAL APPRAISAL OF MULTIDISCIPLINARY REHABILITATION DOSING FOR CHRONIC LOW BACK PAIN

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Background and aims: Few studies have examined the association between dosage of multidisciplinary biopsychosocial rehabilitation (MBR) programs and outcome effects. The aim of this study was to examine the influence of dosage of MBR programs on pain, disability, return to work, quality of life, depression, and anxiety in randomized controlled trials (RCTs), using a systematic meta-epidemiological approach followed by meta-analysis.
Methods: Eligible studies were only RCTs of MBR programs versus any type of control arm in patients with chronic low-back pain (CLBP). Effect sizes, in short length, in non-daily contact, and in low-intensity RCTs were compared with long length, daily contact, and high-intensity RCTs using random-effects models and a summary relative odds ratio (ROR) were calculated. Heterogeneity was quantified with the I^2metric.

Results: A total of 47 RCTs was selected and analyzed. The summary RORs were not significant, indicating that the length, contact hours, and intensity of treatment did not have an overall effect on pain outcomes. Per outcome, only for pain and disability the RORs were significant demonstrating larger effects in RCTs with long length, non-daily contact, and low intensity of treatment. Large heterogeneity was also observed.
Conclusions: The dosage of MBR programs was not associated with better effects on pain outcomes in patients with non-specific CLBP. A program with a duration greater than five weeks and with non-daily contact and low intensity may be more beneficial for pain and disability. The optimum dosage of MBR programs is currently unknown.

MULTIDISCIPLINARY PROGRAMS

P182

PROGNOSTIC FACTORS FOR 12-MONTH-OUTCOME AFTER INTERDISCIPLINARY TREATMENT IN PATIENTS WITH CHRONIC PAIN - A NATIONWIDE MULTICENTRE PROSPECTIVE COHORT STUDY

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Background and aims: Chronic musculoskeletal pain is prevalent, leading to poor overall health and impaired functioning. Evidence distinguishes interdisciplinary treatment (IDT) as best available treatment approach but is still limited regarding outcome prediction. We aimed to investigate early prognostic factors for one year follow-up outcomes on physical and emotional functioning, by targeting patients' characteristics and validated self-rated pain and health measures.
Methods: A prospective cohort of 2876 patients representing Swedish IDT specialist clinics was followed. The association between baseline characteristics and a successful outcome was evaluated through multiple regression procedure, using data from the Swedish Quality Registry for Pain Rehabilitation. Primary outcomes were Physical and Emotional health, measured by component scales of SF-36 and HAD.
Results: Regression analyses revealed work status: 'currently working' (or shorter time off from work) being an independent predictor for both physical and emotional health. Moreover, positive beliefs of health restoration, better emotional health, lower initial levels of pain severity and pain related interference in everyday life and younger age predicted an improvement on Physical health. Improvement on Emotional health was predicted by a European nativity, higher general activity and higher sense of life control.
Conclusions: Working was the most important prognostic factor, indicating the importance of avoiding delay with IDT. A positive treatment expectancy was important for improvements in physical function, however, certain multidimensional measures indicated 'better in better out' while others indicated 'the worse the better', indicating a complex prognostic picture for the complete understanding of good clinical follow-up.

P183

MULTIDISCIPLINARY SHOULDER SERVICE

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Shoulder Pain is the second most frequent diagnosis in our Chronic Pain Service, in some scenarios it was difficult to coordinate distinct treatment modalities among patients with severe pain shoulder and great functional limitation. In the aim of better results in shoulder pain scores and functionality in patients with difficult pain control, this multidisciplinary team was created. These service is conformed by a Physical and Rehabilitation Medicine Specialist, an Orthopedic Surgeon and an Anesthesiologist from Chronic Pain Unit.
The first step was to review clinical history, followed by a shoulder pain semiology, then a physical examination was performed. When diagnosis was not clear an ultrasound of shoulder was performed, all of this in the first consult. After evaluation was completed we develop a treatment algorithm and decided if it had a surgical option or not, if surgery was not an option we consider the possibility of interventionism and/or rehabilitation, if we considered neither of them was possible then we optimize treatment and were followed by one specialist.
After 18 months of activities the results are as followed:
51 patients were evaluated from which 32 were treated or followed by Multidisciplinary Shoulder Service, the rest were derived to different specialists.
Pain Score in first visit have an average of 8.44 in second visit of 5.6
DASH score in the first visit have an average of 73 in the second visit have an average of 65.
Conclusion: Multidisciplinary Treatment can be useful for those patients who doesn´t respond to individual treatment modalities.

P184

CHANGES IN PAIN FOLLOWING A 6 WEEK WEIGHT MANAGEMENT IN-PATIENT PROGRAMME

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Background and aims: Musculoskeletal (MSK) pain is a commonly reported obesity related co-morbidity. Our Weight Management Service is a national Tier 3 referral centre for the treatment of adults with severe obesity. As part of our service we deliver a 6 week weight management in-patient programme (WMIPP). This WMIPP involves a 1,100kcal liquid diet, functional rehabilitation and psychology interventions. This study evaluates the impact of the WMIPP on MSK pain.
Methods: A retrospective analysis of the WMIPP database was undertaken. Prevalence and intensity of MSK pain were established. Post programme changes in weight and pain [numerical rating scale (NRS)] were established using the Wilcoxon Signed rank test. Measures of clinically significant change (CSC) in NRS scores (>30% change) were calculated. Missing data were not adjusted for.
Results: From June 2014 to January 2019, 72 patients completed the WMIPP. Baseline BMI was 59.0±11 kg/m^2, while only 14% (10/72) did not report MSK pain. Low back pain (LBP) (68%-49/72) and knee pain (64%-46/72) were common, 46% of patients reported both LBP and knee pain. Post programme there were significant changes in weight ($p< 0.001$), LBP ($p< 0.001$) and knee pain ($p< 0.017$) NRS scores. CSC was seen in 41% (18/44) of patients with LBP and 27% (12/44) with knee pain.
Conclusions: Prevalence of musculoskeletal pain is high in patients admitted to the WMIPP. The reduction in pain scores is very encouraging and highlights the holistic value of WMIPPs. Reducing pain levels has the potential to influence outcomes into the longer term.

NEUROMODULATIVE THERAPIES

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HITTING THE TARGET: PERIPHERAL FIELD MODULATION FOR STERNAL PAIN

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Background: Post-traumatic persistent sternal pain can be resistant to conventional surgical and medical management. We report successful management of persistent sternal pain following rugby injury with peripheral field stimulation.
Method: A 21-year-old rugby player developed persistent sternal/chest pain following sternal injury, resistant to analgesics, steroid injections and insertion of a manubrio-sternal plate. The plate was subsequently removed. He also did not respond to 8% capsaicin, lignocaine patch and pain management strategies.
He presented with visual analogue score of 7-10/10. He had stopped working and socialising, scoring highly on the EQ5D, depression, anxiety, catastrophising and suicidal ideation. The sternal scar had healed with mild increased sensitivity over the xiphisternum.
Trial of peripheral field stimulation was done in February 2018 using 2 subcutaneous leads with 12 contacts each. Full implant with 2 sternal leads connected to Nuvectra ® Algovita pulse generator was done in April 2018. The optimal stimulation parameter that provided pain relief was stimulation at 60Hz frequency and pulse width of 1500us.
Results: By September 2018, he was pain free, back at work and required no medications.
Conclusions: Resistance of post-traumatic persistent pain to conventional management is thought to be due to small fibre neuropathy initiated by trauma. We describe the use of percutaneous field stimulation in treating one such condition. This technique is minimally invasive and adds to the increasing use of peripheral neuromodulation. We also describe the feasibility of implanting the leads close to the site of pain. We advocate consideration of peripheral neuromodulation in carefully selected patients.

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MULTIFOCAL TDCS TARGETTING THE RESTING-STATE MOTOR NETWORK MODULATES CORTEX EXCITABILITY ON PROLONGED PAIN

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Background and aims: Multifocal transcranial direct current stimulation (tDCS) allows targeting multiple brain regions. Recent studies indicated that multifocal tDCS administered to brain regions linked to the resting state motor network (network-tDCS) could enhance corticospinal excitability in healthy participants compared to single site M1 tDCS. It remains unknown whether network-tDCS has also the potential to modulate the inhibitory effects on motor excitability associated to prolonged pain. The current proof-of-protocol study aims to explore the effects of network-tDCS stimulation on motor cortex excitability during capsaicin-induced prolonged pain.
Methods: Ten healthy participants were randomized to receive two consecutive treatments with one day interval of active (n=6) or sham (n=4) network-tDCS. In each session, capsaicin patches were applied over the dorsum of the right hand to induce prolonged pain (lasting approx. 30 hours) assessed on a numerical rating scale (NRS). Motor evoked potentials (MEPs) of the first dorsal interosseous (FDI) muscle using transcranial magnetic stimulation were recorded before capsaicin application, 20 minutes after pain onset, and 20 minutes after the last network-tDCS session.

Results: Pain NRS ratings after both active and sham network-tDCS were not systematically different. MEPs before capsaicin application and 20 minutes after pain onset were comparable between groups. However, motor evoked potentials were increased in active network-tDCS compared to sham stimulation 20 minutes after the last tDCS session.
Conclusion: Preliminary results suggest that multifocal network-tDCS over resting state motor network might modulate corticospinal excitability associated with prolonged pain although still to be assessed in the full powered protocol.

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ANALGESIC EFFICACY OF "BURST" AND TONIC (500HZ) SPINAL CORD STIMULATION PATTERNS: A RANDOMISED PLACEBO-CONTROLLED STUDY

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Aims: The aim of this study is to compare the efficacy of burst (BST) and tonic sub-threshold stimulation at 500Hz (T500) versus sham stimulation delivered by a device capable of automated postural adjustment of current intensity .
Methods: The study is a randomised double blind, 3-period 3-treatment crossover multicentre study. After randomisation, BST, T500 and Sham spinal cord stimulation (SCS) were initiated in a double blind randomised crossover design. Patients reported a) pain intensity (VAS), b) patient global impression of change (PGIC), and c) health related quality of life (EQ5-D).
Results: 19 subjects in total were recruited from 2 UK sites.
Following recruitment 9 cases were available to assess response to Tonic vs. Sham and 11 for response to Burst vs. Sham.
The mean reduction in pain for Tonic vs. Sham was 25% (95% CI, 8 to 38%; P=0.008). Pain VAS in Burst was 5% higher than Sham (95% CI, -13 to 27%; P=0.59).
Sub-group analyses by study site and sex were also conducted for the Tonic vs. Sham and Burst vs. Sham comparisons
Conclusions: The findings demonstrate a superior outcome from T500 stimulation over BST stimulation in a group of subjects with leg and back pain habituated to tonic SCS and having achieved a stable status with stimulation. It is difficult to explain why our findings are at odds with previous studies of similar design (1), however the speculate that the use of adaptive stimulation may be a factor , another explanation may be small study size.
References: 1. Schu S, Slotty PJ, Bara G, von Knop M, Edgar D, Vesper J. A Prospective, Randomised, Double-blind, Placebo-controlled Study to Examine the Effectiveness of Burst Spinal Cord Stimulation Patterns for the Treatment of Failed Back Surgery Syndrome. Neuromodulation. 2014;17(5):443-50.

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PATIENTS' GOALSETTING BEFORE SPINAL CORD STIMULATION: A QUALITATIVE EXPLORATION IN PATIENTS WITH FAILED BACK SURGERY SYNDROME

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Introduction: Due to the difficulties encountered in the treatment process of patients with chronic pain, it is of utmost importance to involve patients themselves in their rehabilitation trajectory. Patient engagement can be obtained by motivating patients to select their own treatment goals to get individual selected outcome parameters. Even though Spinal Cord Stimulation (SCS) has been used extensively, patients' individual goals remain to be explored. Therefore, the aim of this study was to explore goal setting in patients with FBSS.
Material and methods: Fifteen patients suffering from FBSS and scheduled for SCS were in-depth interviewed. The International Classification of Functioning, Disability and Health framework was used to structure the responses of patients. All interviews were recorded and analysed using in vivo coding.
Results: In the domain of bodily functions, 11 patients wanted to regain a feeling of happiness, 5 patients wanted to focus on avoiding depression and 1 patient wanted to regain his previous sleep pattern, besides pain reduction. In the domain of activities, walking, sitting, driving a car, bending down and picking up were the highest ranked goals. Regaining a social life was the highest ranked goal for participation. Additionally, 8 patients indicated that they have concerns about SCS with subthemes
a) fear of complications,
b) fear of procedure success and
c) fear of pain after procedure.
Conclusion: The interviews revealed a broad spectrum of individual patients' goals, highlighting the need of individually targeted rehabilitation trajectories. Goalsetting could entail the first step towards individualized medicine in the SCS trajectory.

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OUTCOMES OF A PROSPECTIVE RANDOMIZED CONTROLLED TRIAL UTILIZING A SPINAL CORD SYSTEM CAPABLE OF MULTIPLE NEUROSTIMULATION MODALITIES (COMBO STUDY)

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Background and aims: Spinal Cord Stimulation (SCS) devices that enable personalized fine-tuning of stimulation parameters or waveforms offer the potential to address the variability among chronic pain patients. Recent real-world observational data reported a mean 5.2-point reduction ($p < 0.0001$) in a cohort of over 200 patients at their last follow up (mean 3 months) when utilizing a newly launched SCS system capable of multiple neurostimulation modalities. We endeavored to clinically investigate this system by evaluating the outcomes associated with use of multiple neurostimulation modalities as compared with conventional SCS settings alone in a prospective, randomized controlled trial.
Methods: COMBO is a prospective, multicenter, randomized controlled trial with an adaptive design (Clinicaltrials.gov identifier: NCT03689920). The primary endpoint of the study is based on the proportion of subjects, permanently implanted with an SCS system capable of multiple neurostimulation modalities (Spectra WaveWriter, Boston Scientific), demonstrating ≥50% reduction from Baseline in average overall pain intensity at 3-month follow up. Additional endpoints will assess quality of life, disability etc. Adverse events will also be collected.
Results: Data collection and analysis are ongoing. Results will be presented.

Conclusions: Outcomes of a prospective, randomized controlled trial offer the opportunity to provide Level 1 evidence related to the use of an SCS system capable of multiple neurostimulation modalities in the treatment of chronic pain, while minimizing bias and confounding effects resulting from differences in patient selection, demographic variables, investigator technique and/or patient management.

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EFFECT OF LOW FREQUENCY REPEATED TRANSCRANIAL MAGNETIC STIMULATION ON PSYCHOLOGICAL AND PAIN ASSOCIATED SYMPTOMS IN FIBROMYALGIA PATIENTS

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Fibromyalgia (FM) is a chronic pain syndrome involving altered pain modulation system affecting 2-3% individuals of productive age, mainly women. It is characterized by widespread pain, tenderness, fatigue, sleep disturbance and psychological distress. The management of FM is not satisfactory probably because of lack of clear understanding about its etiology and predisposing factors. The aim of the present study was to evaluate the effect of repeated Transcranial magnetic stimulation (rTMS) as a treatment option.
FM patients (n=86) diagnosed with were divided into two groups real and sham treatment groups. The patients were evaluated using Coping Strategies Questionnaire, Spielberger State- Trait Anxiety Inventory - six item short forms, Pain Belief Questionnaire, World Health Organization Quality of Life-BREF questionnaire, and Visual analogue scale for pain. Patients were given rTMS was given in 8 trains of 5-minute pulses at inter train interval of 5 minutes (0.5 Hz frequency, for four weeks (five days per week=20 days) on right dorsolateral prefrontal cortex (rTMS) while sham group received sham stimulation, Patients were evaluated with above mentioned questionnaires before, just after as well as six months follow ups.
Our data suggest that unilateral TMS at RDLPFC reduces chronic widespread pain, anxiety and depression and therefore, it can constitute an effective alternative treatment modality for Fibromyalgia. Low frequency (0.5 Hz) rTMS treatment for four week and improved chronic pain & associated symptoms. Sustained effect of rTMS was observed till 6 months of follow up.
Slow frequency rTMS is a favorable treatment option in patients with primary FM.

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LONG-TERM EFFECTS OF HIGH-DOSE SCS FOR TREATMENT OF CHRONIC PAIN IN PATIENTS WITH CBLP AND CRPS: OUTCOMES OF A PROSPECTIVE CASE SERIES

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Background: High-dose spinal cord stimulation (HD-SCS) is a programming option at higher stimulation frequencies and longer pulse durations, i.e. delivering greater electrical charges per unit time compared to conventional (low-dose) SCS (1). The goal of this research was to prospectively investigate the effect of HD-SCS in patients with chronic pain in our standard-of-care SCS pain practice.
Method: Patients selected for SCS were included and treated according to standard of care. Placement of an 8-polar lead was optimized upon paresthesia coverage of the painful area. During the trial period first HD-SCS was offered. In case of sub-optimal outcomes with HD-SCS, conventional SCS was tried. Patients who responded to HD-SCS, received a rechargeable pulse generator, were programmed with a frequency of 500Hz and pulse duration of 500µs, and prospectively followed. Pain was scored using a weighted VAS score. Furthermore, information on pain medication use was collected.

Results: 30 of the 32 patients, responded to HD-SCS. Twenty-six patients, age 51 (SD 34) years, 22 with FBSS and 4 with CRPS, had a follow-up of 6-12 months of whom the results are presented here. The average pain decreased from VAS 7.0 (SD 1.1) prior to SCS, to 2.5 (SD 1.4), and 2.3 (SD 1.4), at 6- and 12-months follow-up, respectively. Pain medication was taken by 85% of patients before SCS and by 45% and 20% of patients, respectively at 6- and 12-months SCS.
Conclusion: HD-SCS is an effective long-term stimulation modality for treatment of chronic pain in patients with CBLP and CRPS.

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OUTCOMES USING AN SCS DEVICE CAPABLE OF DELIVERING COMBINATION THERAPY (SIMULTANEOUS OR SEQUENTIAL) AND ADVANCED WAVEFORMS/FIELD SHAPES

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Background and aims: Developing “all-in-one” spinal cord stimulation (SCS) systems with capability for multiple types of neurostimulation paradigms will likely empower patients to identify the best treatment approaches suitable for their needs. Here, we provide observed real-world outcomes in patients who used a new SCS system designed to combine multiple waveform availability, capable of sequential or simultaneous delivery of therapeutic neurostimulation, with an algorithm that enables highly manipulatable control of stimulation field shape.
Methods: This is a consecutive, multi-center case-series based on retrospective chart review as part of an ongoing real-world evaluation of SCS outcomes for chronic pain (Clinicaltrials.gov identifier: NCT01550575). Patients were treated with a newly designed SCS system (Precision Spectra WaveWriter, Boston Scientific) capable of combination therapy (sequential or simultaneous), multiple waveforms and advanced field shapes, and waveform automation for treatment of low back and/or leg pain.
Results: To date, 217 patients have been analyzed. A statistically significant improvement in overall targeted pain scores (NRS) at last follow-up was reported (Baseline NRS: 7.5; at last follow-up [96.6 ± 80.9 days] NRS: 2.4; $p < 0.0001$). Thirty-nine percent of all patients indicated >80% pain relief at their last follow-up. Twenty-two percent (48 of 217) of all patients reported being pain free (NRS = 0) at last follow-up. Updated data will be presented.
Conclusions: These results suggest that an SCS system designed to provide combination therapy, multiple waveform options, and enhanced anatomical targeting capabilities, allows for highly effective pain relief outcomes in a patient-specific manner within the realworld clinical setting.

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IMPROVEMENT OF HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH SPINAL CORD STIMULATION: DATA FROM THE PRODUCT SURVEILLANCE REGISTRY

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Background and aims: The Product Surveillance Registry (PSR, Medtronic) is a prospective, long-term, multicentre global registry to monitor the performance and safety of Medtronic Spinal Cord Stimulation (SCS) systems.[1] We present here exploration of health-related quality of life (HR-QOLvia EuroQol 5D (EQ-5D-5L)) outcomes in patients with an Intellis™ SCS system as their initial implant for the treatment of intractable pain.

Methods: The current analysis identified 246 patients implanted with Intellis devices from 30 centres. As the registry enrolment and follow-up are ongoing, baseline and 6-month follow-up paired data was available for 55 subjects (EQ-5D UK score).
Results: In subjects with paired data available, 80% presented with failed back pain. Mean baseline EQ-5D UK scores were 0.44±0.25. At 6-months, scores improved to 0.62±0.21; representing a statistically significant improvement of 0.17 (CI: 0.10,0.31; $p< 0.001$). Results were similar in a subset of these patients with a baseline general pain score ≥5 (n=41) on a 0-10 numeric rating scale; improving by 0.18±0.28 (CI: 0.09,0.27; $p< 0.001$) from 0.43±0.26 at baseline. Additionally, in those with a diagnosis of failed back pain and a baseline general pain score ≥5 (n=32), EQ-5D UK scores improved 0.20±0.29 (CI: 0.10,0.31; $p< 0.001$) from 0.45±0.26 at baseline.
Conclusions: Our analysis shows statistically significant improvements in Health-Related Quality of Life, as measured by the EQ-5D-5L, from baseline to 6-months in patients implanted with an Intellis™ SCS system. These improvements were observed in subsets of patients with baseline general pain score ≥5 and indication of failed back pain.

PHARMACOLOGICAL THERAPIES

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A SYSTEMATIC REVIEW OF THE GASTROINTESTINAL SAFETY PROFILE OF IBUPROFEN AT OVER-THE-COUNTER DOSES

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Background and aims: Non-steroidal anti-inflammatory drugs (NSAIDs) have topical and systemic effects on prostaglandins involved in regulating gastrointestinal (GI) mucosal defence systems. This systematic review investigated whether ibuprofen administered at over-the-counter (OTC) doses (oral, ≤1200 mg/day, single/multiple doses or paediatric equivalent) is associated with increased GI adverse events (AEs) compared with paracetamol, placebo or other NSAIDs in adults and children. The results reported here focus on OTC ibuprofen doses administered for ≤10 days compared with paracetamol and placebo only.
Methods: A literature search was performed following PRISMA guidelines in July 2018 using PubMed and Embase, focusing on published literature reporting GI safety and ibuprofen. No date limits were applied.
Results: 2409 unique records were identified. 69 studies were included, predominantly randomised controlled trials (RCTs) (n=46) with several meta- or pooled analyses (n=4), observational/case-control studies (n=3) and retrospective analyses (n=16) across multiple treatment settings. Of these, 28 studies reported OTC doses of ibuprofen for ≤10 days versus placebo or OTC paracetamol. In adults, a meta-analysis established GI AE incidence rates were not statistically different (p=0.420) between ibuprofen and placebo. Additionally, in 16 RCTs, ibuprofen was associated with similar incidences of GI AEs compared with placebo or paracetamol. A multivariate analysis in one RCT also showed a lower GI risk for ibuprofen compared with paracetamol (p=0.01). In children, 5 RCTs demonstrated similar incidences of GI AEs for ibuprofen versus placebo or paracetamol.
Conclusions: Published literature demonstrates that ibuprofen at OTC doses and duration has similar GI tolerability to placebo and OTC paracetamol.

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EFFECTS OF RANOLAZINE, A LATE SODIUM CURRENT BLOCKER, ON ACTION POTENTIAL PROPAGATION IN PERIPHERAL NERVES

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Background and aims: Ranolazine, a clinically approved anti-anginal drug, has been shown to block the late sodium current. Previous studies have found the drug to be effective in animal models of inflammatory and neuropathic pain. Here, we investigated whether ranolazine has a demonstrable effect on action potential propagation in peripheral sensory nerves.
Methods: Compound action potentials (CAP) were recorded *in vitro* from rat saphenous nerves in response to supramaximal electrical stimulation. The tonic block was assessed using 0.25Hz stimulus frequency whereas a frequency-dependent block was measured by trains of 100 impulses at 100Hz. Ranolazine was applied to a ring placed on the nerve between the recording and stimulation site.
Results: Ranolazine at high concentrations (100μM) failed to show CAP inhibition of intact nerves. However, in mechanically desheathed nerves, ranolazine exhibited a dose-dependent tonic block of A-fibre CAP. 1, 10 and 100μM reduced the CAP by (mean±SEM) 10±4%, 21±8% and 35±10%, respectively. Completeness of desheathing was determined at the end of each experiment by applying 1μM TTX which abolished responses in desheathed, but not in intact nerves. High-frequency trains of stimulation showed an additional reduction of CAP amplitude. In the absence of drug, it was 16% on average and was only slightly increased with ranolazine of 18%, 21% and 42% at 1, 10 and 100μM respectively.
Conclusions: Our results suggest that ranolazine is effective at clinically relevant concentrations (1-10μM) and raises the exciting possibility of repurposing the drug to treat conditions that involve neuronal hyperexcitability such as pain.

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IMPORTANCE OF CCL17/CCL22/CCR4 SIGNALING IN NOCICEPTIVE TRANSMISSION AND MORPHINE ANALGESIC POTENCY IN NAÏVE AND NEUROPATHIC ANIMALS

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Background and aims: Current investigations underline the chemokine signaling pathways in the development of neuropathy, however, the role of CCR4 was not study so far. We examined the role of CCR4 and its ligands (CCL17, CCL22) on the development of hypersensitivity and morphine effectiveness in naïve and neuropathic animals.
Methods: The Chronic Constriction Injury (CCI) model of neuropathic pain in rats was used. Single and/or repeated, intrathecal injections of C021 (CCR4 antagonist) and/or morphine were performed and pain behavior was evaluated by von Frey/cold plate tests. Changes in proteins levels were analyzed by Western blot. The influence of single, intrathecal injection of CCL17 and CCL22 in naïve mice on pain development was investigated.
Results: We demonstrated that administration of CCL17 and CCL22 induces pain-related behavior in naive animals. Administration of the C021 (16h and 1h before CCI and then once daily for 8 days after injury) diminished hypersensitivity and enhanced the analgesic properties of morphine. C021 reduced Iba1-positive cells activation, but not GFAP, CD4 and CD8 in spinal cord and DRG. C021 diminished the level of pronociceptive IL-1beta and IL-18 in both structures, while the level of antinociceptive IL-10 was reduced only in DRG and IL-6 was not affected.
Conclusions: Our research suggest that CCL17/CCL22/CCR4 signaling pathway may be a potential therapeutic target for the treatment of neuropathy.

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DEMONSTRATION OF SIGNIFICANT DECREASES IN PAIN ENDPOINTS IN SUBJECTS WITH PAINFUL OSTEOARTHRITIS OF THE KNEE AFTER SINGLE/MULTIPLE DOSES OF A NOVEL ANTI-NGF, ANTI-TNFMBISPECIFIC MOLECULE

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Background and aims: In clinical studies anti-NGF mAbs have demonstrated significant efficacy in osteoarthritis pain. *In vitro* data suggest that TNFα synergises with low concentrations of NGF, driving nociceptive gene expression. MEDI7352, an anti-NGF, anti-TNFα bispecific molecule, demonstrates synergy *in vivo*, with anti-hyperalgesic efficacy observed in preclinical models at doses at which the discrete components, are inactive. Target engagement modelling suggests that MEDI7352 achieves efficacy by suppressing ≤10% NGF. The safety, tolerability, and efficacy of MEDI7352 was investigated in a Phase I study in patients with painful osteoarthritis of the knee.
Methods: A first-in-human (FIH), interleaved single ascending dose (SAD) and multiple ascending dose (MAD) study in patients with painful osteoarthritis (OA) of the knee was carried out. N=53 subjects received a single intravenous dose of placebo/MEDI7352 (0.3, 2,10, 50, 250 and 1000 µg/kg). N=60 subjects received 4 consecutive doses (once every 2 weeks) of placebo/MEDI7352 (1, 5, 50, 150µg/kg). Safety data includes follow-up MRI imaging of joints.
Results: Single i.v. administration of MEDI7352 was well tolerated with no serious adverse events reported. PK appeared dose-proportional and consistent with predictions. Dose dependent suppression of free NGF is observed. Statistically significant decreases in NRS and WOMAC pain endpoints is achieved at single doses of 50µg/kg MEDI7352 and greater. Emerging MAD cohort data will also be presented.
Conclusions: A single administration of MEDI7352 co-sequesters NGF and TNFα producing significant reversal of NRS and WOMAC pain endpoints in subjects with painful osteoarthritis of the knee.

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THE IMPACT OF TAPENTADOL ON QUALITY-OF-LIFE AND SICK LEAVE: REAL-WORLD DATA FROM THE GERMAN PAIN PRACTICE REGISTRY (GPPR)

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Background and aims: Chronic severe pain is challenging, especially because of the adverse effects of commonly used classical opioids. Tapentadol (TAP) is an unique opioid effective against both nociceptive and neuropathic components of chronic pain and well-tolerated. We analyzed the impact of TAP on Quality-of-Life Impairment by Pain (QLIP) and sick leave in patients included in GPPR.
Methods: This was a retrospective longitudinal analysis, using propensity scoring for age, gender and chronification and graded pain scale (von Korff), of biometrically/medically-comparable cohorts of patients with chronic spine/low back pain receiving TAP after non-opioids (WHO-group 1), low-potency opioids (WHO-group 2) or high-potency

opioids (WHO-group 3). Quality-of-Life Impairment by Pain (QLIP) and pain-related sick leave were evaluated as secondary efficacy endpoints.
Results: Of 174,222 patients in the GPPR, 48,506 (27.8%) received WHO-specified analgesics, with 10,389 (6%) receiving TAP. Compared with baseline, patients receiving TAP after WHO-group 1 analgesics had greater improvement in QLIP (72.6%) and less sick leave (-76.8%) compared with WHO-group 2 and 3 patients [QLIP 57.1 and 43.7%; sick leave -48.9 and -37.0%, respectively]. Generally group 1 exhibited higher/better responses than group 2, which was better than group 3.
Conclusions: Earlier switching to TAP from WHO 1&2 analgesics in chronic pain was associated with improved QLIP and less sick leave compared with its use later in the course of the disease.

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PHARMACOGENETICS APPLIED TO TAPENTADOL EFFECTIVENESS ON AMBULATORY CHRONIC PAIN PATIENTS

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Background and aims: Opioids are the more suitable analgesic in severe pain, with a high response interindividual variability being genetic print one of the possible reasons. New opioids are used in medical practice, because they are thought to be more effective and safer. The aim is to assess the genetic influence and effectiveness of "new generation opioids" (Tapentadol) in ambulatory patients under real conditions at Pain Unit (PU).
Methods: An observational study was made. Patients treated with TAP (n=204) were compared with another matched-control group (VIG, n=215 from PU), who took other analgesics. We analysed the relation among the polymorphisms A118G of *OPRM1* and G472A of *COMT* genes with clinical variables: The intensity of pain and relief (VAS, Visual Analogue Scale, 0-100mm), quality of life (EuroQoL-VAS, 0-100mm) referred by patients. We also calculated the intensity of pain and relief with a Likert Scale (0=None, 1=Mild, 2=Moderate, 3=Severe, 4=Extremely Severe). The study was approved by the Ethical Committee of Scientific Investigations. The data were analysed with the statics programmes "*GraphPadPrism7"* and R 3.2.0.
Results: The preliminary results showed similar pain intensity between TAP and VIG, with a VAS average of 61mm. Pain relief was higher with Tapentadol (VAS TAP 36±27mm, VIG 30±30mm, p=**0.0339**). We assessed the influence of different polymorphisms over the effectiveness of Tapentadol, but it wasn't found.
Conclusions: Preliminary results showed how new generation opioids like Tapentadol achieved greater relief than the common analgesics used in PU. Results of the safety and genetic influence over it will be assessed.

P201

ANALGESIA INDUCED BY 2- HZ ELECTROACUPUNCTURE IN THE RAT NEUROPATHIC PAIN DEPENDS ON THE ZONA INCERTA

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Background and aims: The zona incerta and electroacupuncture (EA) activate descending mechanisms to modulate nociceptive inputs in the spinal dorsal horn. This study examines qualitatively whether mechanisms in the

zona incerta participate in the EA-induced analgesia in rats.
Main methods: To induce neuropathic pain, male Wistar rats were submitted to a complete spinal nerve ligation. The Von Frey test (in 2, 7, 14 and 21 days after surgery) was utilized to examine the changes produced by lidocaine 2%, glutamate injected into the zona incerta on the analgesia induced by a 20-min EA applied at 2- Hz frequency to the Zusanli and Sanyinjiao acupoints. The control groups received only vehicle (saline).
Results: The 2-Hz EA-induced analgesia was reduced in 56% by neural blockade of the zona incerta. On the other hand, the 2-Hz EA-induced analgesia was more intense after glutamate administration and remained unchanged after injection of the saline into the zona incerta.
Conclusion: The present study showed for the first time that 2-Hz EA-induced analgesia depends on activation of glutamate receptors in the zona incerta.

P202

IL-4-INDUCED M2 MACROPHAGES PRODUCE LONG-LASTING ANALGESIA VIA ENDOGENOUS OPIOIDS

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Background and aims: Interleukin-4 (IL-4) is an anti-inflammatory cytokine that can polarize macrophages from a pro-inflammatory M1 into an anti-inflammatory M2 phenotype, which is considered to exert the effects via IL-10. This study aims to investigate the role of the endogenous opioid system in the analgesic actions of IL-4 and M2 macrophages.
Methods: Experiments were approved by the local ethics committee and performed following IASP guidelines. As a pain model, the sciatic nerve chronic constriction injury in male C57BL/6J mice was used. IL-4 was administered daily at the injury site on days 14-21, whereas opioid peptide antibodies and receptor antagonists were applied on days 22 and 26, and mechanical sensitivity was assessed by von Frey filaments. On day 22, immune cells from injured nerves were quantified by flow cytometry, $F4/80^+$ macrophages were isolated using immunomagnetic separation, their M1/M2 state and opioid peptide precursor mRNA expression was assessed by qPCR and fluorescent in situ hybridization, and the opioid peptide content was measured by enzyme immunoassays.
Results: IL-4 increased $F4/80^+$ macrophage numbers and shifted them into an M2 phenotype. M2 macrophages synthetized and contained more opioids than M1 cells. IL-4 induced analgesia for several days after the discontinuation of IL-4 treatment. This analgesia was diminished by opioid peptide antibodies and receptor antagonists.
Conclusions: IL-4-induced M2 macrophages at injured nerves produced opioids, which activated peripheral opioid receptors to diminish pain. The endogenous opioid system is crucial to the analgesic actions of IL-4 and M2 macrophages.
Research support: Deutsche Forschungsgemeinschaft (MA 6432/2-1).

P203

RESCUE AND CONCOMITANT ANALGESICS IN PLACEBO-CONTROLLED TRIALS OF PHARMACOTHERAPY FOR NEUROPATHIC PAIN AND LOW BACK PAIN

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Background and aims: Rescue medication is commonly offered to participants in placebo-controlled trials of analgesic drugs. The use of pain medication in addition to the placebo or experimental drug may complicate the interpretation of effects and tolerability. This issue has received little methodological attention. We examined the handling and reporting of rescue and concomitant analgesic use in trials of pharmacotherapy for neuropathic pain and low back pain.
Methods: We based our review on 265 trials from two recent systematic reviews, 83 trials of low back pain and 182 of neuropathic pain.
Results: In total, 117 (44%) trials permitted rescue medication and 126 (48%) allowed participants to continue all or some of their usual analgesics. The utilization of rescue medication increased over time, occurring in 18% of trials before 2000 compared with 55% after 2000. Forty-one trials (16%) permitted both rescue analgesics and continued use of prestudy analgesics. More than one-third of the trials permitting rescue medication did not report the rescue drug consumption, and over half of the trials allowing concomitant analgesics did not report whether intake changed during the trial. Only 22 (19%) of the trials permitting rescue medication included complete information about whether rescue medication was used as an outcome, specified the drugs used, specified how consumption was assessed and measured, and reported and analyzed the use of rescue medication in each trial arm.
Conclusion: Our findings suggest that poorly described procedures and incomplete reporting are likely to hinder the interpretation, critical appraisal, and replication of trial results.

PSYCHOLOGICAL THERAPIES

P204

IMMUNE-INFLAMMATORY PATHWAYS AND CLINICAL CHANGES IN FIBROMYALGIA PATIENTS TREATED WITH MINDFULNESS-BASED STRESS REDUCTION (MBSR): A RANDOMIZED, CONTROLLED CLINICAL TRIAL

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Introduction: Fibromyalgia (FM) is a highly-prevalent syndrome characterized by chronic widespread musculoskeletal pain and a broad range of cognitive and affective symptoms. Imbalance on immune biomarkers may have a relevant role in its aetiology. This study evaluated the effects of Mindfulness-Based Stress Reduction (MBSR) to both clinical symptomatology and immune biomarkers in serum (IL-6, CXCL8, IL-10 and hs-CRP). Role of biomarkers as predictors of effectiveness was also analysed.
Methods: 70 female patients with FM were randomly assigned to Treatment-As-Usual (n=35) or to TAU + MBSR (n= 35). Blood extractions and clinical measurements were conducted at pre- and post-treatment. Treatment effects were analysed using linear mixed models.
Results: MBSR was found to be clinically effective and also prevented the tendency of IL-10 to decrease as observed in the TAU group. Higher baseline levels of CXCL8 attenuated the effect of MBSR on clinical symptomatology. Furthermore, higher baseline CXCL8/IL-10 ratios were associated with less improvement in psychological inflexibility following MBSR treatment.
Discussion: MBSR showed clinical efficacy and significant immune regulatory effects in FM patients. Specific immune-inflammatory pathways may partially predict the clinical efficacy of MBSR.

PAIN THERAPIES WALK 2

P205

EFFECTIVENESS OF OSTEOPATHIC MANIPULATION TO CRITICALLY EVALUATE SEVERITY SYMPTOMS IN IRRITABLE BOWEL SYNDROME - IBS

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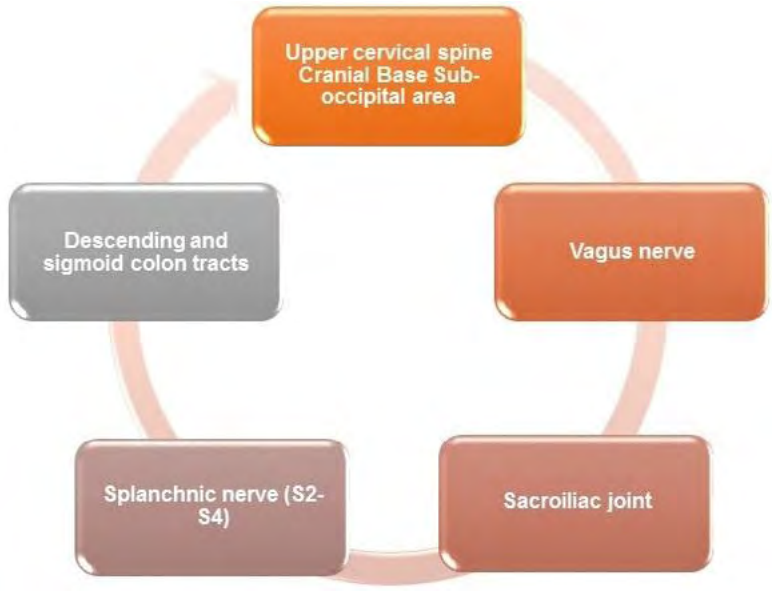
Background and aims: Irritable Bowel Syndrome (IBS) is a gastrointestinal disorder commonly affecting 11% of the population, mainly women (2:1) under 50 years.
It usually manifests itself as intermittent pain with tolerable to severe intensity becoming disabling thus reducing quality of life (QoL); also, this pain overlaps other gastrointestinal disorders (functional dyspepsia, nausea, constipation due to pelvic floor dyssynergia, Crohns, etc.).
The multifactorial pathophysiology mechanism is very complex although recent scientific evidence highlights the importance of gut dysfunction and visceral sensation considering they are closely related to the HPA axis (hypothalamus-pituitary-adrenal due to its sensorimotor functions), the brain-gut axis and the enteric nervous system (ENS). It is challenging to identify the IBS's etiology.
The aim is to critically evaluate the evidence of osteopathic manipulation (OMT) on the severity of IBS symptoms (IBS-severity score: pain, quality of life, etc.) in order to be considered feasible and realistic as complementary and alternative medicine (CAM).
Methods: A systematic review has been conducted, screening and reviewing more than 10 among databases and journals to answer the aim.
Results: All studies reflect a significant improvement in IBS severity score and pain level ($p \leq 0.01$).
Conclusions: OMT could be considered feasible and realistic as CAM.
Further investigations are needed in this area to allow meta-analysis and to demonstrate how osteopathy can act holistically on IBS (on musculoskeletal system, the ENS, the ANS and the neuroendocrine system) and affirms itself as desirable and achievable.



[Possible holistic treatment]

P206

REDUCED PAIN PERCEPTION AND ANALGESIC MEDICATION CONSUMPTION AFTER ACOUSTIC BINAURAL BEATS APPLICATION IN PATIENTS SUFFERING FROM CHRONIC PAIN - A RANDOMIZED CONTROL TRIAL

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Background and aims: Binaural Beats (BB), consisting of two artificial acoustic stimuli, with small difference in wave frequency, synchronize brain activity and have been found to decrease intraoperative pain. The aim of this study was to evaluate whether brain entrainment in lower function rhythm, with the application of BB, decreases pain perception and analgesic medication use, in patients suffering from chronic pain (CP).
Methods: Twenty-one CP patients of AHEPA Hospital outpatient Pain Unit, Thessaloniki, Greece, participated in a double blind, randomized, cross-over trial comparing BB at 5Hz (theta rhythm), with soft music in background, to placebo (soft music, no frequency difference), applied for 30 minutes on site and subsequently on patient demand for a week. Pain (numeric scale, NRS), stress (STAI) and medication usage (defined daily doses, DDD) were assessed at baseline, 30 minutes and week ending.
Results: Perceived pain (NRS) was significantly reduced in the BB group during the 30 minute phase (5.6±2.3 to 3.4±2.6, p< 0.001), compared to placebo group (5.2±2.1 to 4.8±2.3, p=0.78), as well as at the week´s end (to 3.9±2.5 vs 5.5±2.6 respectively, p< 0.001). Stress was equally and significantly reduced in both groups at 30 minutes, but remained reduced at the week ending only in the BB group. Analgesic consumption (DDD) during the week was significantly less in the BB group (3.9±3.7 vs 4.6±4.1, p=0.02), while reporting equal mean levels of perceived pain (5.9±1.8 vs 6.3±1.7, p=0.22).
Conclusions: Acoustic BB reduced perceived pain severity, stress and analgesic consumption, compared to placebo, in CP patients.

P207

THE INFLUENCE OF INFORMATION ON THE HYPOALGESIC EFFECTS OF EXERCISE - A RANDOMIZED CONTROLLED DOUBLE-BLIND STUDY

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Background and aims: Exercise reduces pain sensitivity in pain-free subjects, also known as exercise-induced hypoalgesia (EIH). Positive information about EIH increases EIH expectations and the hypoalgesic response after exercise. It is currently unknown how negative information influences the subsequent hypoalgesic effects, which may be more relevant in understanding the lack of EIH in some patients with chronic pain. Thus, the aim of the study was to investigate how positive and negative information about the effect of exercise influence EIH expectations and the hypoalgesic response.
Methods: In a randomized, double blind study, 83 pain-free subjects were randomized to one of three groups receiving different information about EIH: a neutral- information group, a hypoalgesia-information group and a hyperalgesia-information group. Pain sensitivity was assessed with pressure pain threshold (PPT) at the thigh before and after a 3 min isometric wall-squat exercise. Subjects were also asked to rate how they had expected the wall-squat exercise to affect PPT prior to performing the exercise.

Results: Expectations about the effect of wall-squat on PPT as well as the hypoalgesic response after exercise was significantly different between groups (Fig. 1) with a larger response in the hypoalgesic expectancy group, but hyperalgesia in the hyperalgesic expectancy group (P< 0.05). Moreover, there was a significant positive association between the increase in PPT and positive expectations (r=0.35, P=0.001).
Conclusions: The hypoalgesic effect after isometric exercise was influenced by the information given prior to the exercise. Negative information completely abolished the hypoalgesic response after exercise likely mediated by negative expectations.

P208

IS IT POSSIBLE TO EVALUATE THE EFFECTS OF KINESIO TAPING ON MYOFASCIAL TRIGGER POINTS USING ULTRASOUND SHEAR-WAVE ELASTOGRAPHY? QUANTIFICATION OF KINESIO TAPING

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Background: Myofascial pain syndrome (MPS) is a regional pain syndrome characterized by muscle stiffness, trigger points, taut bands. Kinesio-taping (KT) has been used in treatment of MPS. There is no study to demonstrate its effect quantitatively on muscle. We aimed to investigate KT on pain, cervical range of motion (ROM), neck disability and to determine the effect of KT on trapezius muscle with shear wave velocity (SWV).
Methods: 30 female patients with MPS included. KT was applied on trigger points of upper trapezius muscle bilaterally, once a week/3 weeks. Pain, pain threshold, cervical ROM, neck disability, quality of life, and muscle stiffness were evaluated with visual analog scale (VAS), algometer, goniometer, Neck Disability Index (NDI), SF-36 questionnaire, respectively, before and after treatment. Stiffness of trapezius muscle evaluated with SWE.
Results: The mean age of patients were 46.8±11.7 yrs old. There was significant improvement with respect to ROM values of the cervical spine (p< 0.001) after the KT. Mean VAS values of before treatment (BT), and 1, 2 and 3 weeks after KT were 7.93, 5.5, 3.86, and 3.90, respectively. Significant differences of VAS values were detected between BT vs. after KT (p=0.001). Pain threshold increased (P=0.014), and the mean NDI score decreased from 17.53 to 10.50 after KT (p< 0.001). Five subscales of SF-36 questionnaire [physical functioning, social functioning , vitality, mental health, bodily pain] significantly improved after KT. When we analyzed SWVs in bilateral upper trapezius muscles with SWE, SWVs in all cervical positions decreased (p< 0.001) after KT.

P209

AN INVESTIGATION INTO THE EFFECT OF ALTERING THE SIZE OF A VIRTUAL LIMB ON EMBODIMENT AND EXPERIMENTALLY-INDUCED CONTACT THERMAL HEAT PAIN IN HEALTHY PARTICIPANTS

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Background and aim: Studies suggest that altering the visual appearance of size of a body part may affect pain perception. However, the direction of effect varies between studies. It has been suggested that embodiment of the viewed body part may contribute to variance in responses. The aim of the study was to compare the effect of observing different sized virtual hands on perceptual embodiment and on contact-heat stimuli in healthy participants.
Methods: A within-subjects repeated-measures design was used to compare warm detection threshold, heat pain threshold and heat pain tolerance whilst 36 participants (mean±SD age=26.00±7.01 years) observed normal-sized, magnified and minified virtual arm. Contact-heat stimuli was applied to the hand using a 30x30 mm thermode

attached to a TSA-II Neurosensory Analyser. The mean of the responses to an embodiment questionnaire was used as a covariate in a linear mixed model, factoring Condition (i.e. normal-sized, minified, and magnified), and treating participants as random factor.
Results: For warm detection threshold the best model fit included the interaction Condition x Embodiment ($\chi^2(1)=4.43$, $p< 0.05$). However, the estimates of fixed effects failed to detect significant Condition x Embodiment interactions [$F(120,3)=2.04$, $p=0.111$]. For pain threshold and tolerance, the analysis demonstrated that Embodiment and the interaction Condition x Embodiment did not contribute to the model fit.
Conclusion: Embodiment of the virtual hand did not affect pain perception in response to contact heat stimulation when healthy participants observed different sized virtual hands. The clinical utility of the technique should be carefully evaluated.

P210

EFFECTIVENESS OF PAIN NEUROSCIENCE EDUCATION AND COPING SKILLS TRAINING FOR PATIENTS WITH PAIN CATASTROPHISM SCHEDULED FOR A TOTAL KNEE ARTHROPLASTY: RANDOMIZED CONTROLLED PILOT STUDY

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Background: Approximately, 20% of patients with osteoarthritis having undergone a total knee arthroplasty (TKA) experience high levels of pain and disability after surgery. Literature shows that preoperative pain catastrophism is one of the most relevant predictors for poor outcomes following TKA, and it might be an important treatment target before surgery. This randomized single-blind controlled pilot study aimed to compare the effects of a perioperative treatment based on pain neuroscience education (PNE) and coping skills training (CST) to improve knee pain, physical performance and psychosocial outcomes of patients with knee osteoarthritis and pain catastrophism scheduled for TKA.
Methods: Eleven patients with knee osteoarthritis and high levels of pain catastrophism were randomly allocated to receive 3 perioperative sessions of PNE and CST in addition to the usual care (n= 5) or only usual care (n=6). Self-administered questionnaires and physical tests were provided at baseline and 6 months after surgery. Between-group differences were evaluated by the Mann-Whitney U or Student-T test.
Results: No statistically significant differences were observed between groups at baseline. At 6 months assessment, statistically significant differences were observed between groups for physical performance, pain catastrophism, depression and self-efficacy ($p< 0,05$). No significant differences were found in pain, anxiety, disability, quality of life and kinesiophobia (see table 1).
Conclusion: Our results suggest that patients receiving PNE and CST showed more significant improvements in physical performance and psychosocial variables (pain catastrophism, depression and self-efficacy).
Ethical considerations: Approved by the Clinical Research Ethics Committee of Hospital Clínic of Barcelona.

REHABILITATION THERAPIES

P211

EFFECTS OF SPECIFIC VERSUS GENERAL EXERCISES ON NECK PROPRIOCEPTION IN PATIENTS WITH CHRONIC NON-SPECIFIC NECK PAIN

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Background and aims: Chronic neck pain is associated with proprioceptive deficit and deep muscles morphological changes. It is believed that deep neck muscles have extremely high density of muscle spindles. This characteristic may make them play an essential role in neck proprioception. However, it is not clear if therapeutic exercises targeting deep neck muscles have superiority in improving proprioceptive deficit or general exercises which is frequently recommended to patients.
Methods: In this preliminary randomized clinical trial 20 patient with chronic non-specific neck pain were recruited and allocated into two groups. One group received specific exercises including deep neck muscles strengthening and the other group received neck general exercise including neck and shoulder free active range of motions (ROM). Absolute repositioning error in neck rotation was measured. Repeated measures ANOVA was used to analyze data. The level of significance was set at 0.05.
Results: The main effect of time was found significant (F=4.42, p=0.04) indicating both general and specific exercises improved neck proprioception significantly, although the main effect of group was not significant (F=1.101, p=.32). Furthermore, the group by time interaction was not significant (F=0.67, p=0.42) demonstrating similar effects of both specific and general exercise on neck proprioception.
Conclusions: Results of the present study indicate that both deep neck muscles strengthening and general ROM exercises improved neck proprioception challenging the belief of more essential role of deep neck muscles in proper neck proprioception compared to superficial muscles.

P212

IMPORTANCE OF TYING THE SCIATIC NERVE IN ABOVE KNEE AMPUTATION TO PREVENT NEUROMA FORMATION

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Background: Sciatic nerve is the thickest nerve in human body. Neural sheath of sciatic nerve is rich in microvasculature. In this study we compared neuroma formation after tying the sciatic nerve with leaving its cut end open in patients who undergo above knee amputation.
Methods: We followed a total of 90 patients who underwent above knee amputation. In half of these patients, cut end of sciatic nerve was left open and in other half, the nerve was tied. Patients in both the groups were age, sex and BMI matched. Neuroma formation in the stump was assessed one year after surgery. This assessment was done by measuring the diameter of sciatic nerve ending using sonogram. Sciatic nerve diameter was measured bilaterally at the same level, and the value of the normal limb was taken as control.
Results: Of 45 patients who underwent tying of sciatic nerve, only 10 patients developed thickening of the cut end of sciatic nerve in comparison to opposite limb. On the other hand, 45 patients in whom the cut end was left open, 33 patients developed neuroma formation. Result was statistically significant.

Conclusion: Rich microvascularity of sciatic nerve results in the formation of haematoma beneath the cut end, if left open. This haematoma eventually results in growth of neural fibres. As a result of this, neuroma formation occurs at cut end in above knee amputation. We thus conclude, it is wise to tie the cut end of sciatic nerve in above knee amputation to prevent neuroma formation.

P213

FENTANYL VERSUS DEXMEDETOMIDINE WITH BUPIVACAINE IN ULTRASOUND GUIDED SUPRACLAVICULAR BLOCK IN HEAMODIALYSIS SHUNT SURGERIES

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Background: Ultrasound guided supraclavicular brachial plexus block provides perfect option for end stage renal disease patients undergoing arteriovenous fistula for hemodialysis.
Purpose: To evaluate and compare the effects of adding fentanyl to bupivacaine versus bupivacaine with dexmedetomidine in ultrasound guided supraclavicular brachial plexus block for shunt surgeries in chronic renal failure as regards efficacy of block and possible side effects.
Methods: Thirty adult patients with ESRD admitted for shunt surgery in the arm or forearm under ultrasound guided supraclavicular brachial plexus block randomly assigned into two equal groups (15 patients each) according to adjuncts added to bupivacaine, either fentanyl or dexmedetomidine. The demographic data of patients was recorded and block characteristics categorized according to sensory block onset time and duration and motor block onset time and duration. The hemodynamics, duration of analgesia, time of first analgesic administration, total dose of analgesics used, VAS score, Ramsey sedation score and complications were recorded and subjected to statistical analysis.
Results: Both dexmedetomidine and fentanyl provide rapid onset and prolonged duration of both sensory and motor block but more with dexmedetomidine and the results were statically significant. There is also statically significant difference in the duration of analgesia and sedation score in the side of dexmedetomidine. Demographic data, duration of surgery appeared without significance between two groups.
Conclusion: Addition of dexmedetomidine to bupivacaine to supraclavicular brachial plexus block provide more favorable condition for surgery than fentanyl, more duration of analgesia and better sedation with less hemodynamic variability and low incidence of complications.

P214

FIRS DO NOT HARM: HOW THE DEXAMETHASONE CAN IMPROVE POSTOPERATIVE ANALGESIA AFTER SHOULDER ARTHROSCOPY

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Aim: To compare the effect of i.v. dexamethasone with that of perineural on the prolongation of analgesic for shoulder arthroscopy.
Methods: This is a prospective double-blind randomized placebo-controlled study in patients undergoing elective arthroscopic shoulder surgery under regional anesthesia with a single-shot ISB (ropivacaine 0.5% 30 mL). Patients were randomized in three groups: ropivacaine 0.5% (G1); ropivacaine 0.5% and dexamethasone 8 mg perineural (G2); and ropivacaine 0.5% with dexamethasone 8 mg i.v. (G3). Patients were assessed during first 24 hours after surgery for the duration of analgesia, defined as the time from the onset of sensory blockade to the first analgesic request, motor block duration, satisfaction score with pain control and total analgesic use.

Results: Between 1/2015-5/2016, 129 patients were randomized. 120 patients (51F/69M) with a mean age of 57.6 years (range, 18-79 years) completed the study (forty patients in each group). The median duration of analgesia was significantly different between the three groups (G1, 12,65 [12.1-13.1] h; G2, 21,09 [19.9-22.2] h; and G3, 22,5 [21.2-23.6] h; p = 0.0001). Patients experienced significantly longer pain free interval when dexamethasone was added to ISB. Total analgesic use presented a significant lower consumption comparing G1 group to G2 and G3 respectively (p< 0,0001). In both dexamethasone groups (G2 and G3) patient satisfaction was significantly higher in comparison with G1 group (p< 0.001).
Conclusion: Dexamethasone significantly prolongs the duration of analgesia for ISB when added perineural and even more when administrated i.v.

LATE BREAKING PAIN SYNDROMES AND GENERAL GUIDED POSTER WALK

P215

MANAGEMENT AND QUALITY OF LIFE OF PATIENTS WITH CHRONIC PAIN ATTENDING PRIMARY CARE UNITS IN MAINLAND PORTUGAL: AN OBSERVATIONAL STUDY

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Background and aims: Patients with chronic pain are often undertreated, which can have a detrimental effect on the health-related quality of life (HRQoL). The aim of this study was to investigate how chronic pain is managed and to assess the HRQoL in patients attending primary care units in mainland Portugal.
Methods: A cross-sectional, multicentric, observational study was carried out at primary care units in continental Portugal. Adult patients (≥18 years-old) attending primary care appointments from September 2017 to November 2018 were screened for chronic pain.The physicians collected data including pain medication, resolution of pain after treatment, and use of health care resources from medical records and by interviewing the patients. The HRQoL was evaluated using the EuroQol 5-dimension 3-level (EQ-5D-3L) questionnaire and the EQ-5D-3L 100-mm visual analogue scale (EQ-VAS).
Results: A total of 578 patients from 58 primary care units were included in the study. The mean (SD) overall EQ-5D-3L score (Portuguese value set) was 0.403 (0.229) and the mean EQ-VAS score was 55.9 (19.6). Pain/discomfort (92%), usual activities (74%), and anxiety/depression (69%) were the most affected HRQoL domain. Most of the patients (95%) were medicated for pain, however, 62% of the patients had insufficient pain relief with the current treatment. The health care resource most used in the past 12 months was primary care ambulatory appointments (99%).
Conclusions: This population of patients with chronic pain attending primary care units in mainland Portugal has a very low HRQoL according to all domains of the EQ-5D-3L questionnaire.

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SEVERE CHRONIC LOW BACK PAIN PATIENT JOURNEY IN EUROPE - OPPORTUNITY FOR BETTER MANAGEMENT

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Background and aims: Chronic low back pain (LBP) is a leading cause of disability. This study, the first patient journey in Europe, assessed LBP management perspectives of patients and general practitioners (GPs).
Methods: In-depth one-to-one, telephone interviews and small-group discussions were conducted in the UK, Germany, Italy and Spain with a total of 40 GPs and 20 patients.
Results: The patient journey had 4 phases, Onset of Symptoms (2wks to 12 mts), Simple Problem (1-6mts), Complex Puzzle (6mts -2 yrs), Unsolvable Frustration (>2yrs), comprising 8 steps (Initial Presentation/Quick Fix, Movement Therapies, Underlying Cause, No Easy Fix, Shifting Focus to Lifestyle/Psychology, Exploring Unfamiliar Treatment Options, Giving up Hope, Resigned to the Problem). Initially, patients self-manage, followed by GP consultation and treatment with NSAIDs/paracetamol, heat/gels, with patients perceiving treatment as hurried/superficial. Subsequently, GPs recommend movement therapies (e.g. physiotherapy), investigate causes and escalate treatment to strong analgesics (e.g. tramadol) with patients losing confidence and becoming frustrated with pain. Later management focusses on lifestyle, psychological strategies and strong opioids, with GPs concerned about dependency; patients' lifestyles become increasingly limited, with reduced quality of life, depression and anxiety and they feel frustrated/unheard. Subsequently, patients lose hope, become increasingly depressed and accept a restricted life style; GPs express frustration about patient attitude to coping and concern about long-term high-dose opioids.
Conclusions: This patient journey shows the inadequate/sub optimal management of LBP at GP setting, there is scope for improvement especially at the earlier stages of disease when appropriate management may lead to better patient outcomes.

P217

PAIN CONTROL BY KETAMINE IN COMBAT SITUATIONS: CONSIDERATION AND OUTCOMES

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Background: Pain management is an important key point to surmount multi injured peoples in an overcrowding emergency setting. Its roll would be more apparent when the physician encounters a mass casualty in a war zone or even a military prehospital. Having sedative and analgesic properties, rapid onset and offset effects, maintaining the cardiovascular and respiratory contain are the main reason for selecting ketamine as a good choice in war zone.
Methods: In a prospective interventional study in a war zone, we have selected and followed the two groups are casualties for pain management. All were men with the average age of 26.6±8 y/o and 27.5 ±7 y/o in group A and B respectively. Group A received only Ketamine and Group B, received ketamine and diazepam.
Results: This study showed that all of the injured patient who received ketamine have experienced some degrees of agitation and they may finally need benzodiazepines for sedation but in group B that received benzodiazepine before or concomitant with ketamine, the agitation was significantly reduced. (P Value ≤0.05)
Conclusion: Various factors may effect on pain score and pain perception; patients culture, mental health, previous drug usage and addiction could alter the pain score in the similar situations. It seems that the significant agitation is due to catecholamine release in the rough situation of war zone that is exacerbated with the ketamine properties, nonetheless, as a good choice, ketamine is now recommended to use with benzodiazepines in critical condition such as war zone for sedation and analgesia.

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CAREGIVER ANXIETY AND THE ASSOCIATION WITH ACUTE POST-OPERATIVE PAIN IN CHILDREN

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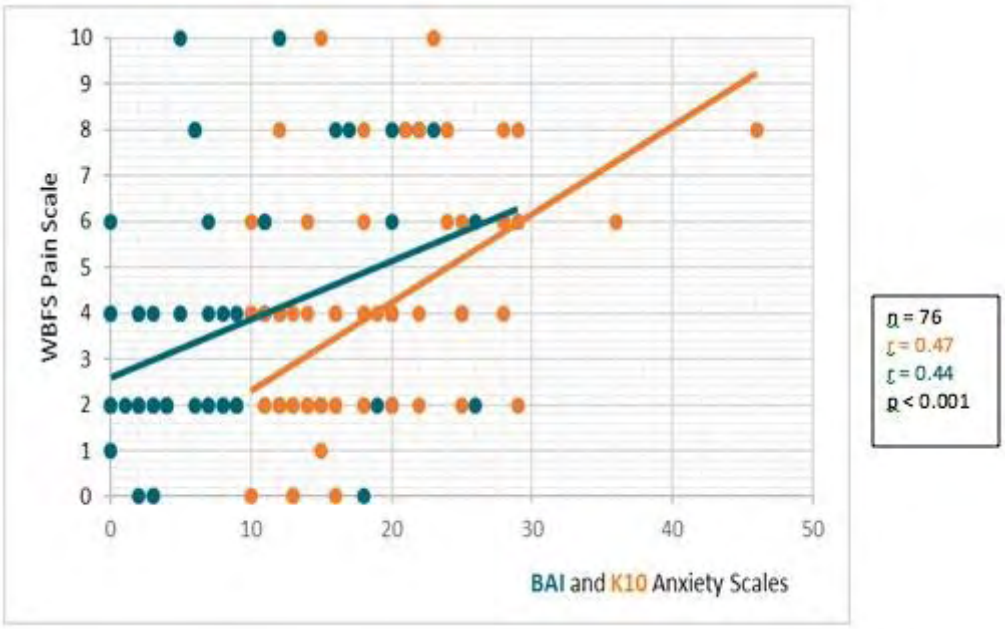
Background and aims: The successful management of children's postoperative pain requires a biopsychosocial approach. The purpose of this cross-sectional study was to examine caregiver's pre-operative anxiety and children's post-operative pain and to test for an association between these variables in a South African setting.
Methods: Included in the study were 76 children aged 4 to 12 years undergoing elective ambulatory tonsillectomy or adenotonsillectomy and the primary caregiver accompanying them. Caregivers completed validated measures of anxiety before surgery. Children's post-operative pain was measured 4 hours after surgery.
Results: Approximately one-third of caregivers were anxious before their children underwent surgery. 51% of children had moderate post-operative pain. Spearman's rank correlation and quantile regression showed that caregiver anxiety was associated with post-operative pain ($p < 0.0001$).
Conclusions: These findings suggest that presurgical assessment of caregiver anxiety predicts greater pain intensity in children undergoing elective, ambulatory surgery. Preoperative assessment of caregiver anxiety will help identify children at an elevatedrisk for severe postoperative pain.



[Association between caregiver anxiety and child's pain]

P219

TRENDS IN LUMBAR SPINE SURGERY IN NORWAY: A 15-YEAR STUDY

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Background and aims: There are no previous studies of spinal surgery rates in Norway. The purpose of this study was to investigate trends in lumbar spine surgery in Norway over 15 years, including length of hospital stay, and rates of complications and reoperations.
Methods: Hospital patient administrative data was linked with sociodemographic data from the National Registry in Norway. Annual rates of simple (microsurgical discectomy, decompression) and complex surgical procedures (fusion, disc prosthesis) in the lumbar spine were analyzed in all patients aged ≥ 18 years discharged from Norwegian public hospitals between 1999 and 2013.
Results: The rate of lumbar spine surgery increased by 54%, from 78 (95%CI [75-80]) to 120 [107-113] per 100,000, from 1999 to 2013. More men had simple surgery whereas more women had complex surgery. Among elderly people over 75 years, lumbar surgery increased by a factor of 4.5 during the 15-year period. The rates of complications were low, but increased from 0.9 in 1999 to 2.3 per 1000 in 2013.
Conclusions: There was an increase in spinal surgery in Norway, similar to trends in other Western world countries. The rise in lumbar surgery among elderly people represents a challenge for health services, given our ageing population.

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CHRONIC PAIN AND COGNITIVE PERFORMANCE IN OLDER CAREGIVERS: LONGITUDINAL STUDY

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There is some evidence on the influence of chronic pain on cognition, however, further studies need to be conducted in order to better investigate this association.

Objective: to compare cognitive performance among the groups of elderly caregivers with chronic pain and absence of pain over four years and to identify the associated factors in the improvement/worsening of cognitive decline.
Method: Longitudinal study conducted between 2014 and 2018/2019 with elderly caregivers. Interviews were conducted at the participants´ homes. Cognition was evaluated by the Addenbrooke´s Cognitive Examination (ACE-R), which includes the domains: orientation/attention, memory, verbal fluency, language, spatial visibility skills and total score. Statistical analyzes were performed using the Shapiro-Wilk test, paired t-test and multivariate linear regression. All ethical precepts have been respected.
Results: 104 elderly caregivers divided into two groups: with chronic pain (n = 73) and absence of pain (n = 31). There was a significant difference over time in cognitive performance in the group with chronic pain in the ACER-R total score (p = 0.017). In the memory domain were observed in the group with chronic pain (p = 0.036) and absence of pain (p = 0.001) over four years. In the regression results for the total ACE-R instrument, it was observed that the variables presented in the model were not statistically significant.
Conclusion: The results showed that the elderly caregivers with chronic pain had a worse cognitive performance over four years in the total score of the ACER instrument compared to those without pain.

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A PROSPECTIVE, MULTI-CENTER, RANDOMIZED, CLINICAL TRIAL COMPARING COOLED RADIOFREQUENCY ABLATION VS A SINGLE INJECTION OF HYALURONIC ACID IN THE MANAGEMENT OF OA KNEE PAIN

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Cooled radiofrequency ablation (CRFA) is a minimally invasive procedure for the treatment of knee OA pain that can bridge the gap between nonsurgical and surgical procedures. In this clinical trial, one-hundred seventy-seven patients with OA underwent diagnostic block injections. Those with a minimum of 50% pain relief were randomized to receive either CRFA on 4 genicular nerves or a single hyaluronic acid (HA) injection. One-hundred and seventy-five patients were treated (n=88 CRFA and 89 HA) and evaluated for pain (numerical rating system=NRS), function (WOMAC), Global Perceived Effect (GPE), and safety at 1, 3, and 6 months. The two groups had statistically similar demographics and pain at baseline. One hundred and fifty-eight patients completed 6-months post treatment (n=76 CRFA and 82 HA). In the CRFA group, 71.1% of patients (95%CI 60.9-81.2) had ≥50% reduction in NRS pain score compared to 37.8% (95%CI 27.3-48.3) in the HA group (p< 0.0001, primary endpoint). The mean NRS was 2.7±2.3 for the CRFA group and 4.5±2.7 for the HA group (p< 0.0001). The mean WOMAC score improvement from baseline was 48.2% in the CRFA group and 22.6% in the HA group (p< 0.0001). At 6 months, 72.4% (55/76) of subjects in the CRFA group reported improvement in Global Perceived Effect compared to 40.2% (33/82) in the HA group (p< 0.0001). No serious adverse events related to either procedure were noted. Overall adverse event profiles were similar. CRFA treated patients demonstrated significant improvement in pain relief and overall function compared to patients treated with HA.

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RELAPSING-REMITTING CRPS: CASE-BASED DISCUSSION OF A RARE SUBTYPE

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Background and aims: Complex Regional Pain Syndrome (CRPS) is a chronic condition that arises following injury. It is characterised by autonomic, nociceptive, vascular and trophic changes. The clinical course is generally persistent, however a rare subtype termed 'relapsing-remitting' was outlined in Veldman's seminal 1993 prospective study. Evidence in literature for this subtype is brief and the lack of clear evidence, alongside difficulty in treatment, indicates that it deserves further discussion.
Methods: We examined the medical notes of 4 patients who suffered from this subtype, identified from a larger population with primarily persistent CRPS seen over the past 10 years at a tertiary pain treatment centre. We looked at a variety of case demographics such as initial and persisting symptoms, examination findings and relapse episodes in an attempt to characterise shared themes among those affected.
Results: All patients fulfilled the CRPS Budapest diagnostic criteria. Symptoms first presented in childhood in 2/4, consistent with case reports in the literature, and 2/4 had pinprick hyperalgesia, an otherwise uncommon finding in our population with persistent CRPS. Remission and relapse occurred more than 2 times in 3/4 sufferers. There was a high degree of activity avoidance due to pain reported in 3/4 patients.
Conclusions: Relapsing-Remitting CRPS is a rare subtype with little research performed. Following analysis of

sufferers from the population at our tertiary centre we have attempted to identify shared themes among them and begin developing a deeper understanding. We hope that further research will be conducted into this rare subtype.

P223

S1PR ANTAGONIST ATTENUATES MECHANICAL ALLODYNIA IN A MOUSE MODEL OF CHRONIC CRPS BY INHIBITING SPINAL REACTIVE ASTROCYTE-MEDIATED NEUROINFLAMMATION THROUGH THE NF-ΝB PATHWAY

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Background and Aim: Although the mechanisms supporting the chronic phases of complex regional pain syndrome (CRPS) are still very poorly understood, reactive astrocyte-mediated neuroinflammatory responses in the spinal dorsal horn has been identified as one of the major causes of central sensitization, and has been regarded as one of the causes of the chronic stage of CRPS in previous studies.
Method: FTY720 has been reported to act as an inhibitor of sphingosine-1 phosphatase (S1P) receptor. Here, we explored the anti-allodynia effects of FTY720 on a model of chronic CRPS induced and investigated the levels of the GFAP protein and the mRNA and protein levels of pro-inflammatory cytokines in the spinal cord, including interleukin-6 (IL-6) and tumor necrosis factor-α (TNF-α), C-C motif checmokine ligand 2 (CCL2).
Results: Chronic CRPS model using limb fracture and cast immobilization significantly induced mechanical allodynia. Intrathecal administration of FTY720 remarkably reversed the mechanical allodynia and reduced the mRNA levels of IL-6, TNF-α, and CCL2 in the spinal cord. Additionally, according to the in vitro data, the FTY720 treatment inhibited S1p-induced increases in the mRNA and protein levels of IL-6, TNF-α, and CCL2 and suppressed the NF-κB pathway by inhibiting the phosphorylation of NF-κB/p65 and the degradation of inhibitor of NF-κB (IκB) in astrocytes without toxicity to astrocytes.
Conclusion: Overall, the analgesic effect of FTY720 correlated with the inhibition of spinal reactive astrocyte-mediated neuroinflammation through the NF-κB pathway in a mouse model of chronic CRPS.

PAIN IN GENERAL

P224

EFFECT OF MONOPOLAR ELECTRICAL DRY NEEDLING ON PAIN AND SPONTANEOUS ELECTRICAL ACTIVITY OF MYOFASCIAL TRIGGER POINTS

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Background and aims: Nowadays, motor endplate dysfunction has been stablished as the epicenter of Myofascial Trigger Points (MTrP), being Spontaneous Electrical Activity (SEA) its electromyographic representation. Dry needling technique has been shown to be able to modulate this electromyographic activity, but in return, it provokes pain during and after its application. Electrical dry needling is a less painful technique currently used for the treatment of the MTrP, but its ability to modulate SEA has not been studied so far.
Methods: We present a series of cases of subjects with at least one latent Myofascial Trigger Point in the

infraspinatus muscle treated with monopolar electrical dry needling. Prior to the intervention, we measured the Visual Analog Scale (VAS) and the Pressure Pain Threshold (PPT) in the MTrP. SEA of the MTrP was evaluated using needle-electromyography. Afterwards, a monopolar electrical dry needle treatment was performed through the electromyographic needle using intervals of 15 seconds of application. VAS and PPT measurements were re-evaluated immediately after and again at 12, 24 and 48 hours after the intervention.
Results: SEA was normalized with an average of 35 seconds of treatment. Immediately after the intervention, the mean for VAS was 1.33 cm, 0.33 cm at 12 hours, and 0 cm at 24 and 48 hours. The PPT also increased.
Conclusion: Monopolar electrical dry needling is a technique capable of modulating the Spontaneous Electrical Activity of the Myofascial Trigger Point and not as painful as dry needling.

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BENZODIAZEPINES: ADJUNCTS FOR PAIN TREATMENT?

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Introduction: Benzodiazepines are effective adjuncts of acute pain because of their anxiolytic and muscle relaxant properties, but don't have analgesic effects and cause dependence, addiction and tolerance.
Suspension-guidelines:
Immediate discontinuation after 30 days. If the patient cannot be left without medication, benzodiazepine should be replaced by another with half-life superior, with equivalence adjustment. Weekly decrease is 50% (8-12 weeks); when withdrawal symptoms persist, withdrawal should be slower (6 months).
Objective: The prospective 2014-2018 study was intended to evaluate suspend benzodiazepine guideline effects.
Patients: 41 women and 26 men with chronic pain without lesion aged 28-60 treated with benzodiazepine for more than 6 months which accepted to discontinue treatment.
Method: Simple randomized patients assigned to receive 3 different kinds of treatment. Patients continued to receive unchanged treatment for pain.
Group I - 13 women, 10 men - medication was immediately discontinued. 8-12 weeks.
Group II - 15 women, 7 men - replacement by another with half-life superior, with equivalence adjustment. Dose was decreased to 50% every week (8-12 weeks). When withdrawal symptoms persist, the drug was discontinued slower. 6-8 months.
Group III - 13 women, 9 men - Benzodiazepine was discontinued (1/4 tablet, month), replaced by chlorpromazine 25 mg (1/4 tablet, month, 3 years).
Results: Group I - 1 woman hit the target.
Group II - 9 women, 2 men hit the target.
Group III - 11 women, 4 men hit the target.
Conclusion: Group III got the best result, regardless of the time of benzodiazepine use..

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METERED-DOSE CANNABIS INHALER PROVIDES CONSISTENT, DOSE-RELATED THC BLOOD CONCENTRATION AND ANALGESIC EFFECTS, IN PATIENTS WITH CHRONIC NEUROPATHIC PAIN

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Background: Currently, medical cannabis treatments' dosing is imprecise. Consequently, balancing between symptom relief and adverse events remains challenging. Therefore, administration by smoking or vaporization as standard treatment is limited, and physicians are reluctant to prescribe medical cannabis. Syqe Medical developed a thermal-metered-dose cannabis inhaler delivering low, precise and selective therapeutic doses of Δ^9-THC from raw cannabis.
This study tested the pharmacokinetic profile, safety, and analgesic effect of a single inhalation compared to placebo, in adult patients suffering from chronic pain.
Methods: In a randomized, 3-arms, double-blind, cross-over, placebo-controlled clinical trial, 27 patients were enrolled to receive, in three study sessions, a single inhalation of Δ^9-THC: 0.5mg, 1mg or placebo. THC pharmacokinetic profile, pain intensity, safety parameters and cognitive tests were performed at pre-defined time points in each session.
Results: Following inhalation of 0.5mg or 1mg, Δ^9-THC plasma Cmax±SD was 14.3±7.7ng/ml and 33.8±25.7ng/ml respectively. Tmax±SD was 3.7±1.4 and 4.4±2.1 minutes respectively. $AUC_{0\rightarrow infinity}$±SD was 300±144ng*min/ml and 769±331ng*min/ml, respectively.
Both 0.5mg and 1mg doses showed a significant reduction in pain intensity compared with baseline (maximum change in VAS score was 24.97% and 39.42% respectively. *P< 0.0001*), that remained stable for 150 minutes. Furthermore, 1mg dosage showed significant pain decrease compared to placebo (*P< 0.0001*). Adverse events were mild and resolved spontaneously. There was no evidence of consistent impairment in cognitive performance.
Conclusions: Syqe inhaler demonstrated effective delivery of low, precise and selective therapeutic doses of THC, enabling individualization of medical cannabis regimens that can be evaluated pharmacokinetically and pharmacodynamically using accepted pharmaceutical models.

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CURRENT STATUS OF PAIN MEDICINE TRAINING IN RESIDENCY PROGRAMS IN KOREA: A SURVEY OF ANESTHESIOLOGY AND PAIN MEDICINE RESIDENTS IN UNIVERSITY HOSPITALS

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Background: This study evaluates the current status of pain medicine training in residency programs in anesthesiology and pain medicine in Korea.
Methods: We analyzed survey data from residents undergoing anesthesiology and pain medicine training. We assessed the aim of the residency training, satisfaction status of pain medicine education, duration of pain medicine training, opinions on current training period, desired period of training, and plans after graduating from the residency. We defined residency as first and second years (group J) and third and fourth years (group S).
Results: In total, 156 residents were involved, of whom 52 (33.3%) residents felt they had not had adequate training in pain medicine. Group S showed a significantly lower satisfaction in the training program. Ninety-one (58.3%) residents underwent training for less than two months during a 4-year residency program. One hundred and eight (70.6%) residents felt the current training period for pain education was too short and 95 (60.9%) residents requested over six months for proper education; there was no significant difference between the groups. After graduating from the residency, 80 (49.1%) residents planned to pursue a fellowship in pain medicine.
Conclusions: Owing to working hour limitations and a structural tendency toward anesthesia training in current programs, lack of opportunity for clinical experience in pain medicine require further training in the form of a fellowship. To overcome these issues, an increase in the pain-training period and the creation of detailed educational objectives for technical skills will be needed.

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MANAGEMENT THE FUNCTIONAL STATUS AND THE QUALITY OF LIFE OF PATIENTS WITH KNEE OSTEOARTROSIS AND RELATED FACTORS

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Objective: To evaluate the functional disability associated to the impact on the quality of life of patients with knee osteoarthrosis (OA), followed by educational actions for self management.
Method: A cross-sectional, descriptive and analytical study with a sample of 32 patients ≥50 years old with knee OA and radiographic findings of Kellgren and Lawrence grade II or higher who may be receiving oral or topical analgesics. Pain and function were assessed by Brief Inventory of Pain and WOMAC. Quality of life (QOL) was used by Whoqol-bref and the emotional aspects were verified by the Hospital Anxiety and Depression Scale.
Results: The mean age was 61 ± 5.8 years, 62% female, with a mean duration of knee OA of 5.4 ± 2.5 years. The degrees of KL were: grade 2: 21/32 (65.6%); grade 3: 8/32 (25%); grade 4: 3/32 (9.4%). Subjects had a mean educational level of 8.5 ± 3.5 years. After applying a short-term program with participatory education and self-management strategies, there was a telephone reinforcement after 1 month and reassessment after 3 months, where the intensity of pain and walking, sleep, work and the use of the life were significantly better ($p \leq 0.05$). The positive impact on QoL was in the physical, psychological and environmental domains and, when correlating QoL and functional disability, a significant result was observed in the physical aspects ($r = 0.40$).
Conclusion: Educational actions for self-management, strengthened by guidelines and telephone reinforcements, proved to be effective in patients with knee OA.

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COULD ANTICONVULSANTS HAVE AN EFFECT ON MOOD DISORDERS ASSOCIATED WITH CHRONIC PAIN?

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Background and aims: Anticonvulsants are easily prescribed as co-analgesics from primary care for pathologies that present with chronic pain, such as neuropathic pain and fibromyalgia syndrome, which associate with mood disorders. In fact, pregabalin has been accepted by the EULAR and the FDA for the treatment of fibromyalgia, with good results in pain and in a range of comorbid symptomatology. Therefore, we question whether pregabalin could be involved in the mechanism of amelioration of mood disorders related to chronic pain states. The aim of this study is to examine the role of pregabalin in depressive-like symptomatology comorbid to chronic widespread pain using a reserpine-induced myalgia model (RIM), introduced as a fibromyalgia animal model by Nagakura's research team in 2009.
Methods: Effects of pregabalin and duloxetine (an SNRI, used as a positive control) have been tested on the alteration of pain thresholds (in terms of tactile allodynia (Electrovonfrey test) and mechanical hyperalgesia (Randall and Selitto test)), as well as on short-term (Forced swimming test) and long-term (Novelty-Suppressed Feeding test) depressive-like behaviors on the RIM model.
Results: Results shown that chronic treatment with pregabalin had analgesic effects on tactile allodynia and mechanical hyperalgesia; on the other side, pregabalin was effective in the early, but not in the chronic depressive-like symptoms caused by this model.
Conclusions: This study considers an early antidepressant role of anticonvulsants, which may be due to an antinociceptive effect. Nevertheless, results suggest the need to deepen the anticonvulsants implication on neuronal circuits related to pain and mood.

PAIN IN THE ELDERLY

P230

A FEASIBILITY STUDY ON PAIN NEUROSCIENCE EDUCATION IN INSTITUTIONALIZED OLDER ADULTS WITH CHRONIC PAIN

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Objective: Pain is a major problem in older adults who are institutionalized. However, non-pharmacological interventions targeting this group are scarce. Pain neuroscience education has been used in other settings with positive effects on pain, but its use with older adults who are institutionalized has never been explored. This study aims to evaluate the feasibility of an intervention program based on pain neuroscience education and dance in institutionalized older adults with chronic pain.
Methods: Forty older adults were screened for inclusion and 8 met the inclusion criteria. All participants received an intervention, consisting of six sessions of PNE and dance. Participants were assessed at baseline and at the end of the intervention regarding knowledge of pain neurophysiology, pain intensity, depressive symptoms, catastrophizing, fear of movement and lower limb performance. At the end of the intervention participants participated in a focus group interview which was analysed using content analysis.
Results: A high number of older adults did not meet the inclusion criteria. Participants that entered the study attended all sessions and were able to understand pain neuroscience concepts. Results suggest pain neuroscience education may decrease pain intensity and pain catastrophizing.
Conclusion: Pain neuroscience education is a feasible treatment for institutionalized older adults, may have a positive impact on pain intensity and catastrophizing, but a high number of participants is likely to not meet inclusion criteria to receive this intervention.

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COMPARISON OF INTRAVENOUS AND EPIDURAL PATIENT-CONTROLLED ANALGESIA IN ELDERLY AFTER FEMORAL FRACTURES SURGERY: RANDOMIZED CONTROLLED TRIAL

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Background and aims: To compare effectiveness and safety of epidural patient-controlled analgesia (PCEA) using 0.125% levobupivacaine and intravenous patient-controlled analgesia (PCIA) with morphine in elderly patients after femoral fractures surgery.
Methods: Randomized, prospective, controlled study in an academic hospital. Patients were ≥ 65 years old, scheduled for the femoral fracture fixation from July 2016 to September 2017. Analgesia was assessed by Numerical Rating Scale (NRS) every 3 hours after surgery for 72 hours. Anxiety and depression were assessed before and after surgery by Hospital Anxiety and Depression Scale (HADS). Postoperative evaluation included mental status, cardiorespiratory, gastrointestinal and motor functions.
Results: Study population included 70 patients, 35 in each group. The NRS pain scores were significantly lower in the PCEA group at all postoperative time points. Anxiety scores were significantly higher in the PCIA group at certain postoperative time points. Mental functions were better preserved in the PCEA group. In the both groups respiratory and hemodynamic values remained within the normal range throughout the study period. There was no significant difference in the presence of side effects and depression scores between the groups.

Conclusions: PCEA with 0.125% levobupivacaine provides better pain relief, reduces anxiety and improves mental status compared to PCIA with morphine in studied population.
Key words: intravenous analgesia, epidural analgesia, elderly, femoral fractures, patient-controlled analgesia

PAIN IN VULNERABLE GROUPS

P232

EXAGGERATED HYPERALGESIA AND BLUNTED CONDITIONED PAIN MODULATION IN PATIENTS WITH MAJOR DEPRESSIVE DISORDER

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Background and aims: The extensive mutual comorbidity of chronic pain and major depression disorder (MDD) is not well characterized.
Methods: Experimentally induced hyperalgesia was assessed in 38 acute/remitted MDD patients, 51 healthy subjects by two human surrogate models, namely repeated strong heat stimulation (60 x 48°C for 6 s, RHS) and by electrical high-frequency stimulation - 5 x 1 s trains at 100 s^{-1} and 10x detection threshold; HFS). Pain was estimated by numerical rating scales before and after hyperalgesia induction. Hyperalgesia was tested by short heat ramps, electrical stimuli, punctate stimuli and light touch stimuli in the primary and secondary pain areas. Conditioned pain modulation (CPM) elicited by 3 min cold pressor test was assessed by change of pressure pain threshold.
Results: MDD patients exhibited significantly increased hyperalgesia in both models to punctate and light touch stimuli in primary and secondary hyperalgesia areas (all $p < 0.05$), but not enhanced heat hyperalgesia. The magnitude of hyperalgesia correlated significantly with depression and trait anxiety. Medication by monoamine reuptake inhibitors (in half of the MDD patients cohort) mitigated the magnitude of hyperalgesia significantly ($p < 0.005$). Significant CPM was present in healthy subjects, but not MDD patients.
Conclusions: Enhanced hyperalgesia in experimental models highlights a risk of exaggerated pain plasticity in MDD patients related to the magnitude of depression and anxiety. This paralleled blunting of the CPM response. Notably, monoamine reuptake inhibitors had a dual effect being an adequate antidepressant treatment but also mitigating pain plasticity.
Funding: Deutsche Forschungsgemeinschaft (DFG-CRC 1158 project B09).

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NOCICEPTIVE RESPONDING IN THE VALPROIC ACID ANIMAL MODEL OF AUTISM AND ASSOCIATED CHANGES IN NEURONAL ACTIVATION

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Background: Increasing evidence indicates that individuals with autism spectrum disorders (ASD) exhibit altered pain perception and expression. This study investigated nociceptive responding in a model of autism, the valproic acid (VPA) prenatally-exposed rat, and associated changes in neuronal activity.
Methods: Pregnant female Sprague-Dawley rats received VPA(500mg/kg;s.c.) or saline at GD12.5. Male and female

offspring (PND43-49) underwent nociceptive testing in the hotplate (HPT; thermal), von Frey (VFT; mechanical), acetone drop (sensitivity to cold innocuous stimulus) and formalin tests (inflammatory). Animals were sacrificed post formalin and the expression of the neuronal activation marker cFOS was assessed in the spinal cord and prefrontal cortex (PFC) using qRT-PCR.
Results: Male and female VPA-exposed rats exhibited increased latencies to respond in the HPT and increased withdrawal thresholds in the VFT. There was no difference between VPA- and saline-exposed rats in the acetone drop test. Female rats exhibited higher formalin-evoked nociceptive responding when compared with male counterparts. VPA-exposed female rats exhibit reduced formalin evoked nociceptive behaviour from 5-10min compared to saline-exposed counterparts. Intra-plantar formalin induced an increase in cFOS expression in the ipsilateral spinal cord of both saline- and VPA-exposed rats. Female formalin-treated rats exhibited reduced cFOS expression in the PFC when compared with male counterparts. Furthermore, VPA-exposed formalin-treated female rats exhibited a reduction in cFOS expression when compared with saline-exposed counterparts.
Conclusions: These data indicate that prenatal exposure to VPA results in hypoalgesia during adolescence, an effect which may be mediated, in part, by alterations in neuronal activity in brain regions such as the PFC.
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SUICIDAL IDEATION AND THOUGHTS OF SELF-HARM IN PEOPLE WITH FIBROMYALGIA: A COMPARISON WITH PEOPLE FROM OTHER PERSISTENT PAIN POPULATIONS

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Background and Aims
The prevalence of suicidal ideation among people with persistent pain is high. Research investigating suicidal risk within the fibromyalgia population is less well established. There is reason to suggest risk may be higher in the fibromyalgia population compared with other persistent pain populations. People with fibromyalgia may present with several risk factors for suicide in addition to pain, including sleep disturbances and symptoms of psychological distress. Additionally, fibromyalgia is a pathology more common in women than men, with female sex a predisposing factor to suicide. This study is a preliminary exploration of risk in the fibromyalgia population compared with the general persistent pain population.

Methods
41 participants were recruited from a specialist fibromyalgia clinic in the UK. Suicidal ideation was assessed via the PHQ-9 questionnaire (question 9) and compared with a matched sample of participants with non-fibromyalgia persistent pain. Percentages of patients with a score ≥1 and mean scores were compared between groups.

Results
There was a 4.9% increased risk among the fibromyalgia sample (46.3%, μ=0.9) compared with the non-fibromyalgia sample (41.4%, μ=0.51)

Conclusions
From this preliminary study, it seems that people with fibromyalgia are at greater risk of suicide than other persistent pain populations. This has implications for how we assess and manage risk in people with fibromyalgia, both at assessment and throughout the pain management pathway. Further research exploring specific factors associated with suicidality, such as past trauma, are discussed.

PAIN SYNDROMES WALK 5

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EVALUATING INCIDENCE AND PREVALENCE OF PAIN IN PATIENTS ATTENDING FOR ELECTIVE JOINT REPLACEMENT

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Joint replacement is one of the commonest operations performed in the UK It is estimated that 58% of patients following joint replacement will report moderate to severe pain that is poorly controlled. The aim of this audit was to identify pre-operative risk factors that would indicate high levels of post-operative pain.
All Patients attending joint school where invited to take part by completing a series of self-administered validated questionnaires over a period of 2 months. Additional audit tool was used to collect data regarding peri-operative analgesia, post-operative analgesic prescribing.
40 / 50 questionnaires were completed, In the pre-operative assessment 20 patients reported a pain score >7 / 10, 17 reported neuropathic symptoms on SLANS and 15 were identified as catrastrophisers. 11 patients scored highly in all three risk groups.
Those who had all three risk factors reported pain scores 2 points higher on day 1 post op and one point higher on day of discharge when compared with patients who had no risk factors. They also required significantly higher opioid requirements during their admission (172.5mg vs 99.28mg).
There is a clear link between pre-operative risk factors and increased post-operative pain and opioid consumption. Through identification of at risk patients additional analgesia can be arranged to ensure adequate post-operative pain control.

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PREVALENCE OF CHRONIC AND NEUROPATHIC PAIN IN ADULTS WITH MOTOR DISABILITY IN CARE IN BUENOS AIRES CENTERS

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Cross-sectional, multicentric study in 5 centers in the City of Buenos Aires where the presence of chronic pain and neuropathic pain was evaluated in people with disabilities from 18 to 85 years old.
Primary objective: to establish the prevalence of chronic pain and neuropathic pain in people with disabilities.
Secondary objective: to establish this prevalence in different age groups and association with functional pathology and etiology.
Materials and method: EVA and DN-4 were performed in the patients who attended different activities in the centers. 225 patients were enrolled. The global means and by functional classification were calculated.
Results: A prevalence of Chronic Pain 75% in adults and 25% of Neuropathic Pain was found. The order of frequency found within the prevalence of chronic pain was found in
1. Quadriparesis / plejia (Spine Injury, Amyotrophic Lateral Sclerosis, Multiple sclerosis),
2. Hemi and diparesias / plejias (Stroke, Spine injury, Multiple scoliosis),
3. Moderate to severe scoliosis,
4. Parkinson´s disease. And in neuropathic pain the frequency order was higher to lower due to spinal cord injuries, MS and Stroke.
Conclusions: Chronic pain is considered a public health problem, with a prevalence of about 10-20%, of which about 10% corresponds to neuropathic pain in the global population. The prevalence of chronic pain and neuropathic

pain is higher than that described in the general population in people with disabilities. It is necessary to generate centers of specialized attention in preventive aboradaje and in the treatment of chronic pain of people with disabilities.

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BURN PATIENTS PAIN DURING DRESSING CHANGES

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Background and aims: Pain in burn patients is often very intense and depends on a number of factors, size and depth of burn injury, the stage of the disease, the presence of infections, etc.
Methods: The study included 53 patients who had 3-5 days old burn injury, before they were operated (depth of burn IIb / III). Patients were divided into two groups:
group 1: receiving Ketamin (2mg/kg) with Propofol and Fentanyl (in different doses), and
group 2: only Propofol and Fentanyl.
We studied the impact of sex, body weight, burn size expressed as total body surface area (TBSA) on the consumption of Fentanyl, Propofol, Ketamine (individually and in combination). The SPSS-17 program was used for statistical analysis.
Results: The study included 53 patients, mostly men-69.8%, average age 50±19 years. The mean TBSA was 31±17%, (min 9%, max 62%). Group 1: 30 patients 56.6%, and group 2: 23 patients or 43.4%. Patients who did not receive Ketamine required significantly higher doses of Propofol and Fentanyl. Group 1: 180mg±106mg of Propofol compared with 286mg±98mg in group 2 (p = o.ooo), and Fentanyl in group 1: 0.127mg±0.116mg, compared with 0.269mg±0.115mg in group 2, (p = 0.000). The Pearson coefficient of correlation confirmed the negative correlation between the doses of Ketamine and Fentanyl (R = -0.403, p = 0.003). It was also showed that larger burns (more than 21%) required significantly higher doses of Fentanyl (p = 0.001).
Conclusions: In large burns, it is necessary to use larger doses of opioid analgesics.

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PRESSURE PAIN SENSITIVITY AND MUSCLE STIFFNESS MAPS OF THE GASTROCNEMIUS MUSCLES IN STROKE PATIENTS: A PILOT STUDY

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Background and aims: Pain associated with increased muscle stiffness is a common impairment after stroke. There is conflicting evidence about the differences in pressure pain threshold (PPT) and muscle stiffness between sides, i.e., affected vs. none-affected. Further, differences in PPT and muscle stiffness measured from the muscle belly (MB) and musculotendinous (MT) sites have been scarcely investigated in this population. This study aimed to compare pressure pain sensitivity and muscle stiffness maps of the gastrocnemius muscles in stroke survivors and matched healthy controls.
Methods: Ten first-stroke survivors and 10 age- and sex-matched controls were recruited.Pressure pain thresholds

and muscle stiffness were measured bilaterallyusing a 12-point shaped grid covering MT and MB sites of the gastrocnemius muscles. A three-way analysis of variance (ANOVA) evaluated the differences in PPTs and stiffness, with sites and sides as the within-subject factors, and group as the between-subject factor.
Results: For PPT levels, the ANOVA detected significant differences between groups ($F=14.919$; $p< 0.001$), but not between sites ($F=1.374$; $p=0.182$), and sides ($F=0.798$; $p=0.372$). For muscle stiffness, there were significant differences between sites ($F=226.142$; $p< 0.001$), but not between groups ($F=2.727$; $p=0.099$), and sides ($F=1.984$; $p=0.160$). The post-hoc comparisons revealed higher PPTs in stroke survivors compared with controls, and increased stiffness in MT sites compared with MB sites.
Conclusions: These findings suggest decreased pressure pain sensitivity in the gastrocnemius muscles of stroke patients compared with controls, and no differences between sides in spatial distribution of gastrocnemius muscles stiffness in stroke survivors, and between stroke survivors and controls.

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DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF AN E-TRAINING FOR PAIN ASSESSMENT IN PEOPLE WITH DEMENTIA

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Background and aims: Pain is often overlooked and thus remains untreated in people with dementia. Therefore, a European initiative (COST Action) developed a universal, standardized observational tool to recognize pain in people with dementia: Pain Assessment in Impaired Cognition tool (PAIC 15). As health care professionals are often unsure how to score and interpret the observational items, training is needed. The aims of this study are to implement the PAIC 15 in Dutch nursing homes by developing tailored implementation plans including an E-training, and to evaluate its effectiveness and feasibility.
Methods: Implementation plans including an E-training are developed using the behavior change wheel. Measurements are taken at: T0 (pre-training), T1 (1-3 weeks post-training), T2 (22-24 weeks post-training). Effects are assessed using pain medication dosage, non-drug pain treatment and PAIC 15 scores (T0-T2). Feasibility is evaluated using inter rater reliability (T1, T2), caregiver questionnaires (T0 -T2) and a focus group (T2).
Results: Two nursing homes including 90 residents and 30 health care professionals, developed and implemented evidence-based implementation plans. A key component of the plans was the PAIC 15 E-training. The 30-45 minute E-training uses videos to provide explanation and practice of the PAIC 15 (freely available in Dutch, German and English at paic15.org). The study is underway and additional results will be present at the EFIC conference.
Conclusions: This study provides valuable information for the implementation planning of other nursing homes aspiring to adopt PAIC 15 observational pain screening in people with dementia.

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INCREASING AGE IS ASSOCIATED WITH ELEVATED CIRCULATING INTERLEUKIN-6 LEVELS AND ENHANCED TEMPORAL SUMMATION OF MECHANICAL PAIN IN PEOPLE LIVING WITH HIV AND CHRONIC PAIN

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Objective: In the current antiretroviral treatment era, people living with HIV (PLWH) can achieve a near-normal life expectancy. However, as these individuals grow older, they are increasingly prone to developing chronic health conditions including pain. One possible explanation for increased pain in older populations with HIV is that aging is associated with inflammation and enhanced pain facilitatory processes. This possibility has yet to be directly tested, however.
Methods: A total of 80 PLWH (median CD4+ = 646; 13% detectable viral load >200; 99% on antiretroviral therapy) who met criteria for a chronic pain condition provided demographic information (age, sex, race) and blood (circulating interleukin-6 levels) prior to completing measures of mood, pain coping, and current clinical pain severity. Temporal summation (TS) of mechanical pain was completed to assess pain facilitation. Additional clinical information was obtained from review of medical records.
Results: Mean age was 48.9 (8.2) years; range: 26-67. Pairwise t-tests revealed significant TS of mechanical pain at the hand ($p < .001$) and trapezius ($p < .001$). In multiple regression models adjusted for covariates, increasing age was found to be significantly associated with elevated levels of circulating interleukin-6 ($p=.011$) and enhanced TS of mechanical pain ($p=.018$). Age was not, however, found to be significantly associated with current clinical pain severity ($p=.975$).
Conclusions: Findings suggest that older adults with HIV and chronic pain may possess high levels of circulating pro-inflammatory cytokines as well as enhanced pain facilitatory processes related to central sensitization.

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NOCICEPTIVE-SPECIFIC DETECTION TASK ENCODES PERCEPTUAL PAIN THRESHOLD IN TRPV1-CHR2 TRANSGENIC MICE

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Withdrawal reflex behaviors are the predominant standard for measuring pain in animal models. However, reflex behaviors are independent of pain perception, and their interpretation is subjective, which makes the hindpaw withdrawal an imprecise metric for studying nociceptive pathways and testing analgesic efficacy. Therefore, there is an urgent need to develop a method to empirically and reliably measure perceptual pain thresholds. To address this problem, we developed a novel detection assay using peripheral optogenetics in mice to achieve temporally precise and perceptually accurate behavioral responses to nociceptive-specific stimulation. Using an optogenetic mouse model that expresses channel-rhodopsin2 in TRPV1 containing neurons (TRPV1-ChR2) we can non-invasively and specifically activate TRPV1-containing nociceptive afferent neurons. Head and hindpaw restrained TRPV1-ChR2 mice were trained to provide a lick report to brief (10ms) pulses of a 470nm LED at varying intensities (0.14-5.45 mW/mm^2) to the hindpaw. Behavioral responses were fit to a cumulative Gaussian to obtain perceptual thresholds (0.91 +/- 0.36 mW/mm^2) and lapse rates (1.62 +/- 0.79 mW/mm^2). Furthermore, TRPV1-ChR2 mice were subject to 'catch' trials that consisted of an innocuous tactile stimulus to the hind paw. False alarm rates were below perceptual threshold (24.3 +/- 18.0%), suggesting that TRPV1-ChR2 mice can distinguish between nociceptive and innocuous stimuli. By merging optogenetic stimulation of the epidermis with a detection-based task, we introduce a reliable, objective and fully-automated behavioral assay for measuring ultra-fast noxious perceptual thresholds in mice. This quantitative nociceptive assay will enable better understanding of pain processing and may lead to more reliable pre-clinical results.

ACUTE PAIN

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THE DISTRIBUTION OF CHRONIC PAIN CONDITIONS IN A PSYCHIATRIC OUTPATIENT POPULATION

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Background and aims: Basic knowledge about chronic pain conditions in a psychiatric outpatient population is lacking. This unique study evaluated chronic pain in a psychiatric population by a structured clinical examination.
Methods: 154 consecutively recruited patients from psychiatric outpatient units participated in this descriptive cross-sectional study consisting of self-reported questionnaires and a structured physical examination by a doctor and a physiotherapist. Inclusion criteria were having a diagnosed psychiatric disorder and chronic pain. We classified chronic pain with the ICD-10. The psychiatric outpatient units performed the psychiatric assessments pre-participation, also using ICD-10 criteria.
Results: The sample consisted of 123 females and 31 males, average age was 36. 45% received benefits as work assessment allowance, whilst 15% were working. The most frequent psychiatric disorders were anxiety disorders 29%, PTSD 21% and mood disorders 21%.
A total of 43% met criteria for chronic widespread pain (ACR 1990), and 33% met criteria for M79.7 fibromyalgia (ACR 1990). Fibromyalgia was significantly higher in females than males (p=.002). The most frequent local pain diagnoses were M54.5 “low back pain” and M54.2 “cervicalgia”. Headache was reported by 79% and 20% met criteria for irritable bowel syndrome.
Conclusions: These investigations of chronic pain give unique information in terms of clinical and detailed data on the pain condition; the type, severity and functional limitations caused by pain. This is essential in gaining a better understanding of chronic pain in psychiatric disorder and towards developing efficient health care services and management programs both in primary and secondary healthcare services.

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INFLUENCE OF AGING ON POSTOPERATIVE PAIN: RESULTS FROM THE INTERNATIONAL PAIN OUT REGISTRY

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Background and aims: With our aging population, the number of elderly people undergoing surgical procedures is increasing. The incidence and intensity of postoperative pain in elderly patients is poorly described. This study aims to examine the influence of aging on postoperative pain, administering opioids and wish for treatment.
Methods: After ethical approval and receiving informed consent, international data of surgical patients undergoing spine surgery, total hip replacement, total knee replacement or laparoscopic cholecystectomy were collected between 2010 and 2018 as part of the PAIN OUT program, an international European Union-funded registry. Pain was measured on postoperative day 1 (POD1) using the Numeric Rating Scale (NRS) from 0 - 10. We performed a linear regression or binary logistic analysis for continuous or dichotomous outcomes respectively.
Results: A total of 11.971 patients underwent one of the afore mentioned types of surgery. The reported maximum pain levels decreased significantly with age ($\beta = -0.008$, $p < 0.001$). The age related decrease in pain scores was more pronounced in women compared to men (Figure1). The number of times of administering opioids on the ward

decreased significantly with aging (β = -0.012, p< 0.001) and the wish for more treatment decreased also with aging (β = -0.008, p< 0.001).
Conclusions: Maximum pain scores on POD1 decrease with increasing age in both men and women. Older patients were administered less often opioids and had less often a wish for more pain treatment than younger patients.

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PAIN-RELATED INTERFERENCE AND ANALGESIC NEEDS SIX MONTHS AFTER SURGERY

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Background: The ICD-11 definition of chronic postsurgical pain emphasizes that pain should have a significant impact on pain-related functional interference with its physical and affective domains. This has rarely been investigated.
Methods: Patients enrolled in the registry PAIN OUT and completing the six-month follow-up were evaluated for pain-related interference with daily living (Brief Pain Inventory=BPI) and neuropathic symptoms (DN4: douleur neuropathique en 4 questions). BPI ***P**ain **I**nterference **T**otal **S**cores* (PITS: NRS 0-10; no interference (PITS=0), mild (PITS=1-2), moderate (PITS=3-5), severe interference (PITS≥6), DN4 scores and the need for analgesic medication were evaluated. Approval of local ethics committees; patient consent; median (IQR); ordinal regression analysis (OR [95% CI]).
Results: Of 2054 patients, 59.5%, 22.0%, 13.2% and 5.3% suffered from no, mild, moderate or severe pain-related functional interference with more pronounced physical than affective impairment. Average pain was NRS 0 (0/0), 1 (0/2), 3 (2/4) and 5 (3/6) in the four groups (p< 0.001). Analgesics were used by 2.7%, 17.0%, 63.8% and 76.9% of the PITS group with WHO-III opioids being prescribed for 0.3%, 0.8%, 5.8% and 18.8%. A positive DN4 was reported by 1.6%, 21.4%, 39.4% and 58.3% (p< 0.001). Risk for a higher PITS group increased by 29% (OR:1.3 [1.12-1.45]) in patients with positive, compared to negative DN4, and by 190% (OR:2.9[2.7-3.2] if average pain was ≥3.
Conclusions: The BPI provides meaningful information on pain-related functional outcome, which was significantly impaired in 18.5% of the patients. High pain scores were not always associated with high PITS. Neuropathic symptoms increased PITS.

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BIOSPSYCHOSOCIAL APPROACHES TO SUPPORT AMPUTEES POST-OPERATIVELY: MULTIDISCIPLINARY INPUT WITH SPECIALIST PAIN SERVICES

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Background and aims: Post-amputation pain contributes to increased distress and delayed discharged. In our UK secondary care trust, amputees referred to the inpatient pain team frequent declined physical therapies due to pain. We aimed to implement multidisciplinary (MDT) working between specialist pain nursing, clinical psychology, physiotherapy and occupational therapy (OT) to better support those with post-amputation pain. This was achieved by collaboratively making treatment plans and MDT patient reviews since June 2018. We will continue service evaluation until August 2019.
Method: All patients with pain that complicated progress with physical therapies were discussed as an MDT with specialist pain clinical psychology, specialist pain nursing, physiotherapy and OT. Number of therapy sessions declined due to pain before and after MDT interventions were collated. Clinicians completed the 19 item Team

Decision Making Questionnaire (TDMQ; Batorowicz & Tracy, 2008) which comprises ratings from 6 (to a vast extent) to 0 (not at all) on the degree to which multidisciplinary working enabled them to achieve potential benefits.
Results: To date, six patients were provided with specialist pain MDT treatment for managing pain-related distress. Before intervention, four patients declined 45% of the physical therapy sessions due to pain; reducing to 24% following MDT intervention. TDMQ (4 collected) showed “develop effective problem solving” as the highest rated benefit. Patient feedback highlighted the benefits of a biopsychosocial understanding of their needs.
Conclusion: The MDT approach involving specialist pain input can support ward staff to improve the post-operative care for amputees with complex pain in secondary care.

P246

THE ANALGESIC EFFICACY OF ULTRASOUND GUIDED CONTINUOUS QUADRATUS LUMBORUM BLOCK VERSUS CONTINUOUS PARAVERTEBRAL BLOCK IN RADICAL CYSTECTOMY-A RANDOMIZED STUDY

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Background: Various techniques of regional anesthesia have been used in abdominal surgery including thoracic epidural, thoracic paravertebral block (TPVB), transverses abdominal plane block. However new techniques such as quadratus lumborum (QL) block are tested to detect its efficacy.
Aim: To compare between intraoperative and postoperative analgesic effect of ultrasound guided continuous QL block and continuous TPVB in patients operated for radical cystectomy (primary outcome). Side effects, length of hospital stay and patient satisfaction (secondary outcome).
Methods: 60 patients admitted to Urosurgery department at Alexandria Main University Hospital for radical cystectomy were randomly assigned into 2 groups, 30 patients for each group: group I received ultrasound guided QL block with 0.3 ml /kg bupivacaine 0.25% on each side with catheter insertion for maintenance doses 0.1ml/kg/hr on each side while group II will received ultrasound guided TPVB with 0.3 ml/kg bupivacaine 0.25 % on each side with catheter insertion for maintenance doses 0.1 ml/kg/hr on each side.
Results: There was no statistically significant difference between the two groups regarding postoperative VAS score, first request of analgesia and length of hospital stay, however there was statistically significant difference between the two groups as regards heart rate and mean blood pressure at 1sr,4^{th},6^{th} and 7^{th} hrs during the intraoperative periods.
Conclusions: There is no difference in the analgesic efficacy, opioid consumption, and hospital stay between continuous bilateral QL block and continuous bilateral TPVB after radical cystectomy. Data suggests that QL block is a viable alternative for delivering multimodal analgesia in radical cystectomy.

P247

COMPARISON EFFICACY OF EPINEPHRINE RELEASE INHIBITION ON SUPRACLAVICULAR PLEXUS BLOCK PROCEDURE

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Background: Many factors have effect on nerve block quality such as: analgesia and nociception, Blood circulation and metabolism, inhibition other pathway have direct and indirect effect on hyperpolarisation like Epinephrine. Dexmedetomidine is selective α_2 agonist that in this study was administrated as Cocktail with lidocaine to evaluate

supraclavicular plexus block.
Material and methods: In double blinds clinical trial 72 patient was enter the study and randomly divide to groups: A (3mg/kg lidocaine,1µ Dexmedetomidine) and B (3mg/kg lidocaine). Agents were administrated supraclavicular plexus under guide of ultrasound. Hemodynamic changes as indirect response of Epinephrine and analgesia (VAS) were assessed 0,4,8,12,16,20 and 24 hr after onset of surgery.
Results: Although O_2 saturation, systolic and diastolic heart was not different Repeated measure ANOVA analysis, VAS was significantly different.
Discussion: Dexmedetomidine rapid distribution and short systemic half-life is answer to controversy of hemodynamic and nociception mismatching. Long period of terminal site elimination of Dexmedetomidine in supraclavicular plexus and local survival of drug on target place cause better quality of block.
Conclusions: Cocktail of lidocaine and Dexmedetomidine suggest as suitable mixture on orthopaedic surgery.
Keywords: brachial plexus Block, Dexmedetomidine, Lidocaine

P248

COMBINED BLOCK OF THE VASTUS MEDIALIS, SAPHENOUS NERVE AND IPACK BLOCK AS AN ANALGESIC STRATEGY IN TOTAL KNEE REPLACEMENT SURGERY

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Background: The femoral block is the most extended analgesic technique for total knee replacement surgery. Current focus on early rehabilitation requires new analgesic approaches with minimal motor alteration. The *vastus medialis* nerve branch seems to play a greater role than the saphenous nerve in the antero-medial knee innervation. The combined blockade of these nerves seems a good analgesic alternative for the antero-medial area. In order to complete analgesia in the postero-lateral area, analgesia could be completed via infiltration of the space between the posterior popliteal artery and the capsule of the knee (IPACK).
Methods: We evaluated the efficacy and safety of the combined vastus medialis and saphenous nerve block together with IPACK for analgesia in patients who underwent total knee replacement. Pain score at rest and upon movement was registered during the first 48 hours after surgery, and upon start of rehabilitation; as well as the need for supplementary intravenous analgesia.
Results: A total of 52 patients were recorded. No complications related to technique performance were registered. Pain data (VAS) was recorded as follows: 4 ± 0.87 at baseline; 2.43 ± 1.75 and 4.98 ± 2.11 at 24h static and moving, respectively; and 1.8 ± 1.15 and 4.08 ± 1.53 at 48h static and moving. Requirements of intravenous painkillers during the first 6, 24 and 48 hours post-intervention were 19%, 63% and 41%, respectively.
Conclusions: The vastus medialis, saphenous nerve block and IPACK technique provides an adequate analgesia in those patients who undergo total knee replacement surgery, allowing for early rehabilitation.

P249

EFFICACY OF COMBINATION OF THORACIC PARAVERTEBRAL BLOCK AND IV PCA TO IV PATIENT CONTROLLED ANALGESIA ALONE FOR POSTOPERATIVE PAIN MANAGEMENT IN NEPHRECTOMY PATIENTS

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Background: Postoperative analgesia following renal surgery is essential to allow effective coughing, early extubation and to reduce the incidence of postoperative respiratory complications.
Aims and objectives: to compare thoracic paravertebral block (TPVB) and IV PCA (iv fentanyl) with IV PCA alone

for postoperative analgesia in patients undergoing open nephrectomy and hemodynamic changes and incidence of side effets.
Material and method: prospective randomized controlled study, 30 patients were taken up in each group belonging to ASA 1-2, age 18-60 years posted for elective nephrectomy.
GROUP A: Patients received GA and postoperative single thoracic paravertebral block (20 ml 0.25% Bupivacaine) +PCA with iv fentanyl (2 mcg/ml) with basal infusion at the rate of 20 mcg/ml, demand dose was 12 mcg with lockout interval of 20 minutes.
GROUP B: Patients received GA+ IV PCA alone (with iv fentanyl -2 mcg/ml) with basal infusion at the rate of 20 mcg/ml, demand dose was 12 mcg with lockout interval of 20 minutes.
In addition rescue analgesia with inj.Tramadol 50-100 mg IV was given on VAS score >3.In postoperative period assessed duration of analgesia,time of first requirement of rescue analgesic, total consumption of fentanyl.
Results: Thoracic paravertebral block using bupivacaine was an effective regional technique with low fentanyl consumption, prolong postoperative analgesia, better hemodynamic stability, good pre-emptive effect, high patients satisfaction and minimal incidence of side effect.
Conclusion: Thoracic paravertebral block using bupivacaine with combination to IV PCA is an effective regional technique to IV PCA alone for postoperative pain management.

CANCER PAIN

P250

A COMPARISON STUDY OF TDS FENTANYL AND TDS MORPHINE ON LATE STAGE CANCER PATIENTS WITH REFRACTORY PAIN

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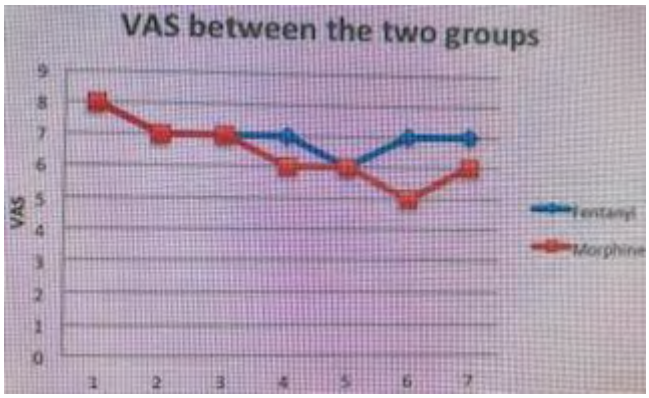
We are presenting a small open label study of 30 cancer patients with refractory cancer pain due to bone metastasis. All patients were on TDS Fentanyl patch 50mcgr/h plus adjuvant analgesics. Pain scores were 7-9/10 VAS. QoL scores were low (2-5/10). PF (performance status) was 3-4. Prognosis was less than 3 months so the patients were not in title of an implantable morphine pump.
Patients were randomly divided in two groups. One to carry on with Fentany TDS therapy in high doses, and second to switch to TDS Morphine patch (BUVERA) in high doses also. The Fentanyl group reached a dose of 200mcgr/h. The Morphine group reached a dose of 140mg/h.
We measured : VAS, QoL, PS, constipation, nausea, vomiting, patient satisfaction every two weeks for 12 weeks.
There was no difference in QoL and PS between the two groups.
The was a small statistical difference (p= 0.003) on VAS score as the Morphine group experiencing less pain. There was a small statistical difference on constipation between the two groups as the Morphine group has less.
Nausea and vomiting was the same.
Overall the Morphine group did better in pain scores and side effects were not increased. We believe that more studies must be done to verify if Morphine TDS is a good alternative for cancer patients with refractory pain already on Fentanyl patch.



[Comparison of VAS in two groups for 12 weeks]

CENTRAL NEUROPATHIC PAIN

P251

CONTRIBUTION OF ADAM10 AND ADAM 17 TO FRACTALKINE SHEDDING AND NEURONAL-MICROGLIA COMMUNICATION IN NEUROPATHIC PAIN

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Neuropathic pain is associated with central sensitization and significant contribution of neuron- microglia communication in the dorsal horn of the spinal cord. Neuron-derived fractalkine (FKN) activation of microglia-expressed CX3CR1 receptors contributes to the development of neuropathic pain. Specifically, transmembrane FKN is solubilised from neurons by cathepsin S, a microglia-derived protease, and soluble FKN promotes the release of pro-nociceptive cytokines by microglia through the activation of CX3CR1 receptors. In addition, CX3CR1 knock out mice develop less severe allodynia compared to WT after peripheral nerve injury. As cathepsin S-mediated shedding of FKN is critical for the maintenance of neuropathic allodynia but is unlikely to be relevant to the initiation of allodynia, we hypothesised that neuron-expressed metalloproteases ADAM10 and ADAM17 contribute to FKN solubilization and activation of CX3CR1 receptors within the first week after nerve injury.
Using IHC and WB techniques we observed that both ADAM 10 and ADAM 17 were expressed in dorsal horn neurons. However, whilst ADAM10 expression was not altered at 7 days after nerve injury, ADAM17 positive neuron and protein expression in the dorsal horns were significantly increased. Interestingly, in the superficial dorsal horns, ADAM17 positive neurons co-expressed FKN mRNA (in situ hybridization).
Thus, the up-regulation of ADAM17 and co-localization with FKN in dorsal horn neurons provide a rationale to test for ADAM 17-mediated shedding of FKN as a mechanism underlying the initiation of neuropathic pain.
These results improve our understanding of the role that ADAM17/FKN/CX3CR1 may play in microglia-driven enhancement of nociceptive transmission in the dorsal horn.

COMPLEX REGIONAL PAIN SYNDROME

P252

MIRROR THERAPY IN MULTIDISCIPLINARY TREATMENT OF CRPS I PATIENTS

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Introduction: Mirror therapy is a kind of biofeedback therapy, which requires minimum equipment but demonstrated rather promising results in treatment of different pathologic conditions. According to the one of many proposed theories of complex regional pain syndrome I (CRPS I) development, pain at this syndrome may be caused by mismatch between muscles movements and proprioceptive feedback. From that point of view mirror therapy can be helpful in CRPS treatment.
Methodology: *T*he analysis of the of 6 weeks treatment results of 50 patients with CRPS I, developed as a result of the distal radius fractures (duration no longer than 3 years) has been performed; all patients were enrolled in standard rehabilitation program (physical therapy, exercises, medications); in addition to standard care 30 patients consented to practice mirror therapy (treatment group), 20 received only standard rehabilitation program (control group). All patients underwent complex evaluation, including pain assessment (VAS) and Bath CRPS Body Perception Disturbance Scale (Bath scale) analyze, before the treatment (baseline), after three days and after 6 weeks of complex rehabilitaion.
Results: After 6 weeks of treatment the majority (83.33 %) of patients in treatment group and 35% in control group demonstrated improvement in body schema perception ($p< 0,05$) with the better results in pain control in treatment group ($p< 0,05$) *Conclusion.* Mirror therapy, included into standard rehabilitation program is effective for the body schema perception disturbances correction and improvement of pain control in patients with CRPS I developed after fractures of the distal radius less than 3 years duration

P253

SEARCHING OF RELIEF OF THE SENSORY SIGNS IN A POST-ISCHEMIC PAIN MODEL IN RATS

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Background and aims: Complex Regional Pain Syndrome (CRPS) is a painful, disabling and often chronic condition that usually develops after limb trauma, and it is accompanied by signs of inflammation and sensory, autonomic, and motor disturbances. This pathology remains one of the most clinically challenging neuropathic pain syndromes.
Our aim was to test if the co-administration of sub-analgesic doses of morphine and pregabalin induce antinociception in an animal model of CRPS.
Methods: Male Wistar rats were used and the Post-Ischemia Pain model (CPIP) was developed by placing an O-ring around the distal ankle for 3 hours (Coderre et al., 2004). The development of mechanical allodynia and hyperalgesia was evaluated on days 7, 8 and 9 after the removing of the ring and in separate groups (n=6-10) the effect of the administration of morphine (0.3-5 mg/kg), pregabalin (10-80 mg/kg) or the co-administration of sub-analgesic doses of morphine and pregabalin were tested at day 8.
Results: Rats developed mechanical allodynia and mechanical hyperalgesia in the ipsilateral hindpaw from day 7. Morphine and pregabalin reduced these painful signs in a dose dependent manner. The combination of sub-analgesic doses of pregabalin (10-20 mg/kg) and morphine (1.3 mg/kg), significantly decreases the allodynia.
Conclusions: The co-administration of small (sub-analgesic) doses of these drugs was effective to treat the

allodynia which is often resistant to treatment. Since the doses used are small, it is expected that the side effects occur with less intensity.
Acknowledgment: SAF2012-40075-C02-01, Lab Dr Esteve SA

P254

OBJECTIVE ASSESSMENT OF VIDEO THERMOGRAPHY IMAGES OF PATIENTS WITH COMPLEX REGIONAL PAIN SYNDROME

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Background and aims: Temperature asymmetry between the affected and contralateral extremity is common in patients with CRPS (Complex Regional Pain Syndrome). In the acute phase of CRPS the affected extremity is generally warmer than the contralateral extremity. In the chronic phase, the affected extremity can become cold due to vasomotor disturbances that cause decreased blood flow.
Although clinically temperature differences are mostly not difficult to estimate, in research a more objective method for assessing temperature differences is needed, desirable expressed in one value to make statistical analyses possible.
Previous studies have shown that skin-temperature has a high correlation with blood flow.
One way to measure skin temperature is through videothermography. In this study we investigate whether radiomics can be used to objectively quantify and classify thermal images.
Methods: Thermal images are made of both patients with unilateral CRPS and age and gender-matched control subjects. All images are first semi-automatically segmented, followed by extraction of histogram and texture features. Feature selection is performed using principal component analysis. Lastly, support vector machines are used to develop a classification model. The performance is estimated through cross-validation.
Results: This study is ongoing. Currently, more images are made and machine learning is used to train the first classifiers. We will show our first results.
Conclusions: The ultimate goal is to develop a model that detects and quantifies thermal asymmetry. An objective and valid method can contribute to a more reliable diagnosis and evaluation of the effects of treatment of vasomotor dysregulation.

P255

A NEW ALLODYNOGRAPHY QUANTIFICATION METHOD FOR SOMATOSENSORY REHABILITATION IN COMPLEX REGIONAL PAIN SYNDROME

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Background and aims: Allodynia is an expression of peripheral and/or central sensitization. Complex Regional Pain Syndrome (CRPS) is a persistent pain condition including sensory, motor, trophic and autonomic abnormalities. According to the somatosensory rehabilitation method allodynia is quantified by allodynography and rainbow pain scale. Allodynography is a mapping technique where its territory is recorded on paper while the rainbow pain scale

is rating the severity of the allodynia. To permit a comparison between patients we integrate the Lund and Browder Chart used in burns for estimating the body surface area affected. This method assesses the allodynography area as a percentage of the affected limb.
Method: 25 patients with CRPS for at least 6 months were recruited. CRPS was diagnosed according to the Budapest Criteria. Allodynia area of all the patients was assessed using the standard allodynography method and quantified with our method. Interrater reliability was evaluated in 4 patients. Furthermore, the allodynia area was tested for correlations with CRPS Severity Score (CSS), pain intensity using the short form McGill pain questionnaire (SFMPQ) and upper and lower limb functional scores.
Results: Positive significance correlations (Pearson test) were found between the allodynia area and CSS (r=.546, p=.006), days in disease (r=.402, p=0.46), SFMPQ (r=.627, p=.001), and functional scales (r=.640, p=.006). The method was also found reliable between clinicians (Cronbach´s Alpha=.958).
Conclusions: This new allodynography quantification method may serve as a within and between subjects´ index for assessment of disease severity and long-term changes along the treatment process.

HEADACHE

P256

LONG-TERM EFFICACY OF FREMANEZUMAB IN SUBGROUPS OF MIGRAINE PATIENTS WITH CLINICAL CHALLENGES THAT COMPLICATE MIGRAINE MANAGEMENT

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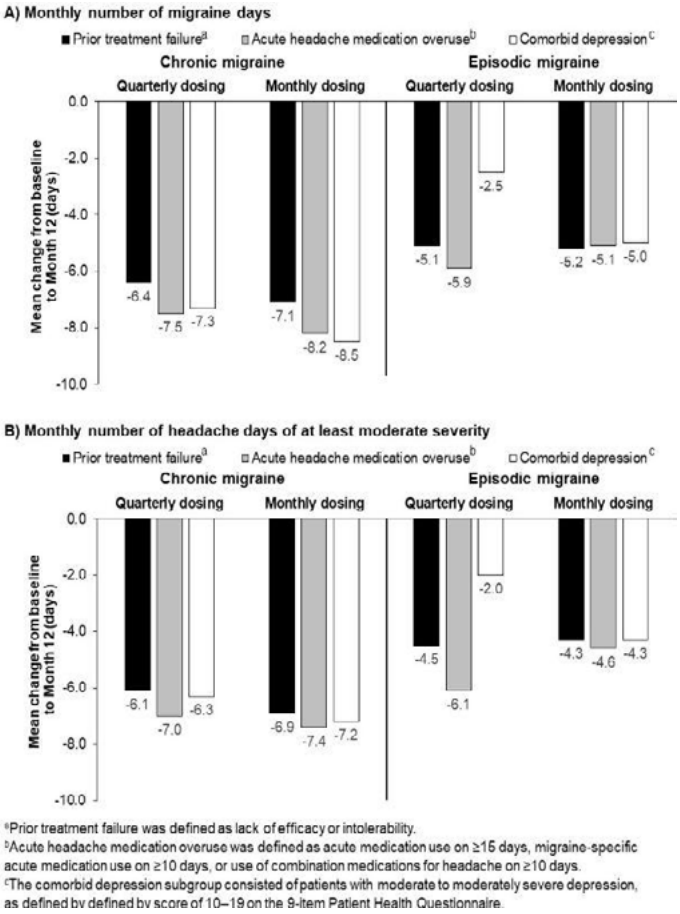
Background and aims: Fremanezumab, a fully humanized monoclonal antibody (IgG2Δa) that selectively targets calcitonin gene-related peptide, is approved in the United States for the preventive treatment of migraine in adults. We assessed the efficacy of fremanezumab in chronic (CM) or episodic (EM) migraine patients with clinical conditions/characteristics that complicate migraine management.
Methods: In this 12-month, randomized, double-blind, parallel-group study, adults with migraine received subcutaneous fremanezumab quarterly (675 mg every 3 months) or monthly (225 mg every month; CM received starting dose of 675 mg). This post hoc analysis evaluated the efficacy of fremanezumab in 3 subgroups of patients who: failed ≥1 prior migraine-preventive medication (defined as lack of efficacy or intolerability); reported acute headache medication overuse (defined as acute medication use on ≥15 days, migraine-specific acute medication use on ≥10 days, or use of combination medications for headache on ≥10 days) at baseline; or had moderate to moderately severe comorbid depression (defined by score of 10-19 on the 9-item Patient Health Questionnaire) at baseline. The change from baseline to Months 6 and 12 in monthly migraine days and headache days of at least moderate severity was measured for each subgroup.
Results: Patients from each subgroup reported a decrease in mean monthly number of migraine days and headache days of at least moderate severity from baseline to Month 6; reductions were maintained at Month 12 (Figure).
Conclusions: Fremanezumab maintained efficacy in patients with migraine who may be challenging to treat.



[a]Prior treatment failure was defined as lack of efficacy or intolerability.
[b]Acute headache medication overuse was defined as acute medication use on ≥15 days, migraine-specific acute medication use on ≥10 days, or use of combination medications for headache on ≥10 days.
[c]The comorbid depression subgroup consisted of patients with moderate to moderately severe depression, as defined by defined by score of 10–19 on the 9-item Patient Health Questionnaire.

[Figure. The effect of fremanezumab on migraine patients who may be difficult to treat at 12 months.]

P257

IMPACT OF FREMANEZUMAB ON HRQOL IN CHRONIC MIGRAINE PATIENTS WITH DOCUMENTED INADEQUATE RESPONSE TO ≥3 CLASSES OF MIGRAINE PREVENTIVE TREATMENTS IN THE PLACEBO-CONTROLLED FOCUS STUDY

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Background and aims: Chronic migraine has a substantial negative impact on health-related quality-of-life. Fremanezumab, a fully-humanized monoclonal antibody (IgG2Δa) that selectively targets calcitonin gene-related peptide (CGRP), has proven efficacy for preventive treatment of migraine in adults. The FOCUS study of fremanezumab was the first and largest study of a migraine preventive treatment in adults with both episodic and chronic migraine (EM and CM) and documented inadequate response to 2-4 classes of migraine preventive treatments. Data from this study on migraine-specific quality-of-life (MSQOL) in CM patients with inadequate

response to ≥3 classes of migraine preventive treatments were analysed.
Methods: During 12 weeks of double-blind treatment, patients were randomised (1:1:1) to monthly fremanezumab (month 1: EM, 225mg; CM, 675mg; months 2 and 3: 225mg); quarterly fremanezumab (month 1: 675mg; months 2 and 3: placebo); or matched placebo monthly. Mean changes from baseline in MSQOL domain scores 4 weeks after the 3rd dose were compared using analysis of covariance.
Results: 293 CM patients with inadequate response to ≥3 classes of migraine preventive treatments were included in this analysis. At 4 weeks after the 3rd dose, improvements from baseline with monthly fremanezumab were significantly greater versus placebo in all MSQOL domains; differences for quarterly fremanezumab versus placebo reached statistical significance for role function-restrictive domain (all $P \leq 0.015$; **Table**).
Conclusions: Fremanezumab was associated with significant improvements in quality of life in CM patients with documented inadequate response to ≥3 classes of migraine preventive treatments.

Table. LSM (SE) Change From Baseline and LSMD (SE) in Change From Baseline Versus Placebo in MSQOL Domain Scores During the 4 Weeks After the 3rd Dose of Study Drug

	Placebo (n=91)	Monthly fremanezumab (n=103)	Quarterly fremanezumab (n=99)
Role function-restrictive domain score			
LSM (SE) change from baseline	8.5 (2.39)	17.5 (2.27)	15.2 (2.24)
LSMD (SE) vs placebo	—	9.0 (2.65)[a]	6.8 (2.65)[b]
Role function-preventive domain score			
LSM (SE) change from baseline	6.3 (2.24)	13.0 (2.13)	11.0 (2.10)
LSMD (SE) vs placebo	—	6.6 (2.47)[c]	4.7 (2.48)
Emotional function domain score			
LSM (SE) change from baseline	5.2 (2.92)	15.4 (2.78)	11.4 (2.74)
LSMD (SE) vs placebo	—	10.2 (3.23)[a]	6.2 (3.23)

LSM, least-squares mean; LSMD, least-squares mean difference; SE, standard error.
[a]P=0.0008 versus placebo; [b]P=0.0113 versus placebo; [c]P=0.0078 versus placebo; [d]P=0.0018 versus placebo (all based on analysis of covariance model).

[Table 1]

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IMPACT OF FREMANEZUMAB ON DISABILITY IN CHRONIC MIGRAINE PATIENTS WITH DOCUMENTED INADEQUATE RESPONSE TO ≥3 CLASSES OF MIGRAINE PREVENTIVE TREATMENTS IN THE PLACEBO-CONTROLLED FOCUS STUDY

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Background and Aims: Chronic migraine is one of the leading global causes of years lived with disability. The FOCUS study of fremanezumab, a fully-humanised monoclonal antibody (IgG2Δa) that selectively targets calcitonin gene-related peptide (CGRP) and has proven efficacy for preventive treatment of migraine, was the first and largest study of a migraine preventive treatment in patients with both chronic and episodic migraine (CM and EM) and documented inadequate response to 2-4 migraine preventive medication classes. Data from this study on headache-related disability, per the 6-item Headache Impact Test (HIT-6) and Migraine Disability Assessment (MIDAS) questionnaire, in CM patients with inadequate response to ≥3 classes of migraine preventive treatments were analysed.

Methods: During 12 weeks of double-blind treatment, 838 patients with and without medication overuse were randomised (1:1:1) to monthly fremanezumab (month 1: CM, 675mg; EM, 225mg; months 2 and 3: 225mg); quarterly fremanezumab (month 1: 675mg; months 2 and 3: placebo); or matched placebo monthly. Mean changes from baseline in HIT-6 and MIDAS scores 4 weeks after the 3rd dose were compared using analysis of covariance.
Results: 293 CM patients with inadequate response to ≥3 classes of preventive treatments were included. Reductions from baseline in HIT-6 and MIDAS scores were significantly greater with both fremanezumab regimens versus placebo (all P≤0.02; **Table**).
Conclusions: Monthly and quarterly fremanezumab were associated with significant improvements in headache-related disability versus placebo in CM patients with documented inadequate response to ≥3 classes of migraine preventive treatments.

Table. LSM (SE) Change From Baseline and LSMD (SE) in Change From Baseline Versus Placebo in HIT-6 and MIDAS Scores During the 4 Weeks After the 3rd Dose of Study Drug

	Placebo (n=91)	Monthly fremanezumab (n=103)	Quarterly fremanezumab (n=99)
HIT-6			
LSM (SE) change from baseline	−1.7 (0.75)	−4.9 (0.71)	−3.8 (0.70)
LSMD (SE) vs placebo	—	−3.3 (0.83)[a]	−2.2 (0.83)[b]
MIDAS			
LSM (SE) change from baseline	0.5 (6.26)	−22.5 (5.95)	−15.5 (5.88)
LSMD (SE) vs placebo	—	−22.9 (6.91)[c]	−16.0 (6.91)[d]

LSM, least-squares mean; LSMD, least-squares mean difference; SE, standard error.
[a]$P<0.0001$ versus placebo; [b]$P=0.0093$ versus placebo; [c]$P=0.0010$ versus placebo; [d]$P=0.0212$ versus placebo (all based on analysis of covariance model).

[Table 1]

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DYNAMIC MECHANICAL SENSITIVITY IN THE TRIGEMINAL AREA IS ASSOCIATED WITH WIDESPREAD PRESSURE PAIN SENSITIVITY IN CLUSTER HEADACHE

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Background and aims: Previous studies have observed that primary headaches, e.g., migraine, tension type headache and cluster headache exhibit widespread pressure pain hyperalgesia. A method for assessing dynamic hyperalgesia was recently developed and used in patients with tension type headache and migraine. Our aim was to investigate the association between static and dynamic pressure sensitivity in patients with episodic cluster headache.
Methods: Men with episodic cluster headache were included. Static pressure pain threshold (PPT) was bilaterally assessed with a digital pressure algometer (Somedic©, Sweden) over the temporalis, cervical spine, and tibialis anterior. Dynamic pressure pain hyperalgesia was assessed with a dynamic pressure algometry set (Aalborg University©, Denmark) consisting of 8 rollers with the following pressure levels (500g, 700g, 850g, 1350g, 1550g, 2200g, 3850g, 5300g). Each roller was moved on a diagonal line over the muscle belly of the temporalis muscle. The dynamic pain threshold (DPT- load of the first painful roller) was calculated. Participants were assessed in a remission phase, at least 1 month from the last attack and without taking preventive medication.
Results: Forty men with episodic cluster headache (cluster periods/year: 2±1.4; number of attacks per day: 2±1.5;

headache intensity: 9±1) were included. Significant positive associations between DPT and widespread PPTs were observed (temporalis r: 0.665, P< 0.001; cervical spine r: 0.368, P=0.020; tibialis anterior muscle r: 0.285, P=0.045). C**onclusion:** This study confirms that dynamic algometry is as valid as a static pressure algometer for assessing sensitivity to pressure pain in patients with primary headaches such as cluster headache.

PAIN SYNDROMES WALK 6

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CYLINDRICAL LEADS FOR PERCUTANEOUS IMPLANTATION IN SPINAL CORD STIMULATION FOR FAILED BACK SURGERY SYNDROME: IMPLANT OF TWO ELECTRODES IN ANATOMICAL POSITION

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Objectives: Due to the introduction in our hospital of Tonic Spinal Cord Stimulation with Percutaneous Cylindrical Leads in 2015, we reconsidered the management of failed back surgery syndrome (FBSS). This retrospective nonrandomized single-center study investigated the posibility of producing a complete paresthetic coverage with an electrode or with the anatomical placement of two electrodes.
Methods: Over a 3 year period, 26 patients with FBSS (mean age: 48 years) were included. Conventional percutaneous cylindrical lead implantation under local anesthesia was performed (14 patients with single lead and 12 patients with two leads). Follow-up included the Visual Analog Scale (VAS) assessment of pain.
Results: Similar significant pain reduction was demonstrated in both groups. The total Lumbar pain VAS reduction with one and two leads was 32% and 30% respectively. The total Radicular pain VAS reduction with one lead and two leads was 36% and 46%. During de follow up, implantation of a electrode lead was necessary in three patients of the one lead implantation group due to the deterioration of clinical effect. Two patients were explanted because of progressive failure of the stimulation.
Conclusion: Minimally invasive percutaneous cylindrical leads are safe and effective, have low complication rates. No significant differences were found between both groups to justify the implantation of one or two electrodes. However, the placement of two electrodes could provide a better relieve in radicular pain and also offers the possibility of 10 kHz high frequency spinal cord stimulation rescues if the tonic stimulation is ineffective.

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SEVERITY OF INFLAMMATORY BACK PAIN AND DISEASE ACTIVITY IN PATIENTS WITH EARLY AXIAL SPONDYLOARTHRITIS

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Objective: to conduct a correlation analysis of the severity of inflammatory back pain (IBP) and the main parameters of disease activity in pts with axial spondyloarthritis (axSpA).
Materials and methods: The research included 175 pts with early axSpA (ASAS criteria, 2009) from Moscow CORSAR cohort with disease duration < 5 and age onset < 45 years. Pts mean age was 28 (5,7) years, average disease duration - 23,9 (17,7) mo, 152 (87%) pts were HLA-B27 positive. All pts assessed for the severity of back pain on a numerical rating scale (NRS) (0-10), a global assessment of well-being on the NRS (0-10), C-reactive protein (CRP) in the blood, calculation of BASDAI and ASDAS-CRP for counting axSpA disease activity, as well as MRI of the sacroiliac joints (SIJ). To assess the severity of active SI used the LEEDS index.

Results: A positive correlation was found between the severity of back pain (NRS) with a global well-being rating (r = 0,6,p< 0,05) and BASDAI index (r = 0,5,p< 0,05). A weak positive relationship between the severity of back pain (NRS) with ASDAS-CRP (r= 0,3,p< 0,05). The severity of back pain with a Leeds score - r= -0,04, p>0,05;with CRP-r=0,04,p>0,05.
Conclusions: The severity of IBP in pts with axSpA does not depend on the values of objective methods for assessing disease activity, such as active SI according to SIJ MRI and laboratory markers of blood inflammation.

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SEX-SPECIFIC EFFECTS IN THE GENETICS OF CHRONIC BACK PAIN

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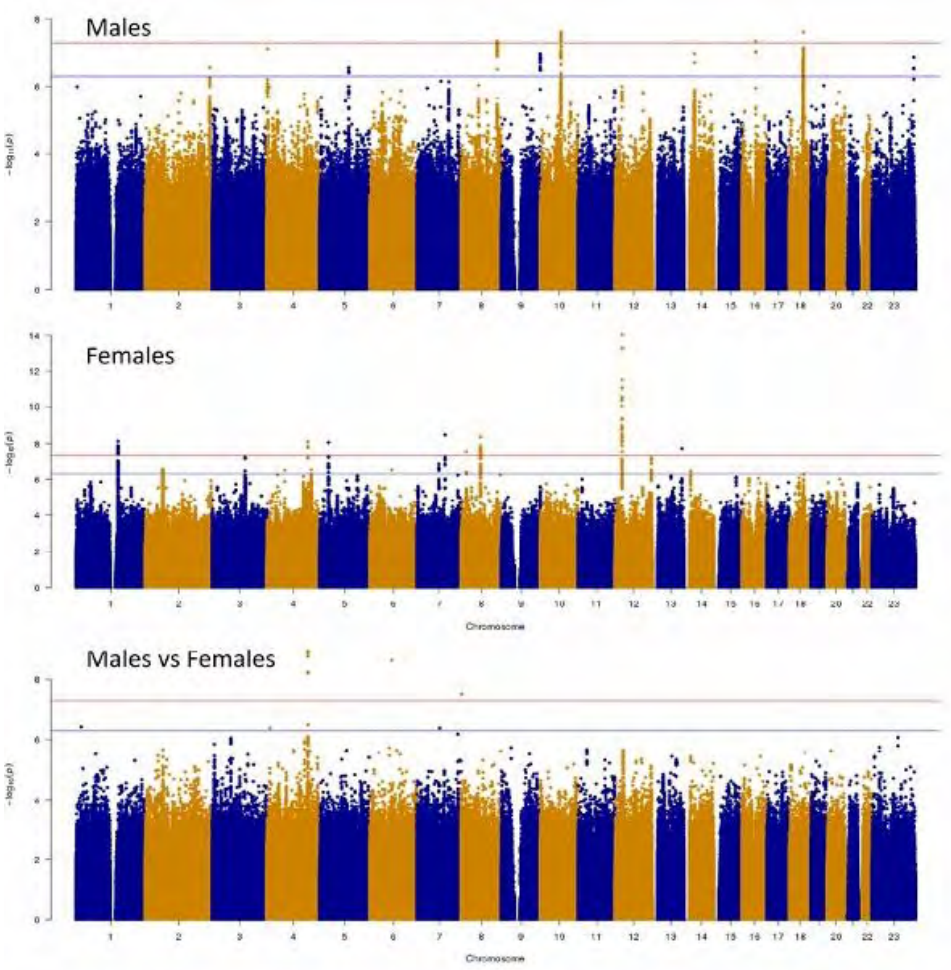
Background: Gender differences in the prevalence of chronic back pain (cBP) have been recorded, but not fully explained. Suggesting gene-by-sex interaction as a possible reason, we explored sex-specific genetic loci for cBP using the UK Biobank.
Material and methods: A total of 200,948 males and 236,412 females of European ancestry have been analysed. The phenotype was "Back pain for 3+months". GWAS were carried out examining males and females separately, followed by a comparisons of SNP effect sizes between the sexes.
Results: The prevalence of cBP was 17.7% and 18.2% and the mean age(SD) was 57.5(8.1) and 57.1(7.9) in males and females, respectively. Four and 8 non-overlapping genome-wide significant loci were identified for males and females. SNP-explained heritability was higher in females (0.079 vs 0.067, p = 0.006). There was a high genetic correlation between the sexes (r = 0.84, p = 1.7e-94). GWAS comparing the effect size between sexes revealed three significant loci: on chromosomes 4 (rs62327819, *SLC10A7*), 6 (rs556434841, *MEI4*), and 8 (rs184345217, *CSMD1*) (Figure). We found differences in genetic correlations between sexes for four traits: "Neck and shoulder pain", "Serious illness, injury or assault to yourself", "Dorsalgia", and "Self-reported disc problems".
Conclusions: The results suggest modest differences in the genetic component of cBP in males and females. Their impact of cBP epidemiology are to be explored.
The study was performed using the UKBiobank data (project # 18219).



[Manhattan plots for GWAS in males and females and for a comparison of effect sizes between them]

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CHRONIC LOW BACK PAIN IN THE ADULT'S SPANISH POPULATION: IDENTIFYING CLINICAL SUBGROUPS THROUGH CLUSTER ANALYSIS

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Background and aims: To estimate the prevalence of chronic low back pain (CLBP) in the general adult Spanish population and to establish CLBP patient groups according to the health status, mental health, pain level and its impact.
Methods: Data has been obtained from the National Health Survey of Spain 2017 with a sample of 23089 adults. Based on the health status, mental health (GHQ-12), pain level and its impact on daily activities, a cluster analysis was performed to identify groups of CLBP patients. Chi-squared and Kruskal-Wallis-H tests were used to analyze differences between groups.

Results: The prevalence of CLBP was 22% (CI95%:21.5-22.5), and 63.8% were women with a mean of 62.08 years old.
Three groups of CLBP patients were identified. Group 1 (N=766), worse group, including subjects with bad/very bad health status (85.6%), a higher score in GHQ-12 (Mean=8.57), with severe/extreme pain (61.7%) and quite/a lot of impact of pain on daily activities (72.3%). Group 2 (N=2141), medium group, with subjects referring regular health status (56.3%), a score of 2.11 in GHQ-12, with moderate/mild pain (61.6%) and a moderate impact of pain on daily activities (48.4%). Group 3 (N=2170), better group, including subjects with good/very good health status (60.6%), a lower score in GHQ-12 (Mean=0.89), without pain or very mild/mild (84.1%) and without or little impact of pain on daily activities (99.4%).
Conclusions: There is a high prevalence of CLBP in Spain, with differences in the characteristics of the patients. Identifying groups of patients could serve to personalise therapeutic strategies.

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ANALYSIS OF ULTRASONIC VOCALIZATIONS IN RATS SUBJECTED TO CHRONIC OROFACIAL PAIN MODELS

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Background and aims: Chronic orofacial pain conditions affect the trigeminal system, resulting in neuronal plasticity, leading to patients´ negative affect. Studies have suggested that ultrasonic vocalizations (USVs) emitted by rats in appetitive and aversive contexts may correspond to an expression of the affective component of pain.
Methods: USVs were recorded with an Ultra Sound Microphone (CM16; Avisoft Bioacoustics) and analyzed by the Avisoft software. The intraoral incision of the buccal mucosae and the constriction of the infraorbital nerve (CION) were used as models of inflammatory and trigeminal neuropathic pain, respectively. Elevated plus maze apparatus was used to determine the anxiety-like behavior. Immunostaining for c-Fos activation of rats slices was visualized using a Zeiss LSM 510 META confocal system. The analysis was carried out on day 3 after the intraoral incision or on day 15 after CION, and facial thermal or mechanical hyperalgesia was determined by using a radiant heat source or Von Frey filaments, respectively. Two-way ANOVA followed by Bonferroni post hoc test was used for statistical analysis.
Results: Rats showed a reduction in the 50-kHz calls, specifically in the flat USVs, facial hyperalgesia, anxiety-like behavior and c-Fos activation in the mPFC, NAc, AMY, PAG and Sp5C.
Conclusions: Persistent pain is related to impaired social interaction and mood changes. The analysis of USVs may be a useful tool to enhance the translational aspect of these models.
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MENTHOL, A TRPM8 AGONIST, PROMOTES OROFACIAL ANTINOCICEPTION IN ADULT ZEBRAFISH THROUGH TRPA1 ANTAGONISM

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Background and aims: Menthol is considered a cold-sensitive thermoTRP channel TRPM8 agonist and it induces a nociceptive behavior when applied to the lips of animals. Here we investigated if the orofacial antinociception promoted by menthol would be related to TRPA1 or TRPV1 antagonism.
Methods: Acute nociception was induced by menthol (1.2 µM), cinnamaldehyde (0.33 µM) or capsaicin (4.93

μM) applied into in the upper lip (5.0 μL) of adult wild zebrafish. Then, animals (n=6) were individually placed in a glass Petri dish, divided into quadrants, and the nociceptive response was registered after menthol (0 - 10'), cinnamaldehyde (0 - 5') or capsaicin (10 - 20') application. Zebrafish were pretreated by intraperitoneal injection (20 μL) with vehicle (Control;) or menthol (0.1; 0.3 or 1.0 mg/mL) 30 min before induction. The effect of menthol on zebrafish locomotor behavior was evaluated with the open field test (0 - 5´). Naive groups (n=6) were included in all tests. The experimental protocols followed the ethical guidelines of CONCEA and were approved by the UECE Animal Research Ethics Committee (#7210149/2016).
Results: Pre-treatment with menthol was associated with a reduction in nociceptive behavior induced by menthol (0.1 mg/mL; *p< 0.05 vs Control) and cinnamaldehyde (0.1 and 0.3 mg/mL; ****p< 0.001 vs Control), but not by capsaicin. Menthol (0.1 mg/mL) reduced the locomotor activity of zebrafish (*p< 0.05 vs Control).
Conclusion: The results indicate the potential clinical application of menthol as inhibitor of orofacial nociception and that this effect may be due to the modulation of TRPA1 channel.

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PREOPERATIVE CONDITIONED PAIN MODULATION AND PAIN CATASTROPHYZING PREDICT PAIN 12 MONTHS AFTER TOTAL KNEE ARTHROPLASTY

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Background and aims: Impaired conditioned pain modulation (CPM) has been widely documented in patients with osteoarthritis (OA) and suggested as a prognostic marker in clinical studies. The Pain Catastrophizing Scale (PCS) has found to be a predicter of pain after surgery. The current study aimed to utilize preoperative clinical pain intensities, CPM, and PCS in a model predicting pain intensity 12-months after total knee arthroplasty (TKA).
Methods: Data from 144 knee OA patients (mean age 68.8 years old) scheduled for TKA were included. Clinical pain intensities (0-10, no pain (VAS0) - worst imageable pain (VAS10)) were assessed as the worst pain within the last 24 hours before and 12-months after TKA. PCS and cuff-induced CPM were assessed before TKA.
Results: Clinical pain intensities were significantly reduced 12-months post-TKA (P< 0.001). 18% had a post-TKA worst pain within the last 24-hours VAS≥3. A backward linear regression model using preoperative pain intensity, CPM, and PCS predicted postoperative pain intensity with a prediction value of R=0.36. CPM (P< 0.01) and PCS (P< 0.01) were significant independent predictors for the worst pain within the last 24-hours at 12-months follow-up. Preoperative pain intensity did not contribute to this model.
Conclusions: Preoperative CPM and PCS can independently predict pain 12-months after TKA. This indicates that both central pain modulation and psychological features are important preoperative factors to consider when counselling patients before TKA.

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PRIOR TREADMILL WALKING EXERCISE ALLEVIATES PRIMARY AND SECONDARY HYPERALGESIA IN A RAT OSTEOARTHRITIS MODEL

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Background: Previous study revealed that prior regular exercise attenuate neuropathic pain and noninflammatory muscle pain. However, its effects on osteoarthritic pain are unrevealed. We examined the effect of prior treadmill walking exercise on osteoarthritis (OA) pain in rats.

Methods: Wistar rats were randomly divided into three groups; sedentary and osteoarthritis (OA group), exercise and osteoarthritis (Exercise group), sedentary and sham-osteoarthritis (Sham group). In the Exercise group, prior walking exercise on a treadmill (10 m/min for 60 min/day, 5 day/week) were performed for 6 weeks before induction of knee OA. Rats in the OA and Exercise group received a single injection of 2mg of monoiodoacetic acid after sedentary and exercise period. Pressure pain threshold (PPT) of knee joint and paw withdrawal response (PWR) were assessed as a primary and secondary hyperalgesia. In addition, distance traveled was calculated by motion-image analysis software. These evaluations were measured at baseline, before injection, and every week for up to 4 weeks.
Results: No differences in primary and secondary hyperalgesia were observed for any groups at baseline and just before injection. After development of OA, significant higher of PPT and lower PWR were observed in the Exercise groups compared to those of OA group. There were no significant differences in the distance traveled for any groups.
Conclusions: These results suggested that prior walking exercise reduce severity of primary and secondary hyperalgesia derived from OA in a rat model and may be effective management strategy to suppress the development of chronic pain derived OA.

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THE SOLUBLE INTERLEUKIN-2 RECEPTOR IN COMPLEX REGIONAL PAIN SYNDROME: IS IT SUITABLE FOR DISTINGUISHING CRPS FROM OTHER PAIN CONDITIONS IN ROUTINE CLINICAL PRACTICE?

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Background and aim: Previously, we showed that serum soluble interleukin-2 receptor (sIL-2R) levels, a marker for T-cell activation, were higher in Complex Regional Pain Syndrome (CRPS) patients than in healthy controls. Additionally, sIL-2R levels discriminated well between patients and controls: sensitivity 90% and specificity 89.5%. Although these findings are interesting, it remains to be established whether serum sIL-2R measurement in routine clinical practice is suitable for distinguishing CRPS patients from patients with other pain conditions. Therefore, we aim to compare sIL-2R levels between these two groups.
Methods: Fifty-two patients aged ≥ 18 years referred with a suspicion of CRPS in one limb will be included. Main exclusion criteria are history of CRPS, an auto-inflammatory or autoimmune disease, pregnancy and use of immunomodulating medication.
CRPS is diagnosed using the Budapest Criteria. Serum-sIL-2R levels are quantified using a validated ELISA-system routinely used in a clinical laboratory of Erasmus MC.
The primary outcome parameter is the sIL-2R level of patients diagnosed with CRPS and patients who are not diagnosed with CRPS. Depending on the outcome of the Shapiro-Wilk test, either the Independent-samples t-test or Mann-Whitney-U test will be used to compare sIL-2R levels between both groups. A binary logistic regression analysis will be used to evaluate the contribution of sIL-2R level to the group prediction. Sensitivity, specificity, positive and negative predictive value of sIL-2R will be calculated.
Results: This study is on-going. The preliminary results will be presented.
Conclusions: The study results could determine the place of sIL-2R in the diagnosis of CRPS.

LOW BACK PAIN AND LUMBORADICULAR PAIN

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THE EFFECTIVENESS OF CONDITIONED PAIN MODULATION IS NEGATIVELY ASSOCIATED WITH LEVELS OF PAIN CATASTROPHIZING IN CHRONIC LOW BACK PAIN

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Background and aims: The efficiency of conditioned pain modulation (CPM) and the occurrence of catastrophizing thoughts is commonly seen in people with chronic low back pain. The aim of this study was to investigate whether these factors are associated in people with chronic low back pain (CLBP).
Methods: 44 males and females (22 persons with CLBP) participated in a single experimental session. At baseline, all participants filled out the Pain Catastrophizing Scale (PCS). To determine the efficiency of the CPM response, pressure pain thresholds (PPT) were assessed at the low back and the calf before (baseline) and after (post) the dominant hand was submerged into a bucket of circulating ice water. The absolute change in baseline PPT values (PPTpost - PPTbaseline) was used to determine the efficiency of the CPM response. The Spearman's correlation coefficient was calculated to determine the the potential association between the CPM response and PCS in the CLBP group.
Results: A significant main factor effect was found for the CPM response where the CLBP had a significantly lower CPM response compared with controls. A strong, negative correlation was found between the efficiency of the CPM effect and the PCS score in the CLBP group (Spearman = -0.67, $P < 0.001$.
Conclusions: The findings indicate at link between pain-related cognitive processing and endogenous pain inhibition but do not infer causality. The findings warrant future studies investigating whether interventions addressing catastrophizing thought can improve the efficiency of endogenous pain inhibitory control.

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THE CLINICAL COURSE OF LOW BACK PAIN DURING A MUNICIPALITY-BASED REHABILITATION PROGRAMME

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Background and aims: In Denmark, people with chronic low back pain (CLBP) can be referred for municipality provided rehabilitation. Patients are categorized into low-, medium- and high-risk groups using the Start Back Tool and are eligible to receive individual treatment and / or group training. This study reports the pain outcomes for participants in this programme for the first time.
Methods: This retrospective cohort study examined data from 623 CLBP patients with a mean pain duration of 222 (SD 358) weeks who received 5.9 (SD 3) individual treatments and 3.0 (SD 4.6) group training sessions. Pain was recorded using the numeric rating scale (NRS) from 0-10. We deemed a change in pain (improved or worsened) of less than 15% as no important change, 15% or more as a minimally important change, 30% or more as a moderately important change and 50% or more as a substantially important change. Potential associations between Start Back categoriesand pain change were investigated using logistic regressionanalyses.
Results: After rehabilitation, the following pain change categories were observed: Substantial worsening n = 21; Moderate worsening n=14; No important change n=187; Minimal improvement n=87; Moderate improvement n=116; Substantial improvement: n=168. After adjusting for pain intensity at baseline, there was no association between

change in pain and Start Back category (chi²(2)= 1.95, p=0.3777).
Conclusions: The municipality rehabilitation program has mixed results on pain with many CLBP patients deriving little to no improvement. Start Back stratification was not related to positive treatment outcomes with respect to pain.

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EFFECTIVE TREATMENT OPTIONS FOR LUMBAR DISK HERNIATION WITH RADICULOPATHY

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Background: Disc herniation with radiculopathy is a disabling and costly condition, with conflicting evidence about effective treatment
Aim: To compare effectiveness of surgical and conservative treatment for lumbar disk herniation with radiculopathy
Methods: A total of 64 patients with MRI-confirmed lumbar disc herniation with radiculopathy were enrolled: 32 in the epidural steroid injection group (mean age 39,1±11,8 years, 13 males) and 32 in the lumbar discectomy group (mean age 42,3±12,1 years, 19 males). Back and leg pain intensity (numeral rating scale), disability (Oswestry index), quality of life (SF-12) were assessed at baseline, in 10 days, 3, 6, 9 and 12 months after treatment. In conservative treatment group patients were offered to repeat MRI in 9 months.
Results: Groups did not differ at baseline. Patients in both groups showed statistically significant improvement after treatment compared to baseline (p< 0,001), which maintained for timeframe of this study. When compared to conservative group, patients in the discectomy group had lower leg pain intensity in 10 days (0,97 vs 2,41, p< 0,001) and in 3 months (0,84 vs 1,56, p=0,02), but there were no differences in 6 months and later. Other measurements did not show significant differences. 9 cases of disc herniation spontaneous regression were observed.
Conclusion: Results of our study show that surgical treatment of lumbar disk herniation with radiculopathy gives opportunity for faster pain relief, but in long term differences between groups diminish, suggesting that both treatment strategies can be used.

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OBJECTIVE MEASUREMENTS OF LUMBAR SPINE FUNCTION IN BACK PAIN PATIENTS UNDERGOING HIGH-FREQUENCY SPINAL CORD STIMULATION AT 10 KHZ

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The Oswestry Disability Index (ODI) is the most commonly used questionnaire to assess the functional capacity of such patients (Fairbank, Spine 2000). However, it is limited by relying on patient recollection and feedback. Therefore, objective and easy to use validated methods for measuring patients function are required. We evaluated the SPINE device (Epionics Medical GmbH, Potsdam, Germany), which allows the objective assessment of the lumbar spine motion and function in chronic back patients candidate for high-frequency Spinal Cord Stimulation at 10 kHz (HF10 SCS).

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EFFICACY AND SAFETY OF TOPICAL NONIVAMIDE/NICOBOXIL FIXED DOSE COMBINATION (NONI) IN ACUTE LOW BACK PAIN (A-LBP): A RANDOMISED, PLACEBO CONTROLLED TRIAL

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Background and aims: LBP affects many patients. We investigated the effects of topical nonivamide/nicoboxil (0.17%/1.08%) cream (NoNi) in patients suffering from acute LBP.
Methods: Phase III randomized, double-blind, placebo (PLA)-controlled, multinational, multicenter trial on efficacy, safety and tolerability of NoNi versus placebo in treatment of A-LBP (endpoints: pain intensity (PI) difference between pre-dose baseline and 8 h after first application and the last treatment day; mobility; efficacy score). Patients (n=138), were treated for up to 4 days with NoNi or PLA.
Results: Mean baseline PI was 6.8 (on a 0-10 point numerical scale). After 8h, pain was more reduced with NoNi (adjusted mean [95%CI]: 2.824 [2.384, 3.264] points) than with PLA (0.975 [0.546, 1.404] points), $p < 0.0001$.
On the last treatment day, NoNi provided more pain reduction (adjusted mean [95%CI]: 5.132 [4.581, 5.683] points) compared to PLA (2.174 [1.635, 2.712] points), $p < 0.0001$.
The chance of better mobility was at least a 7-fold versus placebo; ORs [95% CIs] per day were: 7.2 [3.61, 14.36], 7.1 [3.52, 14.33], 7.0 [3.06, 16.00] and 11.5 [4.18, 31.77].
NoNi and PLA were tolerated well. No treatment-related serious adverse events were reported.
Conclusions: Topical nonivamide/nicoboxil is an effective, well-tolerated medication for the treatment of A-LBP. Effect size appears to be higher when compared to the pooled effect size of systemic medications, including prescription-only analgesics and muscle-relaxants (e. g. Eur Spine J, 16, (2007) 1776).
Sponsor: Boehringer Ingelheim, ClinicalTrials.gov Identifier: NCT02300311

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PAIN AND DISABILITY IN PEOPLE WITH SACROILIAC JOINT DYSFUNCTION (SIJD)

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Background and aim: Sacroiliac joint dysfunction (SIJD) accounts for approximately 15% to 30% cases of idiopathic low back pain (LBP). SIJD can affect the ability to develop functional activities of daily life: however, it is not described if there are differences in the pain and functional performance of people with LBP with and without SIJD. The purpose of this study was to analyze pain intensity and functional performance in people with LBP with and without SIJD.
Methods: Forty-three men and 33 women between 18 and 40 years (Me 24 RIC 20-35) were included in the study and two study groups (LBP and SIJD) were formed (N = 38). Diagnosis of SIJD was established with 3 positive pain provocation tests. The functional performance was evaluated through the Oswestry Disability Index (ODI) and pain intensity with the visual analogue scale. For statistical analysis chi-square and the Kruskal Wallis test followed by the Dunn test were applied.
Results: Significant differences between groups were found, with a higher number of people with pain at rest, on palpation and during the lifting of a load in the SIJD group. Similarly, moderate and severe disability was more prevalent in the SIJD group.
Conclusion: People with SIJD had greater functional limitation due to pain. Biomechanical changes such as anterior pelvic tilt, usually unilateral, present in people with SIJD could make those functional activities such as walking become painful and generate greater disability in this population compared to people without SIJD.

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THE EFFECT OF SOFT TISSUE MOBILIZATION ON PAIN, FUNCTION AND DEPRESSIVE SYMPTOMS IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Background and aims: Soft tissue mobilization (STM) has been developed to evaluate and treat soft tissue dysfunctions that precipitate myofascial pain. The aim of this study was to investigate the effect of STM on pain, function and depressive symptoms in chronic non-specific low back pain (CNSLBP) patients.
Methods: 122 patients (78 females, 44 males, mean age: 51.08 ± 10.78 years) with CNLBP were randomly divided into 2 groups. The study group (65 subjects) received a conventional physiotherapy program (CPP) consisted of hotpacks, ultrasound, TENS and exercise plus STM technique and the control group (57 subjects) received the same CPP without STM 3 times per week for 3 weeks. Outcome measures were pain (Visual Analog Scale), function (Rolland Morris Disability Questionnaire), depressive symptoms (Beck Depression Scale). Measurements were recorded before and after and the treatment.
Results: Comparing test scores; decrease in pain intensity, disability level and depressive symptoms were statistically significant in both groups ($p < 0.001$). According to delta scores; adding STM to CPP resulted in higher improvement in terms of pain intensity ($p=0,05$) and function ($p=0,042$).
Conclussions: The results of this study indicated that adding Soft Tissue Mobilisation to Conventional Physiotherapy Programme in Chronic Non-spesific Low Back Pain patients may result in greater improvement of pain intensity, function.

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EFFICACY OF MULLIGAN MOBILISATION TECHNIQUE IN CHRONIC NON-SPESIFIC LOW BACK PAIN

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Background and aims: Sustained Natural Apophyseal Glide (SNAG), when indicated, can provide immediate pain relief and improvement in range of motion (ROM). The aim of this study was to investigate the outcomes of adding lumbar SNAG to a conventional physiotherapy program (CPP) for chronic nonspecific low back pain (CNSLBP).
Methods: Thirty-six female participants with CNSLBP were randomly divided into 2 groups. The study group (aged 40.56 ± 5.97, 18 subjects) received a CPP consisted of hotpacks, ultrasound and TENS applications (5 times per week) plus lumbar SNAG (3 times per week) and the control group (aged 39.44 ± 5.08 7.7, 18 subjects) received the same CPP without SNAG for 3 weeks. Outcome measures were pain, range of motion, fear avoidance behaviour and function measured by Visual Analog Scale, Back ROM II, Fear Avoidance Behaviour Questionnaire (FABQ) and Rolland Morris Disability Index (RMDI). Measurements were recorded before, after and 3 month after the end of the treatment.
Results: Comparing test scores indicated that the study group had significant improvement in all measurement parameters ($p < 0.05$) and control group in pain intensity at extention activity, extention ROM, FABQ and RMDI scores ($p=0.02$, 0.016, 0.006,0.029) respectively. Acording to delta scores, adding SNAG to the conventional program resulted in higher improvement in terms of all measurement parameters ($p < 0.05$) accept extention ROM ($p=0.197$).
Conclusions: This study indicated that adding SNAG to conventional physiotherapy program in the treatment of CNSLBP may result in greater improvement of pain intensity, flexion ROM, fear avoidance behaviour and function.

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THE ASSOCIATION BETWEEN PRO-INFLAMMATORY CYTOKINES, MRI FINDINGS AND QUANTITATIVE SENSORY TESTING IN PATIENTS WITH SCIATICA

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Background and aims: Sciatica associated with lumbar disc herniation is presumably caused by either nerve root compression or inflammation. However, patterns of sensory signs and symptoms vary between patients and are poorly correlated with MRI characteristics of the herniated disc and with evidence of local inflammation. The present study was aimed to search for associations between quantitative sensory testing (QST) patterns, MRI findings and disc cytokine levels in patients with sciatica.
Methods: This is an ongoing study. Patients scheduled for lumbar discectomy for sciatica undergo QST assessment according to a modified DFNS protocol. During surgery, intervertebral disc material is harvested for inflammatory mediators (interleukin (IL)-1b, IL-6, IL-8, IL-17, interferon-gamma and TNF-a) analysis using real-time polymerase chain reaction. MRI scans are assessed for disc protrusion volume and direction. K-means cluster analysis is being used to determine subjects subgrouping, which will be correlated with the MRI and inflammatory parameters.
Results: Thus far, 35 (out of 60) patients were studied. Based on 7 QST variables, two subgroups of patients were identified: subgroup-1 (n=13) exhibiting high mean Z-scores (mechanical and thermal hypersensitivity), differing from subgroup-2 (n=22), exhibiting low mean Z-cores (loss of sensory function). Further results are pending.
Conclusions: Preliminary results indicate that patients with sciatica can be classified into at least two (of the 3 DFNS) QST subgroups. By completing this study we hope to be able to correlate each subgroup with a specific inflammatory and disc morphology pattern, and by that to reveal the mechanism (inflammation versus compression) underlying each sensory profile.

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TREATMENT PATTERNS OF CHRONIC LOW BACK PAIN PATIENTS - INITIAL RESULTS FROM A GLOBAL 8,990 PATIENT SURVEY: CITIZENS' RESEARCH

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Background and aims: Chronic low back pain (CLBP), one of the most common chronic pain conditions, affects 5-10% of people worldwide. Treatment patterns and preferences of 8,990 patients completing global (14 country) CLBP survey are presented.
Methods: Patients (≥18y) with self-reported physician diagnosis of CLBP, recruited via online panels, completed the survey March-May 2019. Data were weighted by sample size, CLBP prevalence and pain severity.
Results: 8,990 patients completed the survey [mean age 52y (SD=14.91); 45% female]. Using a 0 (no pain) to 10 (pain as bad as you can imagine) numeric rating scale, 41% reported severe (7-10), 49% moderate (4-6) and 10% mild (1-3) pain.
On average, severe patients had seen 2.9 different physicians regarding their CLBP since diagnosis (mild:2.3) and currently took 2.1 medications for CLBP (mild: 1.3).
56% of severe patients were prescribed pain medication (mild:20%). Of these patients, 58% reported taking an opioid (mild:33%) and 60% reported taking an anti-inflammatory (mild:66%); 12% did not know if they were taking an

opioid (mild:10%) and 14% if it was an anti-inflammatory (mild:17%). 25% of severe patients taking opioids had done so for ≥5 years (mild:22%)
Besides pain relief, functionality mattered most to patients (severe:42%, mild:46%), followed by side-effects (severe:23% mild:24%); for 37% of severe patients, risk of addiction also mattered (9%=most important, 13%=second-most, 15%=third-most; mild:9%, 12%, 13%, respectively).
Conclusions: Survey results indicate severe CLBP patients take, on average, 2.1 medications; over half take prescription pain relief, with a quarter of those using opioids for longer than guidelines recommend.

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THE SELECTIVE SOMATOSTATIN TYPE 4 (SST_4) RECEPTOR AGONIST, J-2156, ALLEVIATES PRIMARY AND SECONDARY MECHANICAL HYPERALGESIA IN A RAT MODEL OF CHRONIC MECHANICAL LOW BACK PAIN

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Background and Aims: Chronic low back pain (LBP) ranks among the most common reasons for patient visits to healthcare providers. The somatostatin receptor type 4 (SST_4) agonist, J-2156 [(1'S,2S)-4amino-N-(1'-carbamoyl-2'-phenylethyl)-2-(4"-methyl-1"-naphthalenesulfonylamino)butanamide], is an agonist with nanomolar binding affinity at the human SST_4 receptor and that has approximately 300-fold selectivity over other somatostatin receptors. Hence, our aim was to assess the efficacy of J-2156 for the relief of chronic mechanical LBP in a rat model.
Methods: Animal ethics approval was from The University of Queensland. Groups of adult male Sprague-Dawley rats were anaesthetised and their lumbar L4/L5 and L5/L6 intervertebral discs (IVDs) were punctured (0.5 mm outer diameter, 2 mm-deep) 10 times per disc. Sham-rats underwent similar surgery without disc puncture. On day 28 post model induction, rats received single bolus doses of J-2156 or vehicle in a blinded manner according to a wash-out protocol that had a 2-day washout period between three successive doses of either J-2156 or vehicle. Anti-hyperalgesia was assessed at L4/L5 (primary hyperalgesia) and at L1 (secondary hyperalgesia) for 3 h post-dose administration and the tester was blinded to administered treatment.
Results: For LBP-rats, there was temporal development of mechanical hyperalgesia in the lumbar axial deep tissues at L4/L5 and L1 that was fully developed by day 21 and that persisted until at least day 49 post-surgery. J-2156 alleviated both primary and secondary hyperalgesia in LBP-rats whereas vehicle was inactive.
Conclusions: The SST_4 receptor is promising as a target for discovery of novel analgesics for alleviation of chronic LBP.

OROFACIAL PAIN

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THE OROFACIAL ANTINOCICEPTIVE ACTIVITY OF *CIS*-JASMONE IN ADULT ZEBRAFISH IS MEDIATED BY TRPM8 CHANNELS

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Background and aims: *cis-jasmona* (CJ) belongs to the jasmonate family, whose members have biogenic and structural similarities to prostaglandins. Herein, it was investigated the orofacial antinociceptive effect of CJ using adult zebrafish model of orofacial pain.
Methods: Acute nociception was induced by menthol (1.2 µM; TRPM8 agonist) applied into in the upper lip (5.0 µL) of adult wild zebrafish. Then, animals (n=6/group) were individually placed in a glass Petri dish, divided into quadrants, and the nociceptive response was registered after menthol (0 - 10'). Zebrafish were pretreated by *per os* administration (20 µL) with vehicle (Control;) or menthol (0.1; 0.3 or 1.0 mg/mL) 60 min before induction. The effect of CJ on zebrafish locomotor behavior was evaluated with the open field test (0 - 5´). Naive groups (n=6/each) were included in all tests. A molecular docking was performed using the TRPM8 channel. The experimental protocols followed the ethical guidelines of CONCEA and were approved by the UECE Animal Research Ethics Committee (#7210149/2016).
Results: Pre-treatment with CJ was associated with a reduction in nociceptive behavior induced by menthol (**p< 0.01 and ***p< 0.001 *vs* Control). CJ promoted no alteration in the locomotor activity of zebrafish. In line with in vivo experiments, docking studies indicated that CJ may interact with TRPM8 channels.
Conclusion: Results confirm the potential pharmacological relevance of CJ as an inhibitor of orofacial nociception mediated by TRPM8.

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ASSOCIATION BETWEEN TEMPOROMANDIBULAR JOINT OSETOARTHRITIS AND MITOCHONDRIAL DNA HAPLOGRUPS IN A KOREAN POPULATION

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Background: The pathogenesis of Temporomandiblar join(TMJ) osteoarthritis(OA) remains controversial. Imbalance between chondrocyte-controlled reparative processes and degradative processes is considered an important etiologic factor of TMJ OA. The individual groups characterized by the combination of single-nucleotide polymorphisms(SNPs) in the mitochondrial DNA(mtDNA) sequence are called mtDNA haplogroup. In OA, mitochondrial dysfunction compromises the function of chondrocytes, increases inflammatory responsiveness to cytokines of the chondrocytes, and induces the apoptosis of chondrocyte. This study tried to investigate the association between TMJ OA and mtDNA haplogroups among Korean.
Methods: We recruited 108 patients from Yonsei University Dental Hospital. Buccal swab samples were collected, and DNA was extracted using the QIAamp® DNA Mini Kit. The extracted DNA was analyzed using PCR system to distinguish mtDNA haplogroups M, G, D, D4, D5, M7, M8, M9, M10, N, A, N9, R, F, and B, as well as the D4 subhaplogroups. The genotyping of PCR products was carried out using AB GeneMapper® ID Software. Haplogroups of the TMJ OA groups and control group were compared using the chi-square test.
Results: The frequency of haplogroup M10 and D4j was higher in TMJ OA group than in control group. The frequency of haplogroup D4 was lower in TMJ OA group than in control group.
Conclusion: This is the first study to examine and identify the association between TMJ OA and mtDNA haplogroups in Korean population. Polymorphisms of these mtDNA haplogroups could be a promising target for ascertaining the pathogenesis of TMJ OA and finding new therapeutic approaches to TMJ OA.

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INVOLVEMENT OF HEMOKININ-1 IN TRIGEMINAL SENSITIZATION AFTER OROFACIAL INFLAMMATION

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Background and aims: Sensitization of primary and secondary trigeminal sensory neurons underlies hyperalgesia and allodynia in orofacial pain and headache syndromes. Hemokinin-1 (HK-1) encoded by the Tac4 gene is the newest member of the tachykinin family. It has been suggested to play a role in nociceptor sensitization but it has not been investigated in facial pain models. Therefore, we aimed to investigate the expression of Tac4 mRNA in trigeminal ganglia (TRG) and compare wild-type and Tac4 gene-deficient mice in Complete Freund's Adjuvant (CFA)-induced orofacial inflammation.
Methods: CFA was injected in the whisker pad of Wistar rats, C57Bl/6 or Tac4 gene-deleted mice. Mechanical pain thresholds of the face were determined with von Frey filaments. Gene expression changes in TRG were measured by quantitative PCR at different time points after inflammation.
Results: In rats, orofacial mechanical allodynia developed by day 1 after CFA injection with a maximum on day 3. The course of allodynia correlated with increased expression of Tac4, as well as neuronal and glial activation markers in the TRG. We could not reliably measure CFA-induced orofacial allodynia in mice. However, neuronal and glial activation markers were elevated at a lower extent in the TRG of Tac4 gene-deleted mice compared to wild-type animals.
Conclusions: Expression of HK-1 was detected in TRG and it was upregulated after orofacial inflammation. The potential role of HK-1 in sensitization of trigeminal afferents is supported by reduced neuronal and glial activation in Tac4 gene-deficient mice.
Acknowledgements: The study was supported by grants KTIA_NAP_13-2014-0022, GINOP-2.3.2-15-2016-00048, NTP-NFTÖ-18-B-0455, EFOP-3.6.2-16-2017-00008.

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OPTOGENETIC STRATEGIES TO INVESTIGATE PROFILES OF EXCITATORY PROJECTION FROM THE INSULAR CORTEX TO TRIGEMINAL SPINAL SUBNUCLEUS CAUDALIS

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Background and aims: The trigeminal spinal subnucleus caudalis (Sp5C) plays a key role in modulating the nociceptive input arriving from craniofacial structures, and sends the information to the higher central nervous system. The insular cortex (IC) is known as processing nociception, and direct descending projections from IC to Sp5C have been reported. However, there is less information about these descending projection profiles. Here, we examined how IC projections modulate the activities of Sp5C neurons.
Methods: To address this question, we performed whole-cell patch-clamp recordings using VGAT-Venus transgenic rats that received injection of AAV-ChR2-mcherry injection into IC and Cholera toxin subunit B (CTB) into the parabrachial nucleus. We investigated the feature of synaptic transmission from IC to glutamatergic and GABA/glycinergic Sp5C neurons by an optogenetic technique in combination with pharmacological manipulation of synaptic transmission.
Results: Selective stimulation of IC axons in Sp5C induced EPSCs both in excitatory and inhibitory Sp5C neurons, whose amplitudes were comparable. The optogenetically induced EPSCs in the Sp5C were diminished by tetrodotoxin and were rescued by the application of 4-aminopyridine
(4-AP), a blocker of voltage-gated K+ channels. Besides, we recorded unitary IPSCs in the connections from GABA/Glycinergic neurons to glutamatergicneurons and found the high failure rate of unitary IPSCs, which were mostly insensitive to bicuculline but sensitive to strychnine.
Conclusions: These results suggest that IC projections induce excitatory rather than inhibitory effects on excitatory projection neurons in the Sp5C.

OSTEOARTHRITIS, RHEUMATOID ARTHRITIS

P284

THE RELATIONSHIP BETWEEN SEDENTARY BEHAVIOUR AND PAIN IN PEOPLE WITH RHEUMATOID ARTHRITIS

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Background and aims: While there is evidence for the negative effects of prolonged sedentary time for health outcomes in rheumatoid arthritis (RA), its contribution to explaining variation in pain symptoms is unknown. This study (i) compares sedentary behaviour in people with low pain intensity to those with higher pain levels; and (ii) investigates the independent contribution of sedentary time to explain variation in pain intensity and number of painful joints in people with RA.
Methods: Seventy adults with RA wore an activPAL accelerometer over a 7-day period. Pain intensity and self-reported painful joint count were recorded with validated questionnaires**.** A 'low pain' group was defined based on the patient acceptable symptom state (≤ 4/10 on VAS) (Tubach et al 2012)**.** Group differences were analysed using t-tests. The independent contribution of sedentary time to variation in pain symptoms was analysed with hierarchical linear regression (adjusted for age, gender, BMI, depression, disease activity and comorbidity).
Results: Participants´ mean pain score was 4.9/10 (SD 2.9) on VAS. The low pain group had significantly lower total sedentary time (507 v´s 557 minutes, p=0.026) and percentage sedentary time of waking hours (55.7% v´s 62.4%, p=0.012). However after controlling for known predictors of pain, sedentary time did not contribute significantly to explaining the variation in pain intensity (beta= 0.082, p=0.496) or painful joint count (beta=-0.066, p=0.635).
Conclusion: This study suggests that sedentary time does not explain pain variation in RA, however further investigation may be warranted in a larger sample of patients with more severe pain.

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INTRA-ARTICULAR GOLD MICRO PARTICLES RELIEVE PAIN IN KNEE OSTEOARTHRITIS. A PILOT STUDY

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Background and aims: Many patients suffering from osteoarthritis (OA) do not get adequate pain relieve. Evidence suggest an inflammatory component in OA pain. Animal studies prove the effect of gold implantation in arthritic joints and a stimulation of the immune system. The present open pilot study aimed to investigate if gold ions released from intra-articular gold micro particles have a role in treating knee OA.
Methods: A cohort of 30 patients, aged ≥18years, pain ≥ 3 months, synovial effusion on MRI, and Kellgren-Lawrence OA grade 3-4 were included. Metallic gold 20 mg, 72.000 pieces, 20-40 µ-meter (Berlock-Micro-Implants, HumanGoldInject) were injected into the knee joint using the patient's own synovial fluid as the carrier. The primary outcome measure was temporal summation of pain (TSP). The secondary outcome measures were Conditioned Pain Modulation (CPM), knee Pressure Pain Threshold (PPT), the PainDetect score, and the Western Ontario and McMaster Universities Arthritis Index (WOMAC).
Results: TSP was reduced 37.5 % (P = 0.027), CPM was improved 22.4 % (P = 0.026), and PPT increased 10 % (P = 0.0001). PainDetect was reduced from 10 (1-26) to 3 (0-19) (P = 0.0005), WOMAC pain decreased from 9 (6-16) to 3 (0-15) (P = 0.0001), stiffness from 4 (1-8) to 2 (0-8) (P = 0.036) and function improved from 29 (14-51) to 11 (0-41) (P = 0.0009).

Conclusions: The significant improvements in pain caused by the intra-articular gold micro particles indicate an inhibition of inflammation. The significant improvements in qualitative sensory tests indicate less pain hyperalgesia.

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DIFFERENTIAL OPIOID FUNCTION IN A RAT MODEL OF ANXIETY-LIKE BEHAVIOUR AND AUGMENTED OSTEOARTHRITIS PAIN

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Background and aims: Pain research suffers from a significant translational gap, partially attributable to a focus on sensory over affective aspects of pain. To help combat this, we recently modelled the interaction between anxiety and osteoarthritis (OA) in a rat strain with anxiety-like behaviours (Wistar Kyoto; WKY). WKY rats develop an augmented widespread pain phenotype in the monoiodoacetate (MIA) model of OA, mirroring the clinical population. Here we utilise *in vivo* electrophysiology and *ex vivo* analyses to demonstrate altered spinal opioid signalling in this model.
Methods: This study used 4 experimental groups: Anxiety+OA (WKY/MIA); anxiety+no pain (WKY/saline); no anxiety+OA (Wistar/MIA); no anxiety+no pain (Wistar/saline). Adult male rats received a unilateral intra-articular injection of 1mg MIA or saline, and alterations in pain behaviour (paw withdrawal thresholds) and anxiety status (elevated plus maze) were assessed over 21 days. Responses to cumulative doses of systemic morphine were then assessed via *in vivo* single unit spinal recordings. In a separate group of rats, spinal expression of spinal mu opioid receptors (MOR) was assessed via Western blotting.
Results: WKY rats display a basal anxiety-like phenotype. MIA injection does not significantly alter anxiety in either strain. Augmented pain behaviour in the WKY-MIA model is associated with increased wind-up of spinal neurons, and a decreased response to systemic morphine, demonstrating increased spinal excitability in this model. *Ex vivo* analyses reveal alterations in MOR expression.
Conclusions: Morphine has reduced efficacy in rats with anxiety-like behaviour and augmented OA-like pain, with potential implications for clinical prescription of opioids.

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THE INFLUENCE OF RS1001179 POLYMORPHISM OF THE CATALASE GENE ON DISEASE ACTIVITY IN PATIENTS WITH JUVENILE IDIOPATHIC ARTHRITIS TREATED WITH ETANERCEPT

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Active arthritis (AA) in juvenile idiopathic arthritis (JIA) is characterized by by the limitation of motion (LOM) accompanied by pain, tenderness, or both. Although oxidative stress plays an important role in the etiopathogenesis of this disease, genetic contribution of rs1001179 single nucleotide polymorphism (SNP) of the catalase (*CAT*) gene in JIA patients is not yet well established. The aim of this study was to investigate the influence of rs1001179 SNP on disease activity in JIA patients treated with etanercept.
A total of 154 subjects (60 JIA patients and 94 healthy volunteers) were screened for rs1001179 SNP using the polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method. Clinical variables of disease activity were assesed prior to and 12 months after anti-TNF (etanercept) therapy.
The frequency of the polymorphic T allele was significantly higher in the patients compared to controls (p=0.006). There were no differences in erythrocyte sedimentation rate (ESR, p = 0.272), AA (p = 0.994), LOM (p = 0.292), the

physician global assessment of disease activity (phVAS, p = 0.939), between JIA patients, carriers of the CC and CT/TT genotype in samples taken at enrollment. After 12 months of treatment, ESR (p = 0.039), AA (p = 0.001) and phVAS (p = 0.022) were significanlty higher in T allele carriers in comparison to carriers of the wild-type (CC).
In conclusion, the results suggest the potential protective effect of the CC genotype, with regard to pain following disease activity, and response to treatment.

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PARTICIPATION OF AT_2R AND HCN ION CHANNELS IN MODELS OF ARTHRITIC PAIN

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Background and aims: Pain is an important symptom in Rheumatoid Arthritis (RA) and Osteoarthritis (OA). Patients typically experience spontaneous pain and an increase in pain sensitivity (hyperalgesia). The overall aim of this study was to investigate the peripheral roles of HCN channels and the angiotensin II type 2 receptor (AT_2R), in pain models of arthritis.
Methods: The monoiodoacetate (MIA)-model of OA and the antigen-induced arthritis (AIA) were induced in C57BL/6 male mice. Collagen-induced arthritis (CIA) was induced in DBA1/J male mice. Animals were treated with PD123319, an AT_2R-selective antagonist, or ivabradine, a peripherally-restricted HCN channel blocker. Mechanical hypersensitivity, thermal response to heat, joint nociception and swelling were assessed at different time points. Expression of mRNA for AT_2R and HCN2 in the spinal cord were determined by PCR.
Results: Mechanical hypersensitivity induced by AIA and CIA were found to be completely blocked by pre-treatment with PD123319 and ivabradine. However, these treatments only partially reduced MIA-induced mechanical and thermal pain. Joint nociception assessed by dynamic weight bearing was also decreased by PD123319 and ivabradine in all models. Interestingly, block of either AT_2R and HCN channels did not reduce joint swelling, showing that these treatments have an analgesic but not an anti-inflammatory effect. Expression of mRNA for AT_2R and HCN2 were increased in the MIA and AIA models.
Conclusion: Our findings indicate that the AT_2R receptor and HCN channels mediate articular hypersensitivity. Blockers of HCN and antagonists of AT_2R may offer new therapeutic approaches to treat arthritic pain.
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FOLATE CONJUGATED NANOPARTICULATE DRUG DELIVERY SYSTEM FOR THE EFFECTIVE MANAGEMENT OF RHEUMATOID ARTHRITIS

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Rheumatoid arthritis (RA) is a chronic and progressive autoimmune disease of unknown etiology, characterized by synovial inflammation, progressive destruction of cartilage and bone resulting in gradual immobility. The aim of the study was to develop anti-arthritic drug loaded albumin nanoparticulate system having drug targeting potential for the management of rheumatoid arthritis.
Thus, in the present investigation, it was proposed to prepare etoricoxib loaded bovine serum albumin (BSA) nanoparticles and compare the biodistribution of nanoparticles with that of plain etoricoxib after intravenous administration in arthritic rats. The nanoparticles were made by desolvation method and activated folic acid was conjugated. The *in-vitro* characterization parameters included ftir analysis, transmission electron microscopy (TEM), particle size, zeta potential and stability studies. The in-vivo studies included biodistribution of drugs in various organs, pharmacodynamic study by carrageenan induced paw edema method.

Optimized nanoparticles were spherical shape as shown by TEM images. Reduction in the amount of drug present in blood indicated the sustained release behavior of nanoparticulate formulations. Folic acid conjugation retards drug release resulting in slower drug release as compared to plain nanoparticles. Significantly higher % inhibition of edema was observed. Higher concentration of drug in inflammatory knee joint was found in case of f- etx-nps as compare to the free drug.
Thus, development of folate-targeted therapeutic agents for guided intervention into arthritis enhance its site specific drug delivery at inflamed joints in RA and can be used as sustained drug delivery system in rheumatoid arthritis.

PAIN IN THE NECK AND CERVICORADICULAR PAIN

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PAIN NEUROSCIENCE EDUCATION AND COGNITION-TARGETED MOTOR CONTROL TRAINING TO IMPROVE CERVICAL MOTOR OUTPUT IN CHRONIC NECK PAIN PATIENTS: SECONDARY ANALYSIS OF A MULTI-CENTER RCT

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Background: In the context of interventions aimed at reducing pain, disability and maladaptive pain cognitions in chronic neck pain, it is hypothesized that patients who have greater symptom reduction, possibly also demonstrate greater improvement in cervical motor output.
Objective: The aim of this study was to determine the efficacy of pain neuroscience education plus cognition-targeted motor control training versus usual care physiotherapy to improve cervical motor output.
Design: A secondary analysis of data from a 12-month multi-center, triple-blind, randomized controlled trial.
Methods: Impairments in cervical motor output were measured in 64 subjects with chronic neck pain using standardized tests. Cervical muscle strength, cervical mobility, balance and cervical neuromuscular control were derived. To assess the differences between groups in response to treatment, a random-intercept linear mixed models analysis, applying an unstructured covariance matrix, was used.
Results: A significant treatment x time interaction effect was found for neuromuscular control of the deep cervical flexors, favoring the experimental treatment at 3 months follow-up (mean group difference: 1.982; 95% CI 0.779,3.185; large effect size D =.82). Significant main effects of time were found for the neuromuscular capacity of scapulothoracic muscles and for cervical mobility (i.e. improvement in flexion, extension and side bending). For balance, cervical muscle strength (i.e. flexion, extension and side bending) and endurance of cervical flexors, no significant effects were found.
Conclusion: Pain neuroscience education combined with cognition-targeted motor control training is not more effective than usual care physiotherapy for improving cervical motor output in people with chronic neck pain.

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THE PATIENT JOURNEY IN POST-SURGICAL NEUROPATHIC PAIN (PSNP): REVEALING GAPS BETWEEN GUIDELINES AND REALWORLD PRACTICE

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Background and aims: Post-surgical neuropathic pain (PSNP) places a major burden on the patient. Guidelines recommend treatment with antidepressants/antiepileptics, opioids or topical/local agents, and timely referral to specialist pain management. We conducted qualitative research to explore how PSNP is treated in clinical practice to deliver a detailed picture of the patient journey.
Methods: Interviews with 183 healthcare professionals (HCPs: pain specialists [PS], non-pain specialists, primary care physicians [PCPs], pain nurses) and 70 patients (with PSNP, diabetic peripheral neuropathy, post-herpetic neuralgia, cancer-related peripheral neuropathic pain [PNP]; for ≥12 months) in Europe (France, Germany, Italy, the Netherlands, Spain).
Results: PSNP was usually identified during follow-up with the surgical team. PCPs were less confident managing PSNP than other PNP aetiologies, so patients tended to move between different HCPs with no single HCP taking responsibility/ownership for PSNP treatment. PS referral was usually within 3-12 months and owing to persistent pain or patient request. In Germany, the Netherlands and Italy, referral was most frequently to a neurologist; in France, referral was most frequently to a rheumatologist. PS expressed frustration that patients were not referred more quickly. PSNP had greater patient impact compared with other aetiologies, with some patients reporting that the pain was worse than the reason for surgery. Patients with PSNP frequently did research into their condition, pushed for referrals and new treatments, and used additional pain management techniques.
Conclusions: Care of PSNP in Europe is inconsistent and referral to an appropriate HCP frequently either does not occur or occurs late.

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COMPARISON OF ANALGESIC EFFECTS OF MARAVIROC, RS504393 AND CENICRIVIROC IN RODENTS AFTER SCIATIC NERVE INJURY BASED ON BEHAVIORAL AND MOLECULAR STUDIES

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Background and aims: Recent experimental and clinical studies provide evidence for important role of chemokine receptors CCR2 and CCR5 in neuropathic pain pathomechanism. The aim was to compare the behavioral and molecular effects of maraviroc (CCR5 antagonist), RS504393 (CCR2 antagonist) and cenicriviroc (dual CCR2/CCR5 antagonist), and determine if the simultaneous blockade of both CCR2/CCR5 is better than blocking only one of these receptors.
Methods: Wistar rats and Swiss Albino mice were subjected to chronic constriction injury (CCI) of sciatic nerve. Examined substances were injected intrathecally, repeatedly, and preemptively, then once per day for 7 days (rats) or once 9 days after CCI (mice). The neuropathic pain-related symptoms were assessed in von Frey and cold plate tests. The RT-qPCR was used for biochemical analysis. Significant differences were evaluated using ANOVA with Bonferroni correction.

Results: The repeated administration of each examined substance attenuated neuropathic pain in rats after CCI. It was correlated with reduction in spinal microglial activation. We observed that maraviroc reduced CCI-elevated level of pronociceptive CCL3 and CCL4. Cenicriviroc significantly lowered the spinal level of CCL2, CCL3, and CCL7. In contrast, RS504393 did not influence the mRNA level of any of them. Finally, we demonstrated that single injection of cenicriviroc induced the greatest analgesia in CCI-exposed mice.
Conclusions: Based on our results, we suggest that blocking CCR2/CCR5 simultaneously brings more beneficial effects both on the behavioral and molecular level.
Acknowledgments: Supported by National Science Centre (Poland) grants: OPUS-2016/21/B/NZ4/00128, PRELUDIUM-2018/29/N/NZ7/00287 and statutory funds of Institute of Pharmacology, Polish Academy of Sciences.

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A RECOMBINANT HUMAN SOLUBLE THROMBOMODULIN (ART-123) PREVENTS OXALIPLATIN-INDUCED HYPERALGESIA WITHOUT AFFECTING ANTI-TUMOR ACTIVITY IN RODENTS

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Background and aims: ART-123 has been reported to prevent oxaliplatin-induced peripheral neuropathy in the clinical study. The aim of this study is to examine the effect of ART-123 on oxaliplatin-induced hyperalgesia and anti-tumor activity of oxaliplatin in rodents.
Methods: To induce mechanical hyperalgesia associated with peripheral neuropathy, oxaliplatin (6 mg/kg, iv) were administered once to rats. ART-123 (0.1, 0.3, 1 mg/kg, iv) was administrated to rats on the 2nd day after oxaliplatin administration. Nociceptive threshold was measured by the paw pressure test. In addition, the effect of ART-123 (0.3, 1, 3 μg/mL) on the inhibitory effects of oxaliplatin on cancer cell proliferation was examined with human colon cancer cell lines HCT116, HT29, and SW620. Moreover, the effect of ART-123 (1, 10 mg/kg, sc) on the anti-tumor activity of oxaliplatin (10 mg/kg, iv) in a mouse xenograft model of the HCT116 was examined.
Results: Oxaliplatin-induced mechanical hyperalgesia was significantly suppressed by ART-123 on the 14th day after oxaliplatin administration ($p < 0.005$ by Williams' test, n=10). The suppression rate was dose-dependent, being 25% at 0.1 mg/kg, 42% at 0.3 mg/kg and 83% at 1 mg/kg. Oxaliplatin inhibited the proliferation of the cancer cell lines, and ART-123 did not affect the effect of oxaliplatin in the plasma concentration range seen with the dose used for the clinical study. Also, oxaliplatin inhibited the increase in tumor volume of transplanted HCT116, and ART-123 did not affect the effect of oxaliplatin.
Conclusions: ART-123 prevented oxaliplatin-induced hyperalgesia without affecting anti-tumor activity in rodents.

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A STUDY OF THE ROLE OF PSYCHOLOGICAL FLEXIBILITY AMONG UK ADULT PATIENTS WITH PAINFUL DIABETIC NEUROPATHY

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Background and aims: Painful diabetic neuropathy (PDN) is a complex complication associated with poor glycaemic control. Current treatments for PDN aim to treat the symptoms of pain and discomfort and are mainly pharmacological but have limited effectiveness. However, less is known about alternatives such as psychological treatments and the role of psychological variables related to PDN. The aim of this study is to survey people with PDN and examine the role of psychological flexibility (PF) in relation to their daily functioning.

Methods: This is a questionnaire-based, cross-sectional study with 225 participants (mean age 52.05 ± 12.06), who were recruited from NHS and online.
Results: In correlation analyses, acceptance of pain was shown to be negatively correlated to pain intensity (r=-0.21, p< 0.01), pain distress (r=-0.25, p< 0.01) functional impairment (r=-0.38, p< 0.01), depression severity, (r=-0.41, p< 0.01), and depression impact (r=-0.41, p< 0.01). Committed action also correlated negatively with functional impairment (r=-0.22, p< 0.01), depression severity (r=-0.43, p< 0.01) and depression impact (r=-0.21, p< 0.01). Results from regression analyses show that the combination of four variables representing psychological flexibility accounted for significant variance in most equations. In the equation for depression severity, pain intensity accounted for 23.3% of variance. In the equation for depression impact, pain intensity accounted for 13.2% of variance.
Conclusions: These results highlight the potential utility of PF in the design and implementation of psychological interventions for individuals from PDN. The reliability and generalisability of the results need to be established.

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Μ- OPIOID RECEPTORS MEDIATE THE ANTIALLODYNIC EFFECT OF *ROSMARINUS OFFICINALIS L.* (ALECRIM) IN NEUROATHIC PAIN IN MICE

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Background and aims: *Rosmarinus Officinalis L.* is a well-known plant with several useful properties such as analgesic and antiinflammatory. This study examines whether injection of muscarinic cholinergic (atropine, 20 µg/1 µl), µ1- opioid (naloxonazine, 20 µg/1 µl) or serotonergic (methysergide 20 µg/1 µl) receptors alters the antiallodynic effect evoked from the *Rosmarinus Officinalis L.* in neuropathic pain in mice.
Methods: To induce neuropathic pain in mice, they were subjected to the chronic constriction injury, which consists in a transection of the peroneal and tibial branches of the sciatic nerve. The mechanic allodynia was evaluated using an electronic anesthesiometer (in 2, 7, 14 and 21 days after surgery). Drug and vehicle (saline) was administered intrathecally via a catheter implanted chronically in the space subarachnoid space.
Results: The chronic constriction of nerve reduced the threshold for 30 days. *Rosmarinus Officinalis L.* injection (250mg/Kg, intraperitoneal) reduces the severity of neuropathic pain induced by chronic constriction injury during initial (2 days following the injury, 50%) and maintenance (subsequent 7 days, 70%) phase. On the other hand, Intratecal naloxonazine, but not atropine, methysergide or saline fully inhibited the *Rosmarinus Officinalis L.*- induced antiallodynia.
Conclusion: We conclude µ1- opioid receptors are involved in the antiallodynic effect evoked from *Rosmarinus Officinalis L.*

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NEUROPHYSIOLOGIC FINDINGS IN SYMPTOMATIC PATIENTS AFTER CHEMOTHERAPY

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Objective: To demonstrate neurophysiologic changes in symptomatic patients early after and during chemotherapy.
Methods: Nerve conduction study (NCS) results of cancer patients with sensory symptoms after chemotherapy

between April 1st, 2017 and June 20th, 2017 were reviewed. Eligibility criteria included glove and stocking distribution of symptoms and history of chemotherapy only with taxane-containing regimen. Patients were excluded if they had predisposing condition for neuropathy, such as diabetes mellitus, thyroid disease, and alcohol abuse. Compound muscle and/or sensory nerve action potentials (CMAPs/SNAPs) were recorded in median, ulnar, superficial radial, peroneal, tibial, superficial peroneal, and sural nerves. Latency, amplitude and conduction velocity were measured.
Results: Cancer patients who had received at least four cycles of chemotherapy with either docetaxel or paclitaxel were included. Mean age was 48±12 years and mean time interval between recent chemotherapy and test date of NCS was 102 days. CMAPs parameters, including distal latency, amplitude, and conduction velocity, were within reference range in all patients. Low amplitude of SNAPs was observed only 44.4% of patients in at least one or more nerves examined (Figure).
Conclusion: Only 44.4 % of symptomatic patients after taxane-containing chemotherapy showed axonal injury in sensory NCS. In other words, NCS results determined by absolute reference range showed low study sensitivity in patients with clinically suspected CIPN. Therefore, serial NCS studies from baseline may be helpful to estimate the chemotherapy induced nerve damage and to attain the neurophysiologic evidence of CIPN, as the basis for establishing relative diagnostic criteria for CIPN.

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SENSITIZATION OF NOCICEPTIVE SENSORY NEURONS BY OXALIPLATIN

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Oxaliplatin, a platinum-based chemotherapeutic drug is associated with dose limiting side effects. Acute cold-induced paraesthesias are the major side effect and are unique to oxaliplatin. Here, we have examined the effects of direct applications of oxaliplatin to the receptive fields of intact skin-nerve preparations. 8- 10-week-old C57Bl/6J mice received a single intraperitoneal (i.p) injection (6mg/kg). Paw withdrawal latencies were assessed using a 10°C cold plate. The saphenous nerve with the skin that it innervates was dissected and placed in synthetic interstitial fluid heated to 32°C and bubbled with carbogen. Receptive fields were isolated and exposed to electrical, mechanical and thermal stimulations to enable recordings from single primary afferent fibers and oxaliplatin was directly applied to receptive fields upon isolation of single fibers. A single i.p. injection of oxaliplatin decreased the paw withdrawal latencies to the cold stimulus 4-96 hours post-injection. Direct application of oxaliplatin (600µM) to receptive fields of intact skin-nerve preparations made some normally temperature insensitive mechanosensitive afferents highly sensitive to cooling. Furthermore, acute oxaliplatin treatment *in vitro* sensitized single fibers to mechanical stimulation. Our results show that oxaliplatin generates cold and mechanical hypersensitivities *in vivo* and *in vitro*. Our findings from skin-nerve preparations demonstrate that oxaliplatin sensitizes nociceptive sensory afferents acutely *in vitro*. The observed functional abnormalities may represent the cellular basis for acute oxaliplatin induced cold paraesthesias and mechanical hypersensitivity. Identification of the cellular and molecular mechanism(s) responsible for oxaliplatin-induced cold and mechanical hypersensitivities may allow for more effective use of oxaliplatin as a cancer therapy.

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CORRELATIONS BETWEEN NEUROPATHIC PAIN, QUALITY OF LIFE AND MOOD IN TYPE 2 DIABETIC PATIENTS

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Background and aims: Diabetic peripheral neuropathy (DPN) is one of the most frequent complications of diabetes mellitus. The aim of this study was to investigate the relationship between neuropathic pain (NP), quality of life and mood in patients with T2DM and DPN.
Methods: Twenty patients (mean age: 58,05± 12,28 years) with T2DM and DPN were included in the study. Demographic characteristics and data related to the disease were recorded. The severity of NP by the Visual Analog Scale, quality of life with the Nottingham Health Profile (NHP) and mood by the Beck Depression Invantory (BDI) were assessed.
Results: The severity and duration of NP were associated with mobility sub-domain of NHP (p = 0.010 and p = 0.004, respectively). The sleep sub-domain of the NHP was correlated to the other sub-domain of the NHP which were emotional reaction (p = 0.000), social isolation (p = 0.027), mobility (p = 0.004), pain (p = 0.004). The score of BDI was associated with duration of NP (p = 0.009) and mobility (p = 0.001), sleep (p = 0.002), social isolation (p = 0.038) sub-domains of NHP.
Conclusions: The data obtained in our study shows that neuropathic pain negatively affects the quality of life and mood in patients with T2DM and DPN. In the presence of neuropathic pain, interdisciplinary treatment approaches will improve quality of life and mood.

PERIPHERAL NEUROPATHIC PAIN

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GLYCOGEN SYNTHASE KINASE 3 INHIBITOR AF3581 DECREASES NEUROPATHIC PAIN IN RATS

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The role of GSK-3β in the pathogenesis of pain has recently emerged. It has been reported that inhibition of GSK-3β activity can prevent the development and reverse the existence of neuropathic pain. The aim of the project is to evaluate the therapeutic potential of AF3581, an Angelini GSK-3β inhibitor, in pain conditions.
The chronic constriction injury model (CCI) is one a widely used animal model of neuropathic pain. Nerve injury in rats induced by loose ligatures around the sciatic nerve produces a characteristic behaviour with the appearance of allodynia, hyperalgesia and spontaneous pain, often accompanied by sensory deficits.
CCI was induced in SD rats by loosely constrictive ligatures around the sciatic nerve trunk at mid-thigh level. Mechanical allodynia and mechanical hyperalgesia were measured following oral administration of AF3581 (10mg/kg) and tramadol (10mg/kg), used as reference drug. Sections of spinal cord were used for immunohistochemistry studies. All procedures conformed to the guidelines of the European Community's Council for Animal Experiments.
AF3581 administration induces a significant antiallodynic effect comparable to that of tramadol. Differently from tramadol, AF3581 treatment produces a significant inhibition also of mechanical hyperalgesia. The immunohistochemistry study suggests a possible target engagement of GSK-3β since a significant increase in the phospho-GSK-3β/GSK-3β ratio was observed following AF3581 administration.
These results provide experimental evidence that AF3581 produces marked antihyperalgesic effects in neuropathic pain in rats, possibly linked to a down-regulation of GSK-3β activation. The study support GSK-3β as pharmacological target for the treatment of neuropathic pain.

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SMALL MOLECULE SOMATOSTATIN RECEPTOR SUBTYPE 4 AGONISTS ARE NOVEL CANDIDATES FOR THE TREATMENT OF NEUROPATHIC PAIN AND DEPRESSION

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Background: Somatostatin released from capsaicin-sensitive peptidergic nociceptors at the periphery and GABAergic interneurons in the brain inhibits pain, anxiety and depression. Its sst_4 receptor is not involved in the endocrine actions, but it has potent analgesic and anti-depressant functions proposing drug developmental perspectives. Since it is expressed in pain and mood-related brain regions, we investigated the effects of our novel small molecule sst_4 receptor agonists in mouse models of neuropathic pain and depression-like behavior.
Methods: Sst_4 receptor binding of our pirrolo-pirimidine compounds was determined *in silico*, activation by the gamma-GTP-binding, cAMP inhibition and beta-arrestin activation assay on sst_4-expressing CHO cells. The effects of 4 most potent and efficacious agonists were tested on partial sciatic nerve ligation-induced traumatic mononeuropathic hyperalgesia, spontanepus locomotor activity and anxiety in the open field and elevated plus maze tests, depression-like behaviour in the tail suspension test.
Results: Our novel compounds bind to the high affinity binding site of the receptor, activate the G-protein binding and inhibit cAMP formation. However, despite the reference sst_4 agonists, they do not induce beta-arrestin activation responsible for tolerance upon chronic use. They exert 65-80% maximal antihyperalgesic effects in the neuropathy model after a single oral administration of 100-500 microg/kg doses, as well as significantly inhibit anxiety and depression-like behavior without influencing spontenaous locomotion.
Conclusion: Our sst_4 agonists are promising drug candidates for neuropathic pain, anxiety and depression that are mediated by common mechanisms and frequently occur as co-morbidities.
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"REAL-LIFE" MANAGEMENT OF PATIENTS CONSULTING FOR PERIPHERAL NEUROPATHIC PAIN IN FRENCH TERTIARY PAIN UNITS

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Background and aims: Despite the high prevalence of peripheral neuropathic pain (PNP) in the general population (5-7%), few studies have focused on its "real life" management. The main purpose of the present study was to describe the management of PNP patients consulting for the first time or followed for < 1 year in French tertiary pain units.
Methods: This national, cross-sectional, observational study was promoted by the French Society of Study and Treatment of Pain (SFETD). Adults with PNP and DN4 score ≥ 4/10 were enrolled by 226 specialists. Collected data by pain specialists included demographics, disease and treatment characteristics, while patient-reported outcomes

(completed in ⅔ of the cases) included pain intensity on 0-10 numerical scales and hospital anxiety and depression scale (HADS).
Results: Four hundred and four patients (mean age: 55.8 years, 60.3% females, 78.3% retired or unemployed, median pain intensity: 5/10, median score of 8/21 for depression and 11/21 for anxiety) were included. PNP involved mainly the lower limbs (53.5%), was present for 20.1 months on average and was predominantly related to surgery (45.0%), radiculopathy (23.3%), or polyneuropathy (15.6%). Primary care management was characterized by a high proportion of analgesics (65.1%) and a limited prescription of non-drug therapy (12.4%).
Conclusions: This study highlights the need for increased referral of PNP patients to tertiary pain units and robust educational programs regarding its diagnosis and management.
Acknowledgements: Laboratoire Grünenthal, Axonal-Biostatem (France)

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POSSIBLE INVOLVEMENT OF SPINAL ENDOCANNABINOIDS IN A RAT MODEL OF TRIGEMINAL NEUROPATHIC PAIN

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Background and aims: The manipulation of endogenous cannabinoids is an alternative to the direct targeting of cannabinoid receptors for the treatment of pain. Endocannabinoids are decomposed by enzymes such as fatty acid amide hydrolase (FAAH) and monoacylglycerol lipase (MAGL). Inhibitors for FAAH and MAGL increase amounts of endocannabinoids. The present study evaluates the possible involvement of spinal endocannabinoids in a rat model of trigeminal neuropathic pain.
Methods: We used a rat model of chronic constriction injury to the infraorbital nerve (ION-CCI). Male Sprague Dawley rats underwent unilateral CCI to the right ION by two nylon (5-0) ligatures. A series of von Frey filaments were used to determine pain hypersensitivity to mechanical stimulation on day 14 after surgery. A polyethylene (PE-10) catheter was implanted for upper cervical spinal injection of drugs. The time course of analgesic effects of intrathecally administered a FAAH inhibitor JNJ1661010 and a MAGL inhibitor JZL184 were examined. We evaluated the antagonizing effect of intrathecal pretreatment with a cannabinoid 2 receptor antagonist AM630, on the analgesic action of the FAAH inhibitor or the MAGL inhibitor. The time course data for the dose-response effects were analyzed by two-way analysis of variance and Tukey-Kramer multiple-comparison test.
Results: Intrathecal administration of JNJ1661010 and JZL184 significantly increased mechanical thresholds in a dose dependent manner. AM630 significantly reduced the analgesic effects of JNJ1661010 and JZL184.
Conclusions: The increase of spinal endocannabinoids reduced the pain-related behavior in a rat model of trigeminal neuropathic pain. The pain modulation was mediated by cannabinoid 2 receptors.

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CELLULAR SIGNALING IN DORSAL ROOT GANGLION NEURONS FOLLOWING ACUTE EXPOSURE TO PACLITAXEL IN VITRO

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Successful cancer treatment is often limited by the induction of chemotherapy induced peripheral neuropathy (CIPN). The mechanisms underlying CIPN have proven to be complex and a cohesive mechanistic understanding has yet to be fully elucidated, but primary afferent neurons have emerged as an especially important vulnerable initiating pathophysiological target. An important recent study has also shown that the initial toxicity produced by paclitaxel in patients was highly predictive of long-term outcome. In this study we therefore focused on the mechanisms of acute toxicity produced by paclitaxel treatment on primary sensory neurons under *in vitro* conditions. In primary rat DRG culture with paclitaxel, an increase of pERK and pp38 was observed at two hours and this was accompanied by an increase in expression and release of CCL2. There was no change in pJNK. The increase in pERK was sustained at 48h of exposure when the expression of TLR4, MyD88 and IL-6 were also increased. IL-6 and CCL2 were co-localized to TLR4-positive cells; and all these responses were prevented by co-incubation with the TLR4 antagonist (LPS-RS). Whole-cell patch clamp recordings in rat DRG neurons revealed that CCL2 induced spontaneous action potentials and enhanced the amplitude of membrane potential oscillation in paclitaxel-conditioned neurons. Evidence of oxidative stress and mitotoxicity were only observed at 48h of exposure. These results closely parallel the responses measured in the DRG with paclitaxel exposure in vivo and so indicate that acute toxicity of paclitaxel on the DRG can be modelled using an in vitro approach.

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THE PATIENT JOURNEY IN POST-HERPETIC NEURALGIA (PHN): REVEALING GAPS BETWEEN GUIDELINES AND REALWORLD PRACTICE

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Background and aims: PHN is a major health burden. Guidelines recommend treatment with antidepressants, antiepileptics, opioids or topical/local agents, and appropriate and timely referral to specialist pain management. We conducted qualitative research to explore how PHN is treated in clinical practice to deliver a detailed picture of the patient journey.
Methods: Interviews of 183 healthcare professionals (HCPs: pain specialists [PS], non-pain specialists, primary care physicians [PCPs], pain nurses) and 70 patients (with PHN, diabetic peripheral neuropathy, postsurgical peripheral neuropathic pain [PNP], cancer-related PNP; for ≥12 months) in Europe (France, Germany, Italy, the Netherlands, Spain).
Results: PHN was considered an intense, confusing pain for patients, but was easily diagnosed and mostly managed by PCPs. Patients presented quickly and were often less complex than other PNP aetiologies (e.g. healthy, little comorbidity). Management was similar to other aetiologies, i.e. cycling through pain medications with regular monitoring. Most patients start therapy accepting PCP recommendations. Referrals to PS were rare, took 6-12 months, and were mainly driven by frustrated patients demanding proactivity and better pain relief. Patients with PHN were more likely to look for information and request specific products than patients with other types of PNP. PCPs expressed confidence in managing PHN; however, many PS were frustrated that PCPs often delayed referral and missed the window of opportunity for effective therapy.
Conclusions: We found a gap between the ideal approach for handling PHN and real-world clinical practice, mainly characterised by slow referral to a PS.

PHANTOM LIMB PAIN

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MIRROR THERAPY FOR PHANTOM LIMB AND STUMP PAIN: A RANDOMIZED CONTROLLED CLINICAL TRIAL IN LANDMINE AMPUTEES IN CAMBODIA

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Background and aims: The aim of the study was to examine the effect of mirror and tactile therapy on phantom and stump pain in patients with traumatic amputations,
with particular reference to amputees in low-income communities.
Methods: The study was conducted with an open, randomized, semi-crossover case-control design in rural Cambodia. A study sample of 45 landmine victims with
trans-tibial amputations was allocated to three treatment arms; mirror therapy, tactile therapy, and combined mirrorand- tactile therapy. Non-responders from the mono-therapy interventions were crossed over to the alternative intervention.
The intervention consisted of 5 min of treatment every morning and evening for 4 weeks. Endpoint estimates of phantom limb pain (PLP), stump pain, and physical function were registered 3 months after the treatment.
Results: All three interventions were associated with more that 50% reduction in visual analogue scale (VAS)-rated PLP and stump pain. Combined mirror-tactile treatment had a statistically significantly better effect on PLP and stump pain than mirror or tactile therapy alone. The difference between the three treatment arms were however slight, and hardly of clinical relevance. After treatment, the reduction of pain remained unchanged for an observation periode of 3 month.
Conclusions: The study documents that a 4-week treatment period with mirror and/or tactile therapy significantly reduces PLP and stump pain after trans-tibial amputations.

VASCULAR PAIN

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DOES PHYSICAL THERAPY REDUCE PAIN IN PATIENTS WITH PERIPHERAL ARTERY OCCLUSIVE DISEASE?

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Background and aims: Peripheral artery occlusive disease (PAOD) is one of the most common cardiovascular diseases nowadays. Since the effectiveness of medical therapy is limited and often insufficient, it is important to find additional therapeutic methods in order to achieve the best possible functional outcomes in patients with PAOD. The aim of our research was to observe the influence that physical therapy procedures (electrical therapy, magnetic therapy and exercises) might have in patients with PAOD.
Methods: Sixty five patients with PAOD in total were randomly divided into two groups : a treatment group(receiving both conventional and physical therapy) and a control group (receiving only conventional therapy). Patients in the treatment group had 15 physical therapy procedures, for a duration of one hour per day in a period of three weeks. Patients were assesed before and immediatelly after treatment using claudication distance values, ancle brachial indexes(ABI) and visual analog scale(VAS) for pain reduction.
Results: There were no statistical differences between the groups in age, sex and comorbidities. However,

treatment group showed lower claudication distance values , ABI indexes and higher VAS scores before therapy. At the treatment completion there was a satistically significant improvement in all outcome measures in the treatment group when compared to control group.
Conclusion: Physical therapy treatment influences improvement of both, subjective and objective parameters of PAOD. Our results suggest that physical therapy could be considered as one of the additional therapeutic methods for pain raduction in patients with PAOD.

PAIN SYNDROMES WALK 8

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CHARACTERISTICS OF NEUROPATHIC PAIN AND ITS IMPACT ON QUALITY OF LIFE IN PATIENTS WITH CHRONIC LOW BACK PAIN SYNDROME

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Background and aims: To determine characteristics of neuropathic pain and its impact on quality of life (QoL) in patients with chronic low back pain syndrome (CLBP).
Methods: We examined 159 patients with CLBP. Fifty nine patients (35.1%) had clinical diagnosis of neuropathic pain based on the criteria of Haanpää et al. (2011). These patients were tested with three questionnaires for neuropathic pain (Pain Detect Questionnaire, Leeds Assessment of Neuropathic Symptoms and Signs and Douleur neuropathique en 4 questions). We selected 32 patients who were positive on all three questionnaires (experimental group). We selected 32 patients with CLBP who didn't have clinical diagnosis of neuropathic pain, and were negative on all three questionnaires (control group). Hamilton depression and anxiety rating scales and SF-36 questionnaire were also applied. Patients who had other significant comorbidities were excluded from the study.
Results: Patients with neuropathic pain (experimental group) had significantly greater intensity of pain with radiation in legs, and it was usually presented as episodes of sudden attacks with mild pain between them. The most distinctive features of neuropathic pain were allodynia, electric shock-like sensation, and hypoesthesia to prick. Patients with neuropathic pain had significantly higher depression and anxiety scores, as well as worse QoL compared to the control group, especially in mental domains.
Conclusions: The most important features of neuropathic pain were allodynia, electric shock-like sensations and hypoesthesia to prick. Patients with neuropathic pain had worse QoL compared to the control group, especially in mental domains.

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LINACLOTIDE TREATMENT REDUCES ENDOMETRIOSIS-ASSOCIATED VAGINAL HYPERALGESIA AND MECHANICAL ALLODYNIA THROUGH VISCERO-VISCERAL CROSS-TALK

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Background and aims: Endometriosis, an estrogen-dependent chronic inflammatory disease, is the most common cause of chronic pelvic pain (CPP). Here we investigated the effects of linaclotide, an FDA approved treatment for constipation-predominant IBS, in a rat model of endometriosis. **Methods:** Uterine horn tissue was transplanted into the mesentery of female Sprague-Dawley rats, and endometrial lesions developed eight weeks after surgery.

Retrograde tracing was performed to label afferent neurons and central terminals of ileal, colonic and vaginal afferents. Guanylate cyclase-C (GC-C) mRNA expression was determined by quantitative RT-PCR and *in situ* hybridization. **Results:** Daily oral administration of linaclotide, a peripherally restricted GC-C agonist peptide acting locally within the gastrointestinal tract, increased pain thresholds to vaginal distension and mechanical hindpaw withdrawal thresholds relative to vehicle treatment. Retrograde tracing of sensory afferent nerves from the ileum, colon and vagina revealed that central terminals of these afferents lie in close apposition to one another within the dorsal horn of the spinal cord. We also identified dichotomizing dual-labelled ileal/colon innervating afferents as well as colon/vaginal dual-labelled neurons and a rare population of triple traced ileal/colon/vaginal neurons within thoracolumbar DRG. These observations provide potential sources of cross-organ interaction at the level of the DRG and spinal cord. GC-C expression is absent in the vagina and endometrial cysts suggesting that the actions of linaclotide are via shared nerve pathways between these organs. **Conclusions:** Linaclotide may offer a novel therapeutic option not only for treatment of chronic endometriosis-associated pain, but concurrent treatment of comorbid CPP syndromes.

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PAIN MODULATORY PHENOTYPES DIFFERENTIATE CHRONIC PANCREATITIS PATIENTS WITH DISTINCT CLINICAL PAIN PROFILES

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Background and aims: Pain therapy remains challenging in chronic pancreatitis (CP) patients. Methods based on quantitative sensory testing (QST) provide information on pain modulation. This study explores the existence of CP subgroups with different pain modulatory phenotypes and investigates associations with patients' clinical pain and psychological profiles.
Methods: This was a cross-sectional, multicentre study. Patients completed questionnaires and a standardized QST protocol was used to record pain detection thresholds (PDTs) to muscle pressure stimulations at pancreatic dermatomes and three control areas. Ratio between pancreatic and control PDTs were calculated (PDT-index) to offset inter-individual differences.
PDT-index was used with repetitive pinprick stimulations, applied at the abdominal pancreatic dermatome, to obtain a measure of segmental hyperalgesia. Conditioned pain modulation (CPM) paradigm was performed to investigate descending pain modulation. Patients were grouped based on normative QST reference values and questionnaire scores were compared across subgroups to investigate associations with clinical pain and psychological profiles.
Results: Ninety-one patients completed the study. Four distinct pain modulatory phenotypes were found: group 1 (n=34) had normal pain modulation; group 2 (n=27) had impaired CPM; group 3 (n=14) had segmental hyperalgesia; and group 4 (n=16) had impaired CPM and segmental hyperalgesia. Significant differences in pain scores were observed across subgroups ($p< 0.05$). Psychological profiles were comparable across subgroups.
Conclusion: Patients with segmental hyperalgesia and impaired CPM have significantly more pain compared to their counterparts. As psychological profiles were not dependent on pain modulatory phenotypes, QST provides an unbiased mean for characterization of pain on an individual patient level.

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CHRONIC STRESS INDUCES BLADDER PAIN THROUGH AN TRK A-ALPHA 1A ADRENOCEPTOR MEDIATED MECHANISM

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In this study, we investigated whether chronic stress changes NGF expression through an alpha-1A adrenoceptor (A1A-AR)-mediated mechanism and if NGF promotes stress-associated bladder pain and changes bladder function. Adult female Wistar rats were submitted to water avoidance stress test (WAS; day 1 to day 10), while receiving TrkA antagonist GW441756, or the A1A-AR antagonist silodosin. Sham-treated animals were used as controls.
Visceral pain behavioural tests were performed at day 0 and day 10. At day 11, blood and urine were collected to measure NGF levels by ELISA. After, bladder reflex activity was determined by cystometry under anaesthesia. Bladder strips from intact animals were left in culture medium or in medium with phenylephrine for 24h. Then, the medium was collected and NGF was measured.
The stress conditions induce a marked increase in systemic NGF levels, rather than its production in the bladder. Silodosin treatment blocked plasmatic NGF increase. TrkA receptor antagonist improved visceral pain behaviour and normalized bladder function.
Altogether this data suggest that chronic stress induce painful behaviour and bladder changes through an NGF-dependent sensitization of nociceptive fibres. This mechanism seems to be mediated by the activation of A1AAR. These findings open the opportunity to use NGF levels in the plasma for the diagnosis of chronic visceral painful conditions, such as BPS/IC. Also, the blockade of TrkA receptors by themselves or in combination with A1AAR antagonists may be used to treat such pathologies.

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THE RISK FACTORS FOR NEW ONSETS OF FIBROMYALGIA: THE LIFELINES STUDY

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Background and Aims: A systematic review of 23 population-based studies has revealed a range of risk factors for the onset of fibromyalgia (FM) and chronic widespread pain. This study aimed to identify which variables, out of many, predict new onset FM in a large population-based sample and compare them with the predictors of new onset irritable bowel syndrome (IBS) and chronic fatigue syndrome (CFS).
Methods: The Dutch prospective, population-based Lifelines study screened 152,180 participants at baseline using many physical, psychological and social variables. After excluding participants with pre-existing disorders, we identified new onsets of FM, IBS & CFS over the subsequent 3 years. We assessed the baseline predictors of each disorder using penalised logistic regression.
Results: New onset FM was reported by 692 participants (90% were female); 1,595 reported new IBS (75% female) and 296 CFS (52.7% female). There were 19 predictors of FM, 9 of these also predicted IBS and/or CFS, including female sex, gastro-intestinal disorders, sleep disturbance, chronic health difficulties, somatization, negative health perception. Predictors unique to FM included: IBS and musculoskeletal disorders at baseline, taking medication for upper gastrointestinal disorders, thyroid and ophthalmic disorders, no recent GP contacts, raised BMI and low alcohol consumption.
Conclusions: The predictors of new onset self-reported FM in this study concurred mostly with previously reports. It is unlikely that they relate to a single path into FM, rather there may be several paths, some are common to other syndromes and some are unique to FM.

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EFFECTS OF A 15 WEEKS RESISTANCE EXERCISE PROGRAM ON LEVELS OF ENDOCANNABINOIDS AND N-ACYLETHANOLAMINES IN WOMEN WITH FIBROMYALGIA AND HEALTHY CONTROLS

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Background and aims: Physical exercise is increasingly being promoted by healthcare for chronic pain conditions. The biochemical effect of physical exercise in fibromyalgia are not fully understood. However, the endocannabinoid (EC) system has been suggested to play a role for both exercise-induced reward and pain inhibition.
The aim of this study was to examine the effects of a resistance exercise program on levels of endogenous lipids related to the EC system, in fibromyalgia and controls.
Methods: This is a sub-study of a randomized controlled trial (Clinicaltrials.gov NCTO1226784) investigating the effects of resistance exercise in fibromyalgia. Pain assessments and plasma levels of arachidonoylethanolamide (AEA), 2-arachidonoylglycerol, oleoylethanolamide (OEA), and palmitoylethanolamide (PEA), from 37 women with fibromyalgia and 33 controls, were analysed pre and post a 15 weeks resistant exercise program. OEA and PEA were also analysed in microdialysate sampled from vastus lateralis muscle.
Results: No significant difference of lipid levels in plasma existed between fibromyalgia and controls at baseline. After 15 weeks of resistance exercise AEA levels increased (p=0.02) and pain intensity decreased (p=0.007) significantly in fibromyalgia. In controls, on the contrary, a tendency of decreased (non-significant, p=0.12) levels of AEA was observed. Moreover, AEA levels was significantly higher (p = 0.03) in fibromyalgia compared to controls after the program.
Conclusion: Systemically elevated levels of AEA after 15 weeks resistance exercise might point to long term effect, and not only as previously reported, acute effect of physical activity on AEA levels, and may reflect beneficial biochemical reactions of physical exercise in fibromyalgia.

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IDENTIFICATION OF GENETIC DETERMINANTS FOR CENTRAL PAIN SENSITIZATION IN FIBROMYALGIA PATIENTS

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Background and objectives: Fibromyalgia syndrome (FMS) covers a spectrum of chronic pain conditions characterized by widespread pain and increased sensitivity to nociceptive stimulus or tenderness. Central sensitization is thought to be one of the key mechanisms underlying FMS. This process can be described as a loss of the natural balance between transmission of pain stimuli to the CNS and the central pain inhibitory feedback mechanisms. While familial aggregation could suggest a potential genetic component in FMS development, isolation of genetic determinants has proven difficult due to the multi-factorial nature and complexity of the syndrome. We aim

to identify some of these determinants.
Methods: We used a customized Infinium CoreExome-24 BeadChip from Illumina to genotype 555'356 human genetic polymorphisms in 302 FMS patients and healthy controls.
Results: All samples call rates exceeded 99 % and the genotype completeness exceeded 99% in 97.8% of the SNPs. Following quality control, 98.1% of the SNPs and 284 samples were cleared for further bioinformatic analysis. We performed linear regression analysis using the nociceptive flexion reflex as a primary stratification determinant.
Conclusions: The characterization of our cohort will be used to confirm suspected genetic predisposition and identify new genetic determinants of FMS based on objective measurements of central sensitization. Follow-up work combining genomic, transcriptomic and proteomic techniques will aim to gain a better understanding of the various pathophysiological mechanisms underlying the disease and allow the development of optimized personalized treatments for FMS patients. International collaborations will allow replication of our findings in two independent cohorts.

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PATHOPHYSIOLOGICAL BASIS OF PAIN IN FIBROMYALGIA

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Fibromyalgia syndrome (FMS) is a common widespread chronic pain condition generally associated with distress, and often associated with mechanical tenderness, fatigue, poor sleep and memory problems. Its causes have remained unknown. FMS is associated with a poor quality of life, and typical pharmacological treatments used for chronic pain can often provide no meaningful long-term benefit. There is an urgent need to better understand the FMS pathophysiology.
Here we demonstrate that hypersensitivities experienced by patients can be passively transferred to mice by administration of patient serum-IgG. Serum-IgG purified from individual UK patients with severe fibromyalgia (n=8) or pooled from groups of Swedish patients (n=20), dramatically increased the mouse pain sensitivity to stimulation with mechanical pressure; most preparations also increased sensitivity to noxious cold. In contrast, transfer of IgG from healthy control subjects was without effect on pain sensitivity. Mechanical stimulation of the receptive fields of A- and C-nociceptors evoked a significantly increased number of action potentials in *ex vivo* skin-nerve preparations from mice treated with IgG from patients, compared to preparations from mice treated with IgG from control subjects. Immuohistochemical examination of tissues prepared from the passively transferred animals revealed specific human IgG staining in the animals injected with FMS IgG, but not in those injected with control IgG; the staining patterns were exclusively related to the peripheral pain pathways, with some variability between preparations. Our results demonstrate that severe fibromyalgia pain is caused by IgG autoantibodies that act by sensitizing peripheral nociceptive afferents.
*C. Svensson and D. Andersson contributed equally

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DISRUPTED CROSS-FREQUENCY COUPLING RELATED TO COGNITIVE IMPAIRMENTS IN THE RESERPINE-INDUCED MYALGIA MODEL

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Background and aims: Fibromyalgia syndrome (FMS) is associated with cognitive dysfunction, involving memory and attention impairments. Memory consolidation requires a correct sleep architecture as well as coordination of oscillatory patterns including cross-frequency coupling between slow waves, spindles and ripples in the hippocampus. The aim of this study is to analyze the oscillatory activity and memory consolidation in a reserpine-induced myalgia model (RIM) in rats. Furthermore, pharmacokinetic/pharmacodynamic (PK/PD) study was carried out to quantify the effect of reserpine on monoamines levels in the progression of disease model.
Methods: Memory impairments were evaluated with Novel Object Recognition Test (NORT). Sleep architecture and oscillatory activity were studied by chronic recording of local field potentials in the hippocampus and somatosensory cortex, and electromyogram in rats subjected to RIM model. For PK/PD study, samples of CSF, plasma and SNC tissue were extracted to determine reserpine and monoamines levels.
Results: Animals showed recognition memory impairments in NORT. Sleep studies showed a distortion of sleep architecture, changes in slow waves and theta activity as well as a diminished phase-amplitude coupling between SW-spindles, SW-ripples and spindle-ripples, several weeks following RIM model. PK/PD study indicated a reduction of the effect of reserpine on monoamines after 48 hours from administration.
Conclusions: This study reveals memory consolidation impairment in RIM model associated to changes in neural oscillations. This disruption seems independent of the immediate reserpine effect, suggesting plastic changes in neural activity. These findings provide evidence of FMS etiology, and could lead to the establishment of electrophysiological biomarkers for its diagnosis.

VISCERAL PAIN

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CROSSTALK BETWEEN THE HMGB1/RAGE AND CSE/H_2S/CA_V3.2 PATHWAYS INVOLVED IN CYSTITIS-RELATED BLADDER PAIN IN MICE

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Background and aims: Bladder pain accompanying cyclophosphamide (CPA)-evoked cystitis in mice involves the upregulation of cystathionine-γ-lyase (CSE), an H_2S-forming enzyme, and subsequent increase in the activity and expression of $Ca_V3.2$ T-type Ca^{2+} channels, known as a target for H_2S (Br J Pharmacol **167**, 917, 2012; Toxicology **393**, 102, 2018). We have also shown the involvement of RAGE activation by high mobility group box 1 (HMGB1), a damage-associated molecular pattern (DAMP) molecule, in the cystitis-related bladder pain (Neuropharmacology **79**, 112, 2014). The present study thus examined the relationship between HMGB1/RAGE and CSE/H_2S/$Ca_V3.2$ pathways in bladder pain signaling.
Methods: Female mice received i.p. CPA at 400 mg/kg, and bladder pain (nociceptive behavior and referred hyperalgesia) was assessed 3.5-4 h later. Protein levels of CSE were determined by Western blotting or immunohistochemistry. Macrophages (Mφ) accumulating in the bladder tissue were detected by immunohistochemistry.
Results: The cystitis-related bladder pain caused by CPA in mice was inhibited by (*2R/S*)-6-prenylnaringenin and KTt-45, novel T-channel blockers, or by genetic deletion of $Ca_V3.2$. The CPA-evoked bladder pain and upregulation of CSE in the bladder tissue were abolished by an anti-HMGB1-neutralizing antibody, FPS-ZM1, a RAGE antagonist

or liposomal clodronate, a Mφ depletor. Mφ accumulation was detected in the bladder mucosal layer after CPA treatment.
Conclusions: Our data suggest that Mφ-derived HMGB1 following CPA treatment triggers RAGE-dependent CSE upregulation in the bladder, and the increased H_2S generated by CSE enhances $Ca_v3.2$ channel activity, which in turn induces nociceptor excitation followed by bladder pain.

WIDESPREAD PAIN

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EFFECT OF FMRI-GUIDED NEURONAVIGATION BASED RTMS THERAPY ON PAIN PERCEPTION IN FIBROMYALGIA PATIENTS

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Background: Fibromyalgia syndrome (FMS) is characterised by chronic intractable wide spread pain through out the body along with presence of specific tender points. Studies have shown that FMS patients are refractory to most pharmacological approaches, leading to paucity of treatment options. Recently published studies have shown that repetitive transcranial magnetic stimulation (rTMS) may be a viable and safe option for FMS syndrome. Administration of TMS requires placement of coil over the skull so that areas of interest such as Dorso-lateral Prefrontal Cortex can be stimulated. However, there is variability in individual skull morphology, therefore, localisation of stimulation site was done accurately using individual fMRI-based neuronavigation system.
Objective: To evaluate effect of neuronavigation based rTMS on pain perception in FMS patients.
Methods: RCT in a tertiary hospital. 34 patients diagnosed with primary FMS, as defined by American College of Rheumatology, were recruited from Rheumatology OPD. Patients were asked to fill McGill Pain Questionnaire (MPQ) in vernacular language, followed by a standardised fMRI protocol (Stroop task) to localise right dorsolateral prefrontal cortex. For therapy sessions, screened patients were randomised to receive 20 sessions of either real or sham therapy. Outcome measures of RCTI were MPQ scores - total, sensory, affective, evaluative and miscellaneous domains.
Results: In comparison to sham group, significant improvements were noted for rTMS therapy with total scores ($p=0.0094$), sensory scores ($p=0.0273$) and miscellaneous scores ($p = 0.0273$).
Conclusion: fMRI-guided neuronavigation based rTMS therapy may be an effective therapy for improving pain perception for FMS symptoms.

ANATOMY AND PHYSIOLOGY SOMATOSENSORY SYSTEM

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DEMONSTRATION OF THE ANTINOCICEPTIVE ACTION OF THE FIXED COMBINATION OF CANDESARTAN-CLOMIPRAMINE

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Background and aim: This study investigated the pharmacological influence under experimental conditions of the fixed-ratio combination of a modulator of the renin angiotensin system (candesartan) and an adjuvant in pain therapy (clomipramine) using nociception models with chemical and thermal stimuli.
Methods: The following nociception models were used: formalin test, hot-plate test (52.5 ± 0.2°C, 30, 60, 90, 120 minutes) and the Zymosan-induced constrictive abdominal response.
The investigations were conducted on groups of 10 Swiss male mice weighing 20.00-30.00g, treated orally with dose sequences of the administered substances alone and in combination. Combination analysis was performed using the composite additive method. All experiments have been made in accordance with the bioethical rules and regulations (EU Directive 63/2010).
Results: The binary candesartan-clomipramine combination was found to be synergistic for both phases of the formalin test (Phase I: Zmix = 0.16 ± 0.02 mg / kg, γ = 0.271, tcalc = 6.13, ttab = 3.83, p < 0.001; Phase II: Zmix = 0.20 ± 0.04 mg / kg, γ = 0.338, tcalc = 4.64, ttab = 3.89, p < 0.01) for the dose sequence used and the ratio (f = 0.5, p1 =0.734 , p2 = 0.266). The synergism was demonstrated by the left shift of the additive composite line compared to the regression line of the combination.
Conclusions: The synergism of the combination can be explained by reducing the proinflammatory effects of angiotensin II and the positive regulation of TNF-alpha, and the addition of clomipramine effects on the $5HT_2$ and $5HT_3$ receptors.

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OFFSET ANALGESIA AND ONSET HYPERALGESIA WITH TWO DIFFERENT TEMPERATURE RANGES

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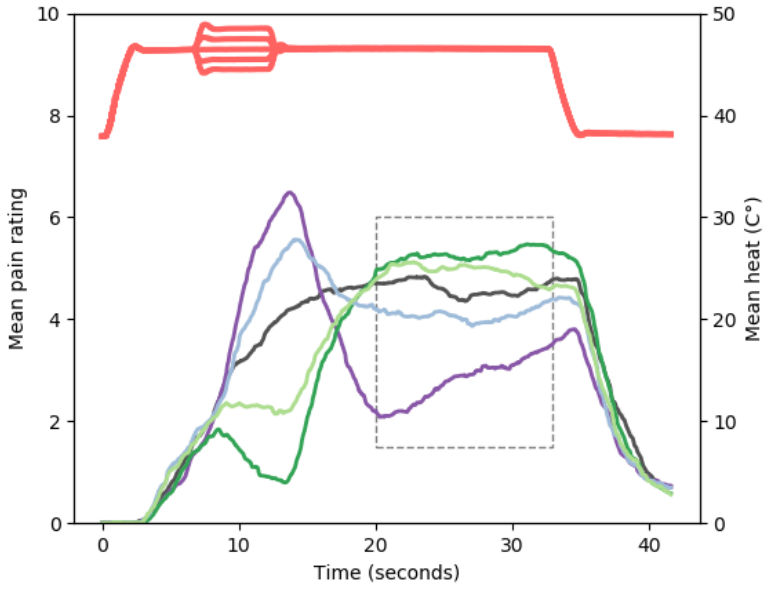
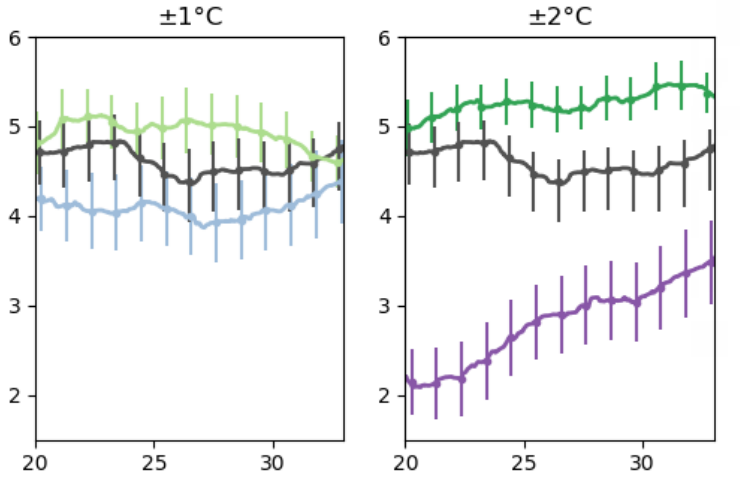
Background and aims: A small decrease in temperature of a noxious heat stimulus may give rise to a disproportional large reduction in pain, so called offset analgesia (OA). Recently, Alter et al. (abstract from IASP Congress, 2018) demonstrated that by inverting the standard protocol for OA a hyperalgesic response can be produced, i.e. onset hyperalgesia (OH). The aim was to replicate this finding and to explore the effects of different temperature ranges on OA and OH.
Methods: Twenty-one healthy women (age: 24.05±2.74) were recruited from Karolinska Institutet. A 30x30 mm thermal probe was attached to participants' left calf. Baseline temperature was set to pain-5 on a 0-10 VAS. OA and OH protocols were conducted with two different temperature ranges (±1°C/±2°C; 5°C/s) and with constant temperature (control) in a randomized order while participants continuously rated their pain level. Hypoalgesic and hyperalgesic responses were defined as differences between pain ratings during experimental and control conditions during the last 13 seconds of stimulation.
Results: We found a significant hypoalgesic response during $OA_{2°C}$, $t(20) = 4.52$, $p < .001$,$d = 1.01$, and a hyperalgesic response during $OH_{2°C}$, $t(20) = -3.39$, $p = .003$,$d = 0.76$, but not during $OA_{1°C}$and $OH_{1°C}$.

Conclusions: We produced OA and OH, but only during ±2°C range conditions. These results suggest that ±2°C range is more effective than ±1°C in producing hypoalgesia and hyperalgesia.



[Offset analgesia (±1C°/±2C°) and onset hyperalgesia (±1C°/±2C°)]



[The last 13 seconds of stimulation (mean±SEM)]

P320

CINNAMALDEHYDE-EVOKED SCRATCHING IN MICE REQUIRES DIRECT OR INDIRECT ACTIVATION OF TRPV4- AND TRPV1- BUT NOT TRPA1-EXPRESSING SENSORY NEURONS

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Background and aims: Cinnamaldehyde (CA) elicits itch sensation in humans. Histamine and other itch mediators require expression of TRPV1, TRPA1, and/or TRPV4 in pruriceptor transduction. We presently investigated if CA-evoked scratching behavior requires TRPV1, TRPA1 and/or TRPV4 using knockout (KO) mice lacking these channels. We also used calcium imaging to investigate if CA activates sensory dorsal root ganglion (DRG) neurons in wildtype (WT) and KO mice.
Methods: We scored hindlimb scratch bouts and forelimb wipes directed to the site of cheek injection of CA in wildtype (WT) and TRPV1, TRPA1 and TRPV4 KO mice. DRG neurons from each genotype were acutely dissociated, cultured and loaded with FURA-2 for ratiometric calcium imaging of their responses to bath application of CA.
Results: In WT mice, CA elicited significant, dose-related bouts of hindlimb scratching but not forelimb wiping. CA-evoked scratching was significantly reduced (~50%) in TRPV1 and TRPV4KOs but not in TRPA1KOs. As expected, DRG cells from TRPA1KOs were unresponsive to CA. Significantly fewer DRG cells from TRPV4KOs were activated by CA, consistent with the behavioral data. Curiously, significantly more DRG cells from TRPV1KOs vs. WTs were activated by CA.
Conclusions: TRPA1 is not required for CA-evoked itch behavior. TRPV4 in sensory neurons is important for CA-evoked itch, since scratching and DRG neuronal responses were both reduced in TRPV4KOs. TRPV1 is also important for CA-evoked itch; however, since CA activated DRG cells from TRPV1KOs, TRPV1 may have a role in itch independent of sensory neurons.
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LYSOPHOSPHATIDIC ACID ACTIVATION OF SCHWANN CELLS

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Background and aims: Lysophosphatidic acid (LPA) is a bioactive lipid acting on its own G-Protein coupled receptors LPA1-6, leading to calcium influx. LPA has been identified as a powerful pruritogen and is involved in a number of cellular processes, including cytoskeleton change. Here we show that LPA activates satellite glial cells and Schwann cells as opposed to having direct action on neurons, and characterize these effects from a functional and morphological standpoint.
Methods: Calcium microfluorimetry was used to quantify cell activation in dorsal root ganglia cell cultures and Schwann cell cultures and immunohistochemistry served to validate the receptor distribution on the different cell types.
Results: LPA leads to a calcium influx in satellite glial cells (SGCs), and in only few neurons. The cells responding to LPA were disjunct from those responding to agonists of transient receptor potential channels (TRPV4, TRPM3, TRPA1, TRPV1). LPA induces calcium transients in Schwann cells, which can be abolished by specific inhibitors for the LPA1 receptor. Moreover, the receptor for LPA is desensitized upon repeated application in continuous superfusion conditions. Antibody staining for LPA1 receptors revealed a highly localized distribution, fitting growth areas of the cell. Morphology changes after LPA application, the responding cells adopt a more rounded phenotype

in a high calcium environment, possibly reflecting myelin sheath retraction.
Conclusions: Schwann cells and satellite glial cells respond to lysophosphatidic acid through LPA receptors, pointing to a signaling pathway with importance for demyelinating disorders.

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CAPSAICIN INDUCED DESENSITIZATION OF THE SKIN: EFFECTS ON THE PERCEPTION OF NOXIOUS AND NON-NOXIOUS SENSORY STIMULI

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Background and aims: Topical application of high-concentration capsaicin is approved as a treatment for localized neuropathic pain. The mechanism of action is probably related to the fact that topical capsaicin activates TRPV1-afferents and that this induces a reversible intraepidermal free nerve ending denervation resulting in reduced thermosensitivity. However the time course and spatial extent of the denervation/reinnervation process and the respective contribution of different types of sensory afferents is not well characterized. This was explored in the present study, in which we characterize the time course and spatial extent of the effects of high-concentration topical capsaicin on the perception of noxious and innocuous heat, cold and mechanical sensory stimuli in healthy volunteers.
Methods: The volar forearm of 20 healthy volunteers was treated with a single high-concentration (2% in ethanol/water) capsaicin-patch during 1h. Brief innocuous warm, noxious heat, innocuous cold, and pinprick stimuli were applied within and outside the treated skin, before treatment, and +1, +3 and +7 days after treatment. Reaction times were recorded and participants were asked to evaluate the intensity and quality of the stimulus.
Results: The decrease in sensitivity to noxious heat stimuli was shorter lasting (approx. 3 days) than the decrease in sensitivity to innocuous heat (>7 days). The perception of cold and tactile stimuli was not affected by capsaicin treatment.
Conclusion: Both heat and warm sensitive fibers were temporary deactivated by capsaicin treatment, but the return of activation differed remarkably in time, suggesting that different fiber types are responsible for the perception of these stimuli.

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PARTICIPATION OF THE NITRIC OXIDE-CYCLIC GMP-K^+ CHANNEL PATHWAY IN THE PERIPHERAL ANTINOCICEPTIVE EFFECT OF CITRAL IN THE RAT FORMALIN TEST

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Introduction: Citral is a monoterpene that occurs naturally in herbs, plants and citrus fruits. Actually, there is evidence limited about the antinociceptive action mechanism of citral. Therefore, the aim of this study was to examine the effect of modulators of the nitric oxide-cyclic GMP-K^+ channels pathway on the local peripheral antinociceptive action induced by citral.
Methods: The rat paw 1% formalin test was used to assess nociception and antinociception. Rats were treated with local peripheral administration of citral (10-100 µg/paw). The antinociception of citral (100 µg/paw) was evaluated with and without the local pretreatment of naloxone, NG-L-nitro-arginine methyl ester (L-NAME, a nitric oxide synthesis inhibitor), 1H-(1,2,4)-oxadiazolo(4,2-a)quinoxalin-1-one (ODQ, a soluble guanylyl cyclase inhibitor) and K^+

channel blockers. All experiments followed the Guidelines on Ethical Standards for Investigation in Animal and an independent committee approved all experiments.
Results: Peripheral injection of citral produced antinociception in both phases of the test. Local peripheral pretreatment of the paws with L-NAME (10-100 µg/paw) and ODQ (10-100 µg/paw) reduced the citral-induced antinociception. Likewise, glibenclamide or glipizide (10-100 µg/paw)(Kir6.1-2; ATP-sensitive K^+ channel blockers), 4-aminopyridine or tetraethylammonium (10-100 µg/paw)(KV; voltage-gated K^+ channel blockers) or charybdotoxin (0.1-2 µg/paw) (KCa1.1; big conductance calcium-activated K^+ channel blocker) or apamin (0.1-2 µg/paw) (KCa2.1-3; small conductance $Ca2^+$-activated K^+ channel blocker), but not naloxone, reduced the antinociception induced by citral.
Conclusions: Our data suggest that citral could activate the nitric oxide-cyclic GMP-K^+ channels pathway, but not opioid receptors in order to produce its peripheral antinociceptive effect in the rat formalin test.

P324

INFLUENCE OF EXERCISE-INDUCED MUSCLE PAIN AND DELAYED ONSET MUSCLE SORENESS ON OFF-SET ANALGESIA AND CONDITIONED PAIN MODULATION

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Background and aims: Offset analgesia (OA) and conditioned pain modulation (CPM) are frequently used to represent the descending inhibitory pain modulation system. A recent systematic review showed reduced offset analgesia in chronic pain. The influence of acute pain has not yet been adequately examined. The aim of this study is to investigate OA and CPM during exercise-induced pain to evaluate whether these tests can be influenced by delayed onset muscle soreness (DOMS).
Methods: Healthy volunteers were invited to three separate examination days: a baseline appointment, the consecutive day and 7 days later. Volunteers were randomly divided into a rest (n=21) and an exercise group (n=21). The latter performed a single intensive exercise for the lower back. Before, immediately after and on the following examination days OA and CPM were measured at the forearm and the lower back. Offset analgesia included traditional thermal stimulation and CPM an ice water immersion as the conditioning stimulus and pressure algometry as the test stimulus.
Results: The exercise provoked a moderate pain stimulus (VAS 4.4 (SD 2.7)) and a mild DOMS on the following day (VAS 1.7 (SD 1.6)). Repeated measurements ANOVA showed no statistically significant effect for [group], [day] or [group*day] for both OA and CPM on the forearm and lower back ($p>0.05$).
Conclusions: Both, moderately painful exercise and mild subsequent DOMS were shown to have no effect on the inhibitory pain modulation system. Thus, OA and CPM are robust test paradigms that probably require more intense, different or prolonged pain to be modulated.

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PRECEDING APPLICATION OF MINOCYCLINE SUPPRESSES PLASTIC CHANGES IN CORTICAL EXCITATORY PROPAGATION IN THE MODEL RAT WITH INFRAORBITAL NERVE LIGATION

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Background and aims: The infraorbital nerve (ION), a branch of the trigeminal nerve, innervates to the facial and oral regions and conveys somatosensory information to the central nervous system. The ION ligation (IONL) is the method of chronic constriction injury that induces trigeminal neuropathic pain. Although recent studies have revealed the molecular mechanisms regarding chronic pain, estimation of the effectiveness of the pharmacological treatment has not been well provided especially in the central nervous system so far. Here we examined whether IONL induces plastic changes in the cerebral cortex and investigated effects of minocycline on the cortical plastic changes.
Methods: We performed the partial IONL to Wistar male rats, and cerebrocortical activities were evaluated 3 d after IONL by the optical imaging with a voltages-sensitive dye RH1691 to quantify the response to electrical stimulation of the mentum, maxillary and mandibular molar dental pulp.
Results: Cerebral cortical responses to the mentum, maxillary and mandibular molar dental pulp stimulation increased one day after IONL, and continued for 2 weeks parallel to the decrease in the mechanical nocifensive threshold. Administration of minocycline (30 mg/kg) before IONL reduced the IONL induced-hyperexcitation in the cerebral cortex 3 days after IONL.
Conclusions: This suppressive effect of minocycline on the IONL-induced cortical hyperexcitation was not observed in the case when minocycline was administered after IONL. These results suggest that somatosensory and insular cortical excitation is facilitated by IONL, and the preceding injection of minocycline counteracts the hyperexcitation.

P326

NALOXONE AND CTOP BLOCK NSAIDS-INDUCED ANTINOCICEPTION IN ANTERIOR CINGULATE CORTEX OF RATS

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Backgrounds and aims: Anterior cingulate cortex (ACC), which is activated by noxious stimuli, is involved in pain processing; however, the mechanisms of the ACC involvement in affective pain have yet to be elaborated. To study relation antinociceptive effects induced by non-steroidal anti-inflammatory drugs (NSAIDs) with endogenous opioid system we treated experimental rats with opioid receptor antagonists, naloxone and CTOP in the ACC pre- and post-following microinjections with NSAIDs.
Methods: We measured nociceptive thermal paw withdrawal latencies and mechanical thresholds in rats' formalin test following microinjections of NSAIDs (diclofenac, ketoprofen, ketorolac and lornoxicam), saline or opioid receptor antagonists, naloxone and CTOP in the ACC.
Results: Five minutes following intraplantar formalin injection all animals showed a significant reduction in thermal paw withdrawal latency and mechanical withdrawal threshold compared to pre-baseline values. Fifteen minutes after formalin injection, diclofenac, ketoprofen, ketorolac and lornoxicam clearly showed antinociceptive effects of NSAIDs. When pretreated with naloxone and CTOP we found a significant reduction of analgesic effects of NSAIDs as well as post-treatment of these completely abolished NSAIDs-induced antinociception.
Conclusion: We demonstrated that pre- or post-treatment with opioid antagonists, naloxone or CTOP attenuated antinociception induced by microinjection widely used non-opioid, NSAID analgesics, diclofenac, ketoprofen, ketorolac and lornoxicam into the rostral part of the ACC of rats. The present findings support the concept that NSAIDs-evoked antinociception is mediated via descending endogenous opioid system.
Acknowledgement*:* This work was supported by the grant from Shota Rustaveli National Science Foundation (SRNSF) of Georgia (#217148).

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EVIDENCE FOR THE IN VIVO ANALGESIC EFFECT OF CARBOXAMIDO STEROIDS VIA LIPID RAFTS

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Transient Receptor Potential ion channels, such as TRP Vanilloid 1 and Ankyrin 1 (TRPV1, TRPA1) are expressed in nociceptive primary sensory neurons. TRPV1 can be activated by capsaicin (CAPS), resiniferatoxin (RTX), low pH and noxious heat. Allyl-isothiocyanate (AITC) and formaldehyde activate TRPA1. Lipid rafts are liquid ordered plasma membran microdomains rich in cholesterol and sphingomyelin. We described that a carboxamido-steroid compound (C1) had an inhibitory effect on TRP ion channel activation through lipid raft disruption. The aim of this study is to examine the in vitro actions, and the analgesic effect of C1 in *in vivo* mouse models.
The effect of C1 was analysed on isolated trigeminal (TG) neurons by measuring agonist induced Ca^{2+}-transients with ratiometric technique, and on receptor-expressing CHO cells by measuring ^{45}Ca-uptake. We investigated the effect of C1 in RTX-, and formaldehyde-evoked hyperalgesia models. The analgesic effect of C1 was also measured in capsaicin-evoked acute nocifensive response („eye-wiping") test.
Our results show, that C1 treatment diminished the percentage of responsive cells, and the magnitude of Ca^{2+} transients in TG neurones, and decreased the ^{45}Ca-uptake on receptor-expressing CHO cells. C1 treatment significantly reduced the RTX-induced thermal and mechanical hyperalgesia, the formaldehyde-evoked hyperalgesia and the number of capsaicin-evoked eye-wiping movements.
Our results provide the first evidence that disruption of lipid rafts by C1 have an analgesic effect in *in vivo* mouse models. Our in vitro and in vivo findings suggest that the hydrofobic interactions between the TRP channel and lipid raft interfaces modulate the opening properties of these channels.

BIOLOGY

P328

GLUTAMATE INDUCES IONOTROPIC AND METABOTROPIC GLUTAMATE RECEPTORS EXPRESSION IN PERIPHERAL MAST CELL POPULATIONS

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Background and aims: The peripheral nervous system exhibits a key role in regulating inflammation and pain signaling of the damaged tissue via afferent to efferent pathways. In a previous study, we used an Achilles tendon rupture rat model and showed that mast cells in the healing tendon were positive for the ionotropic glutamate receptor, NMDAR1. This raises the possibility that mast cells can be activated by glutamate release from peripheral nerve endings.
Methods: We cultured mouse bone marrow derived mast cells (BMMC) and stimulated these cells with L-glutamate. Mast cell degranulation was quantified through β-hexosaminidase release**.** We used immunofluorescence and

Western blot techniques to quantify NMDARs and mGluRs at the protein level, and RT-qPCR with microarray analysis to study the gene level expression.
Results: We show that glutamate induces mast cell degranulation, and up-regulates the expression of glutamate receptors in mast cells. In agreement with this we found by qPCR and microarray analysis that mast cells upregulate the expression of a range of glutamate receptors in response to glutamate exposure, including ionotropic NMDAR1, NMDAR2A/2B, and metabotropic mGluR3, mGluR7. We also showed that the glutamate receptor, NMDAR1 co-localizes with glutamate in the cell membrane of mast cells exposed to glutamate, indicating the interaction between glutamate and its receptor(s) in the mast cell membrane.
Conclusions: These findings introduce the possibility that glutamate signaling can have a functional impact on mast cells derived from peripheral tissue, suggesting a mechanism for neuro-immunological response during pain and inflammation process.

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CYP2D6 GONOTYPE CAN FACILITATE PREDICTION OF EFFICACY AND SAFETY OF TRAMADOL AND CO-DEINE TREATMENT. A STUDY ON GREEK POPULATION

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Background and aims: Codeine and tramadol are commonly prescribed weak opioids, which are being metabolised by cytochrome CYP2D6, a polymorphic enzyme associated with differences in metaboiic ability. The aim of this study was to investigate which genetic polymorphisms of CYP2D6 could possibly facilitate prediction of efficacy and safety of these two commonly used opioids in clinical practice.
Methods: 50 Greek patients were studied, receiving either codeine or tramadol for chronic pain management. The efficacy of treatmet as well as the adverse effects were recorded and correllated to the polymorphisms of CYP2D6. Gonotypes were performed using PCR-RFLP. The effect of polymorphism to the outcome of treatment was correlated to metabolic activity and genotype.
Results: CYP2D6 polymorphisms were significantly correlated with the outcome of opioid treatment (P=0,0003). The carriers of the alleles *4 and *6 characterized as poor metabolizers were significantly associated with the treatment failure. The carriers CYP2D6 genotypes *4/*4, *1/*4, *5/*5, *6/*6 and *10/*10 were associated with the development of adverse side effects mainly nausea.
Conclusions: Results indicated that reduced activity of CYP2D6 is correlated with low therapeutic efficacy. The pharmacogenomic analysis of CYP2D6 could facilitate personalized pain treatment with opioids such as codeine and tramadol.

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ANTIOXIDANT CAPACITIES OF PATIENTS WITH CHRONIC PAIN AFTER STRONG OPIOID TREATMENT

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Opioids are most often used medically to relieve pain by attaching to opioid receptors in the brain, spinal cord, gastrointestinal tract and other organs in the body and facilitating reduction in the pain perception. During treatment with opioids can some of adverse effects appear. Recently, studies confirming the relationship between opioid use and the lack of antioxidant defence of the body have been published. Negative intervention of opioid metabolism into the function of antioxidant mechanisms leads to the induction of oxidative stress, reduction in efficacy, modulation of pain perception and pathogenesis of other disease states. The purpose of Opioid-Redox Study ClinicalTrials.gov NCT03105232 study is to evaluate risk of oxidative stress formation by assessing selected antioxidant markers after long-term opioid treatment. Adult patients who had recently developed chronic pain were prospectively recruited as the study cohort before opioid treatment. We had collected data before treatment and after 6 months using strong opioids. Primary results from samples taken from 25 patients after a six - month follow - up have pointed to significant decrease in glutathione peroxidase, and glutathione-S-transferase activities. With insignificant decrease in superoxide dismutase and glutathione reductase activities and significant increase in reduced glutathione levels we can assume lower need for conversion of peroxides. As glutathione-S-transferase is capable for metabolism of drugs and is specific to hepatocyte damage we can consider from this small number of patients and in the middle of the follow up, the adaptive response of the organism to increased demands for opioids metabolisation.

DEFINITION AND CLASSIFICATION

P331

CHRONIC PAIN IN ICD-11: VALIDATION OF THE PAIN SEVERITY EXTENSION CODE

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Background and aims: Although 20% of the population suffer from chronic pain, it is not represented adequately in the 10th edition of the International Classification of Diseases (ICD-10). To improve this, an IASP Working Group has developed a new classification consisting of seven categories of chronic pain for the upcoming ICD-11. For all chronic pain diagnoses, optional extension codes are available. One of them is the severity of chronic pain code, which will supplement the categorical diagnosis with a dimensional measure of pain severity. Pain severity is a compound measure of pain intensity, pain-related distress and interference rated on numerical rating scales (NRS) by the patient. The aim of the present study was to evaluate the severity extension code.
Methods: An online survey was posted to support groups for chronic pain. The participants provided informed consent and rated each of the severity determinants (intensity, pain-related distress and interference) on an NRS from 0-10. They also completed the Pain Disability Index (PDI), the Brief Symptom Inventory (BSI) and the German Pain Coping Questionnaire (FESV). We expect c. 500 participants.
Results: To evaluate the convergent validity of the severity code, correlations between interference and the PDI as well as between pain-related distress and the BSI and the FESV were calculated.
Conclusions: A valid extension code for pain severity allows recording additional parameters, which can be used to monitor the course of the pain and its treatment. Through the rating on a numerical rating scale, the code is more efficient than questionnaires.

DIGITISATION AND PAIN MANAGEMENT

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A COMPARISON OF SOME AND TRADITIONAL PATIENT RECRUITMENT STRATEGIES FOR AN ONLINE DIGITAL PAIN ASSESSMENT STUDY

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Background and aims: Internet access is available for over 400 million Europeans creating opportunity to improve engagement and compliance though digital pain assessment and management tools. As part of a larger cohort study assessing the changes in spinal pain extent, location and distribution over time, this study assesses the effectiveness of patient recruitment strategies.
Methods: Social media (SoMe) platforms and traditional hospital referral settings were used to recruit patients with spinal pain. Patients completed validated online disability questionnaires and weekly digital pain reports (intensity and drawings), for three months. The SoMe strategy posted a 60-second explanatory video on Facebook, requesting interested participants to contact researchers directly. Both recruitment strategies lasted 8 months.
Results: The SoMe video reached 91 organic shares and 15,276 independent views. Twenty-four percent (N=3726) of the viewers watched the video for at least 10 seconds, 16% (N=2.500) engaged with reactions, likes or comments, and the majority (86%) were female (35-54 years). Total recruitment consisted of 54 eligible patients (48±12 years) from SoMe and 34 patients (59±13 years) from the hospital. Oswestry and Neck Disability Index scores (p>0.5) were similar between the groups at baseline. In addition, 48% and 23% of the patients from SoMe and the hospital, respectively, successfully submitted the requested weekly digital pain reports over a 3-month period.
Conclusions: Recruitment of a higher number of eligible patients and better reporting compliance were achieved using a SoME platform. These findings provide evidence for methods which may improve the efficiency and efficacy of patient recruitment.

EDUCATION OF PAIN CARE

P333

EVALUATING THE EFFECTIVENESS OF ESSENTIAL PAIN MANAGEMENT PROGRAM IN IMPROVING HEALTHCARE PROFESSIONALS KNOWLEDGE OF PAIN MANAGEMENT

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The assessment and management of pain in today's healthcare setting continues to be challenging, the main cause of this is thought to be related to a lack of knowledge from health care professionals. Although it is well documented in the literature that lack of pain education is a major contributing cause there continues to be a significant lack of pain education in pre-registration nursing and medical undergraduate programs.
The Essential Pain Management (EPM) programme was developed to address the growing knowledge gaps of professionals in relation to pain in a simple and easy format. Traditional this has been targeted at undergraduate medical students however the aim of this audit was to evaluate its application to nursing and AHP workforce. Participants were asked to complete pre and post course questionnaire as designed by EPM UK to evaluate

learning.
51 participants attended over 4 study days, 42 completed the pre course questionnaire and 46 participants completed the post course questionnaire. Mean score increased from 69.04% to 73.82% following teaching. 80% of participants did not have any formal pain education during undergraduate study and 98% felt that current pain education in the undergraduate setting inadequate.
EPM teaching resulted in a modest increase in post course test scores which would indicate that it is useful method of improving pain knowledge. However further study is required in a large sample population to ensure its validity.

BASICS IN PAIN WALK 2

P334

DIFFERENTIAL REGULATION OF PAIN AND ANXIETY BEHAVIORS BY CEA NEURONS

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Amygdala nuclei play important roles in emotional responses, fear, depression, and pain processing. However, the identity of the amygdala neuronal subtypes involved in the pain signal is not completely understood. The lateral subdivision of amygdala central nucleus (CEl) contains two major subpopulations of GABAergic neurons which express somatostatin (SOM+) and protein kinase Cδ (PKCδ+). It has been demonstrated that ERK was activated in amygdala central nucleus (CEL) in different pain models. In this study, we showed most of the ERK positive neurons were colocolized with PKC δ+ neurons in different pain models in mice. Optogenetic activation of PKC δ+ neurons was sufficient to induce hyperalgesia without changing the anxiety behaviors in naïve mice. Conversely, activation of SOM+ neurons changed the anxiety behaviors but did not affect the pain behavior. Taken together, our data suggest that CEl PKCδ+ neurons play an important role in mediating the pain signals.

P335

TRANSDIFFERENTIATION AND MICROFLUIDIC CHAMBERS AS TOOLS TO APPROACH THE *IN-VIVO* SKETCH OF HUMAN NOCICEPTORS

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Background: Chronic pain affects ~20% of the European population and drugs currently used to treat this condition present limiting side effects, which alter the compliance to the treatment. Therefore, there is a need to develop translational in vitro nociceptor models to study pain transduction. Here, we propose an in vitro human-based, microfluidic cultured nociceptor model for investigating peripheral pain signalling and its modulation by anti-nociceptive molecules. The use of microfluidic chambers allows for the compartmentalization of soma and axons, resembling the natural architecture of sensory neurons.
Methods: First, rodent nociceptors were cultured in microfluidic chambers (MFC), and their functionality was assessed using calcium imaging and microelectrode arrays (MEA). Concomitantly, we are also optimizing a transdifferentiation of human fibroblasts to nociceptors in MFC and MEA chips.
Results: Nociceptors are readily cultured in MFC and coupled to MEA chips for evaluating their excitability. Stimulation of the peripheral ends, produced electrical activity that is measured in the soma. Transdifferentiation of

human fibroblasts in MFC is possible, although the yields are low and need optimization.
Conclusions: We have improved microfluidic nociceptor cultures, including the MEA recordings. This opens new venues for studying nociceptive signalling and for testing anti-nociceptive drugs. We aim to expand these cultures to human nociceptors obtained by transdifferentiation of cutaneous fibroblasts.

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SELECTIVE PEPTIDE TOXINS FOR ASSESSING NA_V CHANNEL FUNCTION IN SENSORY NEURONS

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Na_V channels are critical for the upstroke of the action potential in peripheral sensory neurons. These neuron express a unique subset of Na_V channels including $Na_V1.7$, $Na_V1.8$ and $Na_V1.9$. Mutations in these isoforms have been associated with both painful and painless neuropathies. Potent and selective pharmacological probes of Na_V channels are required to further understand the role of particular Na_V channels in pain sensing. However, this endeavour is hampered by the high sequence homology (> 50%) between isoforms. The beta-scorpion toxin Tf2 was previously identified as a selective agonist of $Na_V1.3$. The role of $Na_V1.3$ in PNS is not well defined with low levels reported in adult rodents but upregulation reported after injury. Tf2 and analogs were generated using native chemical ligation, assessed using high-throughput and high content fluorescence imaging, manual and automated patch clamp and *in vivo* behavioural nociception experiments. We confirm the beta-scorpion toxin action at $Na_V1.3$ including a strong hyperpolarizing shift in activation (~20 mV). Tf2 does not activate $Na_V1.1$,1.2-1.7 in high-throughput fluorescent assay. Tf2 does not shift the voltage-dependence of activation of $Na_V1.8$. Interestingly, Tf2 induced a small hyperpolarizing shift in activation of $Na_V1.9$. Tf2 induced calcium influx in DRG neurons of a range of sizes. Finally, when injected intraplantar Tf2 caused spontaneous nocifensive behaviours in WT and $Na_V1.9^{-/-}$ animals the absence of changes in withdrawal to mechanical or heat stimulus. Therefore, Tf2 induces spontaneous nocifensive behaviours when injected intraplantar not due to $Na_V1.9$ activation alone.

P337

TRPV1 RECEPTOR ACTIVATION BY CAPSAICIN IS MODULATED BY OXYTOCIN IN CULTURED DORSAL ROOT GANGLION NEURONS

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Background: It has been revealed that oxytocin (OT) plays an important role in pain modulation through oxytocin receptors (OTR) expressed by spinal and dorsal root ganglion (DRG) neurons. This study was designed to examine whether OT may modulate transient receptor potential vanilloid type 1 (TRPV1)/capsaicin receptor function through OTR signalisation in cultured DRG neurons.
Aim: The possible cellular and molecular mechanisms of the antinociceptive effect of OT exerted through an action on primary sensory neurons which express the TRPV1 receptor were examined.
Materials and methods: Cell cultures were prepared from DRGs of adult male Wistar rats (n=9) weighing 250-310 g. Neurons responsive to capsaicin were identified by using the Co^{2+}-uptake assay.
Results: In the presence of 1 µM capsaicin 38±8.56 % of cultured DRG neurons exhibited staining after incubation in the Co^{2+}-uptake assay buffer. Administration of OT or OT co-administered with Atosiban, an OTR antagonist, 10 min prior to the capsaicin challenge failed to affect the proportions of cobalt-labelled neurons significantly (35.78±4.87 and 31.51±7.96%, respectively). However, administration of oxytocin (1 µM) for 3 days resulted in a significant decrease in the proportion of neurons showing cobalt staining (28.45±4.2, $p< 0.05$, n=9), which was

prevented by co-administration of Atosiban.
Conclusion: The present findings indicate that OT may modulate the activation of the TRPV1 nociceptive ion channel in cultured DRG neurons. It is suggested that the modulatory role of OT effected through OTRs may bear of significance in the nociceptive and local regulatory/sensory-efferent functions of chemosensitive primary sensory neurons.
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BASELINE CORTICAL ACTIVITY PREDICTS REACTIVITY TO NOCICEPTIVE STIMULI DURING SLEEP

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Sleep disruption by nociceptive stimuli follows the apparition of a 'cognitive' wave, supposed to reflect the activation of a widespread cortical network (Bastuji et al 2008). The factors allowing the activation of this network are unknown and remain to be identified. The aim of the present study was to test if the characteristics of baseline cortical activity can predict reactivity to these nociceptive stimuli. For this purpose, intra-cerebral electrophysiological signal before nociceptive stimuli during sleep were analysed in the time-frequency domain.
Intracerebral recordings were obtained in 14 epileptic patients receiving thermo-nociceptive stimulations, calibrated slightly above the individual pain threshold, during whole night sleep. Spectral content of 5 seconds pre-stimulus EEG signal and phase coherence between posterior insula and 14 other brain areas were compared according to presence or absence of arousal post-stimulus, during sleep N2 and paradoxical sleep (PS).
Spectral power of delta activity pre-stimulus was significantly lower before arousal reaction as compared to that with no arousal in N2 ($p < 0.0001$), and higher in PS ($p < 0.001$). Pre-stimulus phase coherence between posterior insula and other brain areas was significantly higher before post-stimulus arousal as compared to no arousal, and this in N2 as well as in PS.
Arousal occurrence is related to a lighter sleep when the nociceptive stimulus is delivered and a higher functional connectivity between the sensory and other cortices. This greater connectivity between sensory and association areas may facilitate information propagation leading to conscious perception and physiological response.

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DEPLETION OF EXTRACELLULAR POTASSIUM LEADS TO AN ACCUMULATION OF INTRA-AXONAL SODIUM AND ONGOING ACTIVITY IN MOUSE C-FIBRES VIA NAV1.9

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Background and aim: Bouts of spontaneous pain in chronic pain patients are typically attributed to aberrant activity in unmyelinated C-fibres. The processes leading to the generation of ongoing activity in C-fibres following injury have not been established. Here we ask whether uninjured "naïve" unmyelinated C-fibres can develop ongoing activity.
Methods: C-fibre compound action potential (C-CAP) and single fibre recordings from in cutaneous afferents in combination with calcium imaging from acutely isolated DRG neuronal somata were used to assess the effects on somatosensory neurons of extracellular potassium depletion.
Results: Depletion of extracellular potassium from the nerve terminals of single cutaneous C-fibres led to the development of ongoing burst activity that began within approximately 20 minutes and was sustained for several hours. CAP recordings from sural nerve axons revealed a progressive decrease in the amplitude of the C-fibre elevation during depletion of extracellular potassium. Repeated increases in calcium transients were also observed

in DRG neuronal somata during low potassium. In mice constitutively lacking the sodium channel isoform NaV1.9, the development of ongoing burst activity in single C-fibres , the increase in intra-axonal sodium in axons and calcium waves in DRG neuronal somata and were all ameliorated. The HCN blocker ZD7288 (10-30μM) curtailed burst length during potassium depletion.
Conclusion: Sustained ongoing action potential activity can be generated in uninjured C-fibres using depletion of extracellular potassium. C-CAP amplitude progressively decreased suggesting an increase in intracellular sodium and this is primary dependent upon NaV1.9.

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MODULATION OF TRIGEMINAL ACTIVITY BY OLFACTORY CO-STIMULATION

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Interactions between the olfactory system and various forms of headache, including migraine, have been demonstrated in numerous studies with human subjects. We observed in a two-bottle preference test with mice that the aversive response to noxious irritants is partly suppressed by co-stimulation with the odorant Phenylethyl alcohol (PEA). To find the site of this olfactory-trigeminal cross-talk, we monitored trigeminal activity in nasal epithelia and in the spinal trigeminal nucleus (Sp5) of the brainstem. Electrophysiological recordings of trigeminal afferents in the nose revealed that signal generation and conduction were not changed upon co-stimulation of the olfactory system. In contrast, evidence for interaction was found in the brainstem.
Using a c-Fos approach with mice nasally exposed to the irritant Allylisothiocyanate (AIC), a TRPA1 agonist, and PEA. Brainstem slices were immunohistochemically stained with c-Fos.
We showed that noxious stimulation by AIC induces neuronal activity in the Sp5. To determine whether effects on trigeminal activity in the brainstem can be modulated by odor stimulation, mice were exposed to AIC and the odorant PEA. Co-stimulation of mice showed reduced neuronal activity in the Sp5 compared to AIC stimulated mice. Our current data suggest that the first site of interaction between trigeminal and olfactory systems may be within the trigeminal brainstem and that the intensity of afferent nociceptive signaling in the brainstem is reduced by odors. This effect may be relevant for headache and may possibly be helpful for therapeutic applications.
This project was supported by the Deutsche Forschungsgemeinschaft SFB1158.

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ENDOCANNABINOID AND N-ACYLETHANOLAMIDE LEVELS IN RAT BRAIN AND SPINAL CORD FOLLOWING SYSTEMIC DIPYRONE AND PARACETAMOL ADMINISTRATION

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Contribution of cannabinoid system has been suspected to play role in the mechanisms of actions of dipyrone and paracetamol. Our purpose was to measure the local endocannabinoid and N-acylethanolamide levels in brain and spinal cord of rats following dipyrone and paracetamol administration. In this project, nociception tests were assessed 1-, 5- and 12-hours following drug injections in Wistar rats, using tail-flick and hot-plate apparatus. Firstly, antinociceptive effects of dipyrone (150, 300, 600 mg/kg, i.p.) and paracetamol (30, 100, 300 mg/kg, i.p.) are observed. Then, after administration of highest doses of dipyrone and paracetamol, endocannabinoid (N-arachidonoylethanolamide [AEA], 2-arachidonoylglycerol [2-AG]) and N-acylethanolamine (palmitoylethanolamide [PEA], oleoylethanolamide [OEA]) levels are measured in the periaqueductal gray (PAG), the rostral ventromedial medulla (RVM) and the spinal cords of rats, using LC-MS/MS. Increased 2-AG levels are observed in the PAG and

the RVM 12 hours after dipyrone injection; paracetamol exerted no action on 2-AG levels. Analgesic administrations lead to reduction in AEA levels in the RVM and the spinal cord; similar decreases in PEA and OEA levels are also observed in the RVM and the spinal cord. Dipyrone and paracetamol administrations appear to exert complicated effects on endocannabinoid and N-acylethanolamide levels in rats.
Acknowledgement: This work was supported by a grant from Trakya University Research Council (TUBAP-2018/14).

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IN VITRO AND IN VIVO EVIDENCE FOR THE ROLE OF SPHINGOMYELIN AND LIPID RAFTS IN CA^{2+}-GATING OF THE TRANSIENT RECEPTOR POTENTIAL CHANNELS IN SENSORY NEURONS

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Transient Receptor Potential (TRP) cation as the TRP Vanilloid 1 and TRP Ankyrin 1 channels (TRPV1 and TRPA1) are nocisensors playing important role to trigger pain. These cation channels serve as thermosensors and are suitable to be activated also by several exogenous and endogenous chemical ligands. Capsaicin activates TRPV1, allyl-isothiocyanate (AITC) and formaldehyde activate TRPA1 receptors. Lipid rafts are plasma membrane microdomains rich in cholesterol and sphingomyelin. Sphingomyelinase (SMase) decreases membrane sphingomyelin by hydrolization. Our aim was to examine its *in vitro* actions on TRP channels, and the potential analgesic effect of SMase in *in vivo* mouse models.
The effect of SMase was analysed on TRPV1- or TRPA1-expressing CHO cells by measuring ^{45}Ca-uptake and on isolated trigeminal (TG) neurones[E1] by measuring Ca^{2+} transients with ratiometric technique. Mechanonociceptive and thermonociceptive thresholds of the animals in RTX-induced thermal, and mechanical hyperalgesia, and formaldehyde-evoked hyperalgesia model were measured. The analgesic effect of SMase was measured in capsaicin-evoked acute nocifensive response test.
It has been revealed that intracellular Ca^{2+} enhancement evoked by capsaicin (TRPV1), AITC and formaldehyde (TRPA1) was inhibited after SMase incubation in TG neurons and receptor-expressing cells. *In vivo* the SMase treatment significantly diminished the RTX-induced thermal, and mechanical hyperalgesia, the formaldehyde-evoked hyperalgesia and the capsaicin-evoked nocifensive reaction.
Our *in vitro* and *in vivo* results suggest that the hydrophobic interactions between the TRP channel and lipid raft interfaces modulate the channel opening. Targeting this interaction might be a tool for drug developmental purposes.
Support: János Bolyai Fellowship, KTIA_NAP_20017-1.2.1-NKP-2017-00002, GINOP-2.3.2-15-2016-00050, EFOP-3.6.2-16-2017-00008, 20765/3/2018 FEKUTSTRAT

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PAIN SENSITIVITY IS RHYTHMIC; CONTROLLED BY SLEEP AND CIRCADIAN ENDOGENOUS PROCESSES

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Background and aims: The reciprocal interaction between pain and sleep is well established. However, the link between sensitivity to pain and circadian rhythmicity remains unknown. A few studies have suggested that healthy individuals present a 24-hour rhythm of sensitivity to pain, but the results are equivocal due to the inadequate methodology. The objective of this study is to clarify whether pain sensitivity is rhythmic in humans, and to determine

the origin of this rhythmicity.
Methods: A group of 12 healthy men (20-30 years old) participated in a 34-h constant routine protocol (CR). The CR is considered as the gold-standard in chronobiology as it suppresses the influence of all environmental factors (sleep, posture, light…) and allows the endogenous circadian rhythmicity to appear. Experimental heat pain was induced on the participant's forearm using a thermode and the pain intensity induced by these stimuli were evaluated every 2 hours using a visual analogue scale. An hourly measure of core body temperature was also conducted.
Results: Our results show a linear increase in pain sensation induced by heat pain stimuli with time spent awake and a circadian rhythmicity of pain sensitivity with a peak in the middle of the night. Core body temperature follows a circadian rhythm with a minimum during the night, suggesting an opposite relationship between pain intensity and body temperature.
Conclusions: This is the first evidence that pain sensitivity follows a 24-hour rhythm that is driven by a dual influence from sleep pressure (homeostatic control) and the biological clock (circadian control).

EPIDEMIOLOGY

P344

AN EVALUATION OF THE PROPORTION OF PRIMARY CARE PATIENTS AT RISK OF DEVELOPING CHRONIC PAIN IN FRENCH-SPEAKING BELGIUM

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Background and aims: Chronic pain is a highly prevalent and complex medical condition, which seriously and often irreversibly affects patient's quality of life. Several risk factors for pain chronification are known and stratified approaches to secondary prevention (i.e. avoid the transition from acute to chronic pain) have been developed. However, in order to determine the resources needed for their implementation, we need to evaluate the number of patients at low, moderate or high risk of developing chronic pain.
Methods: Data were collected by 292 medical students, during their one-month general practice rotation. Each day, the third patient was asked to provide demographical data and fill in the short version Örebro Musculoskeletal Pain Questionnaire (OMSPQ), a validated tool to assess pain chronification risk.
Results: 5815 patients were approached and 3882 agreed to participate (66.6% response rate). Of those, 1069 (27.5%) had no pain and 1929 (49.7%) had chronic pain. 884 patients (22.7%) reported pain lasting less than 3 months. After excluding cancer-related pain and incomplete OMSPQ, we analyzed data from 783 patients. According to their OMPSQ score, 417 (55.6%) were at moderate and 212 (27.1%) at high risk for the development of chronic pain.
Conclusions: 17 % of patients in our total sample suffered from acute or subacute pain and were at moderate or high risk for pain chronification. Given the number of patients concerned, it is likely that setting up prevention programs will require significant resources and that they will have to be implemented at the primary care level.

ORGANISATION OF CLINICAL PAIN CARE

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HOW IS A BIOPSYCHOSOCIAL REHABILITATION MODEL USED IN THE BELGIAN MULTIDISCIPLINARY CENTERS FOR THE TREATMENT OF CHRONIC PAIN?

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Background: From 2013, as part of an integrated pain policy in the Belgian hospitals, 35 multidisciplinary centers for the treatment of chronic pain were financed by the federal government. This multimodal national initiative has been reported at the EFIC conference of 2015 in Vienna (1).
In the convention signed with the federal administration, several conditions and missions has been pointed out. A biopsychosocial approach of the patients was one of the main missions. However, the content, a model and the way of implementation was not described, resulting in an individual interpretation of each team or even each team member.
Methods: After 5 years of sustained activity, the guidance committee of the Federal administration investigates the way, the intensity and a possible structuralized model for the use of a biopsychosocial rehabilitation model in Belgian Multidisciplinary centers for the treatment of chronic pain. Therefore a questionnaire on the use of the BPS-scale (2) and the use of the ICF-model (3) are presented to the teams of those centers.
Results: Several regional and national initiatives with the biopsychosocial model as foundation are undertaken, such as case-management re-integration of chronically ill patients in the work environment financed by the regional government, rehabilitation tools proposed by the federal health care insurance. Therefore the results of this review are particularly interesting to substantiate these re-integration programs.
On the occasion of the EFIC conference in September 2019, the first results of this review will be presented.

PSYCHOLOGY

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SPATIAL ATTENTION CAN MODULATE THE DEVELOPMENT OF SECONDARY HYPERALGESIA

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Background and aims: Intense or sustained activation of peripheral nociceptors can induce central sensitization. This enhanced responsiveness to nociceptive input of the central nervous system manifests as an increased mechanical pain sensitivity that spreads beyond the site of injury (secondary hyperalgesia), and is thought to be a key mechanism in the development of chronic pain, such as persistent post-operative pain. It is increasingly recognized that emotional and cognitive factors can strongly influence the pain experience. Furthermore, through their potential effects on pain modulation circuits including descending pathways to the spinal cord, it has been hypothesized that they could constitute risk factors for the susceptibility to develop chronic pain. Here, we tested whether, in healthy volunteers, the experimental induction of central sensitization by peripheral nociceptive input can be modulated by selective spatial attention.

Methods: While participants performed a somatosensory detection task that required focusing attention towards one of the forearms, secondary hyperalgesia was induced at both forearms using bilateral and simultaneous high-frequency electrical stimulation (HFS) of the skin.
Results: HFS induced an increased sensitivity to mechanical pinprick stimuli at both forearms, directly (T1) and 20 minutes (T2) after HFS, confirming the successful induction of secondary hyperalgesia at both forearms. Most importantly, at T2, the HFS-induced increase in pinprick sensitivity as well as the area of secondary hyperalgesia was greater at the attended arm as compared to the non-attended arm.
Conclusions: This indicates that top-down attentional factors can modulate the development of central sensitization by peripheral nociceptive input.

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DO RELIGION AND SPIRITUALITY PLAY A ROLE IN FUNCTION, PAIN-RELATED BELIEFS AND COPING IN PATIENTS WITH CHRONIC PAIN? A SYSTEMATIC REVIEW

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Background and aims: This systematic review examined the extent to which Religiosity/Spirituality (R/S): (1) are associated with pain, function, pain-related beliefs (beliefs), coping responses and catastrophizing in people with chronic pain; and (2) moderate the association between beliefs, coping and catastrophizing, and pain and function.
Methods: Experimental and observational studies examining at least of the above mentioned research questions in adults with chronic pain were eligible. Two reviewers independently performed eligibility screening, data extraction, and quality assessment.
Results: Twenty-four studies were included. Most studies focused on the association between religiosity/spirituality and pain or function. When significant associations between religiosity/spirituality and psychological function were positive; and between religious/spiritual well-being and pain and physical function were negative, but weak. Few studies compared religious groups regarding criterion variables, and examined the associations between religiosity/spirituality and beliefs/coping/catastrophizing; none examined the moderation role of R/S.
Conclusions: Religiosity/spirituality are associated with pain and psychological function in people with chronic pain. Viewing oneself as being “spiritual,” regardless of religiosity and religious affiliation, are a useful resource for psychological adjustment. This suggests the need for considering the role of religiosity/spirituality on psychological adjustment in context of patient care. An improved understanding of the role that religion plays in the lives of individuals with chronic pain would be facilitated by (1) the development of a theoretical model informed by the findings from this review and (2) efforts to clarify and standardize definitions and measure of the key domains, ideally based on a theoretical model. PROSPERO registry CRD42018088803.

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BEHAVIORAL ACTIVATION AND INHIBITION SYSTEMS: FURTHER EVALUATION OF A BIS-BAS MODEL OF CHRONIC PAIN

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Background and aims: The role of the behavioral inhibition and activation systems (BIS and BAS) on function has been evaluated in a wide range of populations. However, research on the role of the BIS and BAS in pain is in its early stages. This study sought to evaluate the utility of a BIS-BAS model of chronic pain.
Methods: Participants were 164 individuals with chronic pain who responded to an online survey. Participants provided information about pain location, intensity and frequency and they completed questionnaires assessing behavioral inhibition and activation sensitivity, pain catastrophizing, pain interference, activity engagement, pain willingness, hope and pain self-efficacy. Six hierarchical regression analyses to test hypothesized associations between BIS and BAS sensitivity and measures of participant function were conducted.
Results: BIS scores were significantly and positively associated with pain catastrophizing and pain interference, and negatively associated with activity engagement, hope and pain self-efficacy (all *p*s < .01). BAS scores evidenced significant and positive associations with activity engagement and hope, and significant negative associations with pain catastrophizing (all *p*s < .05).
Conclusions: The findings support the utility of the BIS-BAS model to help better understand adjustment to chronic pain. The findings are consistent with the possibility that BIS and BAS activation systems may mediate the beneficial effects of pain treatment, and that treatments that reduce behavioral inhibition and increase behavioral activation may benefit individuals with chronic pain. Research to evaluate these possibilities is warranted.

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PEOPLE IN PAIN MAKE POORER DECISIONS

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Background and aims: The disruptive effect of pain on attending has been demonstrated with experimentally-induced pain, chronic pain, and transient pain such as headache. Research in this field has predominantly focused on the effects of pain on simple cognitive processes. Here, we aimed to examine the impact of pain on higher-level real-world cognitive tasks requiring attention, namely numerical reasoning and decision making, which have serious consequences if one gets them wrong.
Methods: In Study 1, 1322 participants completed two tasks online: choosing the best value-for-money deals for groceries, and a measure of decision outcomes over the previous 10 years. In Study 2, which was pre-registered, 44 healthy participants completed a grocery deals decisions task with and without pain experimentally-induced with a cold pressor.
Results: In Study 1, participants who were in pain during the study made more errors on the grocery deals decisions task than those who were pain-free. Participants with a recurrent pain condition reported more negative outcomes from their past decisions than those without recurrent pain. In Study 2, our pre-registered analysis showed that participants made more errors on the grocery deals decisions task while in pain than while pain-free.
Conclusions: Our data suggest that the disruptive effect of pain on attention translates into poorer decisions in more complex and ecologically valid contexts. Study 2 showed that the effect of pain on decision making was causal. Our findings show, for the first time, that the consequences of disruption by pain are not only attentional, but financial.

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STIMULUS CONTROLLABILITY CAN MODULATE THE INDUCTION OF HFS-INDUCED CENTRAL SENSITIZATION

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Background and aims: Central sensitization (CS) is a use-dependent synaptic plasticity often associated with chronic pain. Studies have shown that the intensity of pain perception and the magnitude of pain-evoked brain responses can be modulated by emotional and cognitive factors. Whether these factors may also affect the induction of CS and resulting hyperalgesia remains largely unknown. Behavioral control over pain has been shown to reduce pain perception. Here, we tested whether stimulus controllability modulates the experimental induction of CS by high frequency electrical stimulation (HFS) of cutaneous nociceptors, as evaluated by the measurement of secondary hyperalgesia.
Methods: HFS was applied to the left or right forearm of healthy participants in two sessions separated by >1 week (five 1-s trains of 100-Hz pulses, 20x detection threshold, inter-train interval: 15-20 s). In the 'control' session, participants self-administered HFS by pushing a button triggering each of the five trains. In the 'no control' session, HFS was delivered at the times corresponding to their delivery in the 'no control' session of another participant. The order of sessions was balanced across participants. The extent of HFS-induced CS and secondary hyperalgesia was assessed by measuring pinprick sensitivity at both forearms, before and 20 minutes after HFS.
Results: The increase in pinprick sensitivity at the HFS-treated forearm was significantly greater in the 'control' vs. the 'no control' sessions.
Conclusions: Although previous studies showed that self-administration of nociceptive stimuli reduces pain perception, our results indicate behavioral control over nociceptive stimulation paradoxically increases secondary hyperalgesia and probably CS.

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THE ROLE OF THE SOURCE OF SOCIAL INFORMATION IN THE FORMATION OF PLACEBO ANALGESIA

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Background and aims: The pain experiences can be modulated by information on how other people who underwent the same painful stimulation rated the intensity of pain. This study examined whether
1) information about pain ratings coming from a group of people will be more effective in shaping placebo analgesia than information coming from a single individual,
2) information about pain ratings coming from individuals previously observed in the same experimental situation will produce a stronger placebo effect than information coming from anonymous participants.
Methods: Participants were assigned to one of the four experimental groups or the control group. Participants from the experimental groups received information on how other people rated the intensity of pain stimuli. Their ratings were marked as bars on the VAS. The VASs presenting low pain ratings were displayed after the presentation of a white circle, while the VASs presenting moderate pain ratings were presented on the black background. Participants from the first and second experimental groups were presented with ratings of an individual, while participants from the third and fourth experimental groups were presented with ratings of a group of people. Participants from the second and fourth experimental groups had previously watched a recording showing individuals who provided pain ratings. Then participants rated the intensity of pain stimuli preceded by a white circle and delivered without any visual cues.
Results: The results will be presented on the poster.
Conclusions: This study allows learning more about the effect of social information concerning pain on individual pain perception.

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LONGER-LASTING PAINFUL ELECTRICAL STIMULATION PROVIDES EVIDENCE FOR DISSOCIATION OF PAIN INTENSITY VS. PAIN AVERSIVENESS

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Background and aims: Longer-lasting nociceptive stimulation is prerequisite for experimental studies trying to mimic clinical pain. The aim of this study was to test longer-lasting electrical stimulation with respect to stability of sensations.
Methods: 25 healthy volunteers received painful steady-state stimulation [1] for 4, 8, 16, or 32 seconds at two intensities. The lower intensity (I1) evoked a rating of 20 on a numeric rating scale (NRS) with 0 = no sensation, 50 = just painful, and 100 = most terrible pain during a testing phase (4 seconds stimulation); the higher intensity (I2) evoked a NRS rating of 60. Stimulation was applied via intracutaneous stimulation.
120 trials were applied to each subject during the main experiment, i.e. 15 trials per intensity and duration. Subjects reported overall intensity of pain and aversiveness of pain after each trial. NRS ratings are analyzed using repeated-measure ANOVAs with factors *Intensity* (I1 vs. I2) and *Time of stimulation* (4, 8, 16, 32 s).
Results: Results showed a main effect of *Intensity* both for intensity and aversiveness ratings. Interestingly, there was a significant main effect of *Time of stimulation* for aversiveness ratings, but not for intensity ratings. There were also interactions *Intensity* x*Time of stimulation* driven by an increase of ratings to I2 stimulations compared to I1 with increasing duration of stimulation.
Conclusions: Intensity vs. aversiveness ratings differ with increasing duration of stimulation. This is important for clinical pain research and for the search of biomarkers of pain.

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HOPE, ACCEPTANCE AND CHRONIC PAIN

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Background and aims: Research regarding the role of potentially protective factors - psychological strengths and resources such as hope, acceptance - in moderating the impact of chronic pain on function is limited. This study sought to understand the role of hope and acceptance as (1) predictors of function and (2) moderators of the association between pain intensity and function in adults with chronic pain.
Methods: Participants (N = 189) were a convenience sample of university students with chronic pain who completed measures of average pain intensity, pain frequency, pain interference, pain catastrophizing, depressive symptoms, hope, and both general and pain-specific acceptance. Correlation analyses and two hierarchical multiple regressions were performed to evaluate hope and acceptance as predictors of pain interference and depressive symptoms, as well as their moderating effects on the associations between pain intensity and these criterion variables.
Results: In univariate correlation analyses, hope and general acceptance were significantly and negatively associated with pain interference (*r*s = -.29 and -.44 [both *p*s< .01]) and depressive symptoms (*r*s = -.56 and -.54 [*p*s< .01]). In regression analyses, both hope and general acceptance made independent and significant contributions to the prediction of depressive symptoms (βs = -.36 [p < .001] and -.32 [*p* < .05], respectively), but not pain interference. No significant moderation effects were found.
Conclusions: Findings support the potential direct protective role of hope and general acceptance on psychological function in chronic pain. More effective pain interventions could potentially be developed targeting these factors in individuals with chronic pain.

SOCIETAL IMPACT

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PAIN ALLIANCE EUROPE (PAE) SURVEY ON CHRONIC PAIN AND WORK LIFE

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Background and aims: Having a job is often not only essential for people's social and economic security, but also important for one's life-fulfilment, self-esteem and personal development.
Social and economic insecurity affects many people, with serious consequences for their well-being, especially when their ability to work is compromised by having a disease such as chronic pain.
It is therefore valuable that this survey collected the experiences of people with chronic pain in relation to work and employment. Its aim is to empower people with chronic pain to participate in society, including work.
Methods:
· European-wide online survey
· Available in 16 languages to respondents in 20 countries from 01-03-2017 to 30/04/2017
· Sample population: chronic pain adult patients known in the registries of national patient organisations and charities, regardless of any underlying condition
· Data protection: consent requested, anonymous data
· Developed by patients, PAE members assisted by academic experts based on information from literature and existing questionnaires
· Data analysis by Prof. Nick Guldemond, Erasmus University Rotterdam, The Netherlands
Results: Descriptive statistics are presented for the 28 questions of the survey, addressing diagnosis, situation at work and impact of chronic pain on the financial situation.
4403 patients from 14 countries participated and only valid answers have been considered. The survey results are to be presented at the 11th EFIC Congress 2019.
Conclusion: The survey provides a valuable report on the impact of chronic pain on work capacity and employment, as perceived by chronic pain patients.

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THE IMPACT OF OSTEOARTHRITIS DISEASE SEVERITY ON CURRENT HEALTHCARE RESOURCE UTILISATION IN THE EU - RESULTS FROM A REAL-WORLD STUDY

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Background and aims: Osteoarthritis (OA) represents an increasing societal problem with pain and activity limitation leading to significant economic burden on healthcare services. This study aims to understand the pattern of healthcare resource utilisation (HCRU) across France, Germany, Italy, Spain and the UK (EU 5), as OA severity increases.
Methods: Data were drawn from the Adelphi OA Disease Specific Programme (2017-18), a point-in-time study of physicians and their OA patients in the EU 5. OA disease severity was reported by physicians, who categorised patients as mild, moderate or severe. Physicians provided information about OA-related visits to healthcare professionals (HCPs), tests/scans conducted, emergency room (ER) visits and surgeries. Descriptive statistics were

reported.
Results: The study included 4113 patients with OA: 25% mild (n=1035), 53% moderate (n=2197) and 21% severe (n=881). Over the last 12 months, mean number of consultations with HCPs increased with disease severity (3.7 mild, 4.1 moderate and 5.8 severe). This pattern was also observed in relation to the mean number tests/scans conducted in the last 12 months (7.4 mild, 8.3 moderate and 9.9 severe), the proportion of patients that visited the ER in the last 12 months (4%, 9% and 26% for mild, moderate and severe, respectively) and the proportion of patients that have had a surgery due to their OA (10%, 12% and 26% for mild, moderate and severe, respectively).
Conclusions: This real-world data demonstrates increased HCRU as OA disease severity increases. Novel therapies that improve OA symptom management may lead to significant resource savings.

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THE IMPACT OF OSTEOARTHRITIS DISEASE SEVERITY ON CURRENT HEALTHCARE RESOURCE UTILISATION IN JAPAN - RESULTS FROM A REAL-WORLD STUDY

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Background and aims: Osteoarthritis (OA) represents an increasing societal problem with pain and activity limitation leading to significant economic burden. This study aims to understand the pattern of healthcare resource utilisation (HCRU) in Japan as OA severity worsens.
Methods: Data were drawn from the Adelphi OA Disease Specific Programme (2017-18), a point-in-time study of physicians and their patients in Japan. OA disease severity was categorised as mild, moderate or severe by physicians who provided information about OA-related outpatient visits, scans (x-ray, MRI, CT), emergency room (ER) visits and surgeries. Descriptive statistics were reported.
Results: The study included 393 patients with OA: 41% mild (n=160), 50% moderate (n=196) and 9% severe (n=37). Over the last 12 months, mean number of outpatient visits by disease severity was 8.3, 12.2, and 11.9 for mild, moderate, and severe, respectively. A trend associated with severity was observed in relation to the mean number of imaging scans conducted (1.4 mild, 1.9 moderate and 2.3 severe), and the proportion of patients undergoing surgery for their OA (3%, 3% and 11% for mild, moderate and severe patients, respectively) in the last 12 months. The proportion of patients visiting the ER was consistent across severity categories (2%, 2% and 3% for mild, moderate and severe patients, respectively).
Conclusions: This real world study on patients with OA in Japan demonstrates an association of higher HCRU with increasing OA disease severity. Novel therapies that improve OA symptoms among patients with severe OA could lead to more efficient use of healthcare resources.

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AGEING AND SOCIETY: WHAT DOES THE RESEARCH LITERATURE ARTICULATE ABOUT INFORMAL CARERS' EXPERIENCES WHO PROVIDE SUPPORT FOR OLDER FAMILY MEMBERS LIVING WITH CHRONIC PAIN?

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Background and aims: The World Health Organisation predicts those aged 65 years and above will reach approximately 2 billion by 2050. For many older adults with increased health and social care needs, the responsibility for care is typically placed on family/informal carers who provide vital, albeit an unpaid contribution to maintain the older person's well-being. This can result in carers taking periods of time away from paid employment, early retirement and/or experiencing ill health themselves. This paper will present carers' voices in supporting older adults in chronic pain and to ways in which to best support carers in these roles.
Methods: Five major databases were searched using key terms (2009-2018) to identify empirical research focused on informal caregivers who support older family members living with chronic pain. Titles and abstracts were reviewed independently according to defined criteria.
Results: 149 papers were identified, resulting in 98 after removing duplications, with a final sample of 10 papers meeting inclusion criteria. Findings indicate:
· Chronic pain is a shared experience between patient and carer
· Carers can act as proxies in symptom assessment-sometimes better than health care professionals
· Holistic pain assessment in dementia
· Fundamental lessons from palliative care
· Training for health professionals.
Conclusions: Informal carers are fundamental to caring for older family members living with chronic pain. Untreated pain is a cost to the older person and their carer. Holistic interventions need to be developed to support carers in these roles and help reduce the impact on their everyday lives.

CLINICAL DIAGNOSTICS FOR THE ASSESSMENT OF PAIN

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DIFFERENCE IN THE IMPACT OF CENTRAL SENSITIZATION ON PAIN-RELATED SYMPTOMS BETWEEN PATIENTS WITH CHRONIC LOW BACK PAIN AND KNEE OSTEOARTHRITIS

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The aims of present study were to investigate whether the association between the Central Sensitization Inventory (CSI) score and pain-related symptoms differed by disease (Low back pain: LBP vs Knee osteoarthritis: KOA), and to determine optimal cutoff scores for the CSI for identifying the severity of pain-related symptoms reflecting disease-specific characteristic.
One hundred and four patients with LBP and 50 patients with KOA were recruited. CSI, health-related quality of life (EuroQol 5-dimention: EQ-5D), pain intensity and pain interference (Breif pain inventory: BPI), widespread pain (widespread pain index: WPI), pressure pain threshold (PPT), and temporal summation (TS) were assessed and compared between the LBP and KOA groups. Univariate correlation analysis was performed in each group. The receiver operating characteristic (ROC) curve analysiswere performed to identify 1) presence/absence of CS, 2) presence/absence of CSSs, and 3) pain intensity and pain interference in each group.
The CSI and WPI scores were significantly higher in the LBP group than in the KOA group. EQ-5D and pain interference scores significantly correlated with the CSI score in both the LBP and KOA groups. The suggested cutoff scores were 28 in the LBP group and 17 In the KOA group to identify presence or absence of CSSs, and 34 in the LBP group and 18-19 In the KOA group to identify pain severity.
Our results suggest that we should use the appropriate cutoff scores for the purposes and consider the difference in the impact of CS on pain by patient group.

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MODALITY-SPECIFIC EVOKED POTENTIALS

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Background and aims: In the past years diverse electrophysiological procedures for measuring every nerve fiber function were developed. Several of them like somatosensory evoked potentials (SEPs) for touch fibers or laser-evoked potentials (LEPs) for nociceptive fibers are already in clinical use. Other methods like cold-evoked potentials (CEPs) or pinprick-evoked potentials (PEPs) are exclusively applied for research. The aim of our study is the electrophysiological measurement of all known nerve fiber functions using evoked potentials. Therefore we are applying different stimuli and comparing their central processing by EEG-based potential analysis.
Methods: For our study 20 subjects will be tested. Diverse applied evoked potentials will be compared concerning latency and amplitude. During the experiment, an EEG will be recorded. Subsequent muscle and blink artefacts will be adjusted.
Results: The preliminary data shows that for instance touch evoked potentials could be a noninvasive alternative for dermatomal somatosensory evoked potentials (SEPs) with fast latency and higher amplitudes.
Conclusion: Modality-specific evoked potentials are able to measure all kinds of nerve fibers. The results could be a foundation for creating a modality-specific measurement report which could be used in the diagnostics of neurological disease with sensory deficits.

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A NOVEL METHOD FOR ASSESSMENT AND CHARACTERIZATION OF PANCREATIC PAIN

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Background and aims: Pain is a common problem in patients with chronic pancreatitis and effective therapy remains challenging. The aim of this study was to present a simple and clinically feasible method for characterization of pancreatic pain based on quantitative sensory testing (QST) and to derive adult normative reference values to facilitate its clinical implementation.
Methods: This was a cross-sectional, multicenter study of 122 healthy subjects with equal gender distributions across different age groups. We recorded pain detection thresholds (PDTs) to muscle pressure stimulations at pancreatic dermatomes and three control areas. The ratio between pancreatic and control PDTs were calculated (PDT-index) to offset inter-individual differences. The PDT-index was used in conjunction with repetitive pinprick stimulations (temporal summation), applied at the abdominal pancreatic dermatome, to obtain a measure of segmental hyperalgesia. Conditioned pain modulation (CPM) paradigm was performed to investigate descending pain modulation. The effect of age and gender on QST assessment parameters were investigated using regression models and normative reference values were derived.
Results: No age or gender effects were observed for the primary QST assessment parameters. Absolute PDTs were region specific and significantly lower in women than men ($p < 0.05$). PDT-index < 0.75 or temporal summation score

≥4 indicated segmental hyperalgesia. CPM effect < 15.2% indicated impaired descending pain modulation.
Conclusion: We have developed normative reference values for a clinically feasible test for the characterization of pancreatic pain in adult patients. Application of this standardized QST protocol in patients will allow providers to infer mechanisms of underlying pain modulation.

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IS THE GRADE OF THERMAL PAIN SENSITIVITY LINKED TO FUNCTIONAL STATUS IN PATIENTS WITH FIBROMYALGIA?

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Background and aims: Our aim was to evaluate associations between thermal pain thresholds, functional outcomes and fibromyalgia symptoms.
Methods: We included 56 patents who fulfilled the 2016 revised diagnostic criteria for fibromyalgia. They completed the PainDETECT questionnaire. Functional status was assessed using the 6-minute walk test (6MWT) and the Berg balance scale (BBS). Quantitative sensory testing was performed to measure thermal pain thresholds. To summarise pain sensitivity, standardised deviates were computed and then combined for each measurement spot and averaged across the four measurement spots. Associations were assessed using Pearson and Spearman correlation. Multiple regression models were fitted to assess the association of functional status and fibromyalgia measures with thermal pain thresholds adjusted for age and sex.
Results: Different measures of functional status and fibromyalgia were moderately correlated among themselves ($p < 0.001$). No correlation of functional status measures with fibromyalgia measures was statistically significant (unadjusted $p>0.05$). The observed associations with pain thresholds and regression coefficients showed the same pattern; the correlations were near-zero. The regression model for average standardised cold pain threshold indicated higher WPI scores and lower SSS scores to be associated with higher cold pain thresholds when considering all other factors constant. The regression model for average standardized hot pain threshold indicated worse 6MWT results, higher BBS scores, higher WPI scores and lower SSS scores to be associated with lower hot pain thresholds.
Conclusions: There is no clear and simple association between functional status, severity of fibromyalgia and cold and hot pain threshold among fibromyalgia patients.

DIAGNOSIS AND MEASUREMENT IN PAIN WALK 2

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PREDICTION OF POSTOPERATIVE PAIN AND OPIOID EFFECT BY PSYCHOLOGICAL PARAMETERS AND INTRAOPERATIVE MEASURES OF NOCICEPTION

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Background: Postoperative pain intensity and opioid requirements are highly variable. This study was performed to evaluate if measures of nociception, obtained during anaesthesia at the end of surgery, may predict acute postoperative pain and opioid consumption. In parallel, the influence of psychological factors on these outcomes was assessed by a preoperative assessment.

Methods: This prospective observational study included 100 patients scheduled for gynaecological laparoscopic surgery. The preoperative psychological assessment included: HADS, BDI, PCS, STAI, and the "pain sensivity questionnaire". Anaesthesia was performed with a fixed target concentration of 0.2 ng/ml sufentanil and propofol titrated to BIS (40-60). At the end of surgery, nociception was assessed by measuring nociceptive reflex threshold NRT, pupillary dilatation reflex index PPI, and the "analgesia nociception index ANI" derived from the ECG. Outcomes were instant pain after surgery, respiratory depression, and morphine consumption as well as pain intensity during the first 24h postoperatively.
Results: Some of the measures of nociception weakly correlated with pain on arrival in the recovery room (ANI, NRT) and time to spontaneous respiration (ANI), but none with morphine consumption or pain intensity at later timepoints. In contrast, these latter outcomes were correlated with several parameters of the preoperative psychological assessment (anticipated pain intensity, pain sensitivity questionnaire score, anxiety score).
Conclusions: Intraoperative measures of nociception during sufentanil-propofol-anaesthesia do not yield usable information about postoperative opioid requirements and pain intensity beyond the time immediately after arousal from anaesthesia. These outcomes are better predicted by a preoperative psychological assessment.

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INVESTIGATING THE EFFECT OF PRIMING WITH HEAT AND CAPSAICIN ON THE DEVELOPMENT OF HYPERALGESIA TO HIGH FREQUENCY ELECTRICAL STIMULATION

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Background and aim: Heat/capsaicin application and high frequency electrical stimulation (HFS) are well known methods to induce secondary hyperalgesia. The aim of this study was to investigate the development of secondary hyperalgesia to HFS in healthy subjects after priming the central nervous system with heat/capsaicin application.
Methods: The heat/capsaicin application composed of 45 °C heat stimulation for 5 min followed by a topical capsaicin patch (Qutenza 8%, 4x4cm) for 30 minutes, was delivered on the volar forearm of five healthy subjects. HFS (100 Hz, 5 times 1s, minimum 1.5 mA) was subsequently delivered with a transcutaneous pin electrode 1.3 cm proximal to the heat/capsaicin application. Mechanical pinprick stimuli (weights: 12.8 g and 25.6 g) were applied onto a 1x4 cm area located between heat/capsaicin and HFS applications. Sensation to pinprick stimuli were rated on a numerical rating scale (NRS, 0 = zero sensation, 5 = pain threshold and 10 = worst pain) at baseline, after heat/capsaicin, and after HFS.
Results: Preliminary results indicated trending increase in NRS ratings after heat/capsaicin compared to baseline (repeated measures ANOVA, $p = 0.154$, sidak adjustment). Significant increases in NRS ratings were observed after HFS delivered onto the heat/capsaicin sensitized skin compared to baseline at 10-, 20-, and 30 min after HFS ($p < 0.05$).
Conclusion: The combined application of heat/capsaicin and HFS induced robust secondary hyperalgesia. This method could be considered to model hyperalgesia in a pre-sensitized system.
Acknowledgement: Center for Neuroplasticity and Pain (CNAP) is supported by the Danish National Research Foundation (DNRF121).

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DIFFERENCE IN EXERCISE-INDUCED HYPOALGESIA AFTER 3-MINUTE ISOMETRIC WALLSQAUT EXERCISE IN SUBGROUPS OF HEALTHY SUBJECTS

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Background and aims: Exercise-induced hypoalgesia (EIH) is a measure of descending pain inhibition and can be assessed as the change in pain sensitivity after exercise. The detection of impaired EIH in individual subjects is of potential importance to understand pathophysiology and predict clinical outcomes. This study aimed to investigate if 1) EIH could be elicited in healthy subjects at the beginning of their military training, and if
2) differences in subgroups exists regarding the EIH-response.
Methods: In 40 recruits (average age 21; BMI 23; 15 women) pressure pain thresholds (PPTs) at m. quadriceps femoris (QF) and m. deltoideus (DE) before and after 3-minute isometric wallsquat were assessed. EIH was calculated as relative change in PPT. Two groups were defined based on a hyperalgesic (EIH≤0.0%) or hypoalgesic (EIH>0.0%) EIH-response at QF.
Results: Significant higher PPTs were observed after the wallsquat at QF with an average increased PPT by 11% ± 3% ($P< 0.05$), while no significant increase was observed at DE (5% ± 4%, P>0.05). The hypoalgesic group (75% subjects) showed significant higher EIH-response when assessed at DE compared with the hyperalgesic group ($P< 0.05$). Finally, in the pooled data, the EIH-responses at QF and DE were significantly associated ($R>0.3$, $P< 0.05$).
Conclusions: EIH could be elicited when assessed locally. Pain facilitation rather than inhibition after the exercise condition occurs in some healthy subjects and may not necessarily represent an abnormal finding. Subjects with a local hypoalgesic response was more likely to respond with a systemic hypoalgesic EIH-response.

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CENTRAL ASPECTS OF PAIN IN THE KNEE (CAP-KNEE) QUESTIONNAIRE FOR ASSESSING CENTRAL MECHANISMS IN PEOPLE WITH KNEE PAIN

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Background and aims: Knee pain originates in the knee, but central mechanisms create discordance between pain and joint pathology. Experimental and clinical markers of central pain mechanisms associate with 8 self-report traits of Neuropathic-like pain, Fatigue, Cognitive impact, Catastrophizing, Anxiety, Sleep disturbance, Depression, and Pain distribution. This study sought to develop a validated 8-item measure - the Central Aspects of Pain in the Knee (CAP-Knee) questionnaire - addressing these 8 self-report traits linked to markers of central pain mechanisms.
Methods: Cognitive interviews across individuals with knee pain (n=22) validated participant interpretation of CAP-Knee items. Psychometric properties were assessed in 250 community-based individuals with knee pain, of whom 76 completed the scale twice over one month to measure repeatability.
Results: Participant interpretation of CAP-Knee items was closely aligned to their intended meaning. CAP-Knee displayed a wide range of scores across the study population (median 8, range 0-24). Internal consistency was acceptable ($\alpha = 0.75$) and test-retest reproducibility excellent (ICC=0.91, 95% CI, 0.86-0.94). In confirmatory factor analysis, all CAP-Knee items contributed significantly (item loading range = 0.21-0.92; $p< 0.01$) to one distinct factor

(CFI = 0.99; TLI= 0.98; X^2(df)=37(20); RMSEA= 0.06). Rasch analysis showed that the scale targeted the knee pain population well and constituted a unidimensional scale. Fit to the Rasch model was improved by item rescoring.
Conclusions: CAP-Knee is a simple and valid 8-item self-report questionnaire which may serve as a prognostic and stratification tool for treatments that target central pain mechanisms in individuals with knee pain.

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DO PHYSICAL ACTIVITY LEVELS PREDICT THE EFFICACY OF CONDITIONED PAIN MODULATION? RESULTS FROM A CROSS-SECTIONAL STUDY IN HEALTHY INDIVIDUALS

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Background and aims: Whereas literature on the association between physical activity and pain sensitivity is well depicted, research into the association between physical activity and conditioned pain modulation (CPM) is less extensive. A limited amount of studies suggest an association between physical activity and CPM efficacy. However, these results await confirmation using objective physical activity measures. This study sought to determine the predictive relationship between physical activity and variation in CPM in 105 healthy adults.
Methods: Physical activity levels were assessed during 7 days using the International Physical Activity Questionnaire and accelerometry. CPM was examined through a heterotopic noxious conditioning stimulation protocol which assessed the effect of a hot water conditioning stimulus on pressure pain thresholds. The predictive relationship between physical activity and CPM was explored using hierarchical regression analysis.
Results: The CPM magnitude was positively correlated with the physical activity levels. Higher self-reported levels of moderate physical activity (e.g. cycling < 16km/h) significantly predicted greater CPM magnitude. When the number per steps per day, as registered with accelerometry, was ≥10.000 (= active) or ≥12.500 (= highly active) this significantly predicted more efficacious CPM.
Conclusions: As physical activity levels influence CPM efficacy, they should be taken into account as a confounding factor when examining CPM. Additionally, physical activity might be useful in the treatment of chronic pain patients in whom dysfunctional CPM is established. Performing activities of moderate intensity and walking are achievable for such patients and might have the capability to indirectly improve CPM and reduce or prevent pain.

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VERY-EARLY ACUTE CLINICAL PAIN, PSYCHOPHYSICAL PAIN SENSITIVITY AND PSYCHOLOGICAL DISTRESS CAN PREDICT PAIN BEHAVIOR IN MTBI POST-COLLISION PATIENTS AT ONE-YEAR POST-INJURY

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Background and aims: 12-month post-accident pain distribution demonstrates that although 60% of individuals are entirely pain-free, above 70% of painful individuals report moderate-severe levels (≥50), creating “all or nothing” pain dichotomy, one not seen at baseline.
Study aim - to determine if very-early acute pain-related personality features, pain modulation profile and clinical factors can explain this dichotomy.
Methods: 117 post-MVC mTBI patients were recruited and followed for 1-year. Patients split into 4 groups based on 12m pain levels in head and/or neck: (1) 0,0 (2) 1-49 in one or both (3) ≥50 in one (4) ≥50 in both sites
Head pain, neck pain, number of painful body areas; static and dynamic QST measures, and questionnaires

compiled within 72h post-accident. Pain scores collected again at 12m.
Linear correlation performed for all groups, Mann-Whitney U Test performed between groups 1 and 4 to find explanatory factors for edge-group behavior.
Results: Linear correlation found for painful body areas (2.92±1.3, 2.85±1.2, 3.47±1.9, 3.82±1.2; p=.004), head (43.75±30.6, 39.9±20.8, 51.0±32.1, 67.6±25.0; p= .001) and neck (49.0±30.0, 48.1±25.5, 57.1±30.2, 67.9±24.1; p=.006) pain, and pain50 temperature(45.6±3.2, 45.0±3.6, 44.4±3.2, 43.7±3.0; p=.018) and a trend for pressure-pain-threshold (3.3 ±2.0, 3.1±2.1, 2.9±1.4, 2.4±1.2; p=.054).
Mann-Whitney found significant differences in: painful body areas (p=.004), head (p=.002) and neck (p=.014) pain, pain50 (p=.005), PPT (p=.032), depression (p=.020), and stress (p=.038).
Conclusions: Higher clinical pain, pro-nociceptive pain behavior, and psychological distress at baseline can predict pain non-recovery at 12m post-injury.
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ENHANCING THE PERCEPTION OF PAIN USING VIRTUAL REALITY: A PRELIMINARY REPRODUCIBILITY STUDY

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Backgrounds and aims: The perception of pain is a complex combination of neurological, physiological, and psychological factors. To study the effects of analgesics on the nociceptive part of pain, the Centre for Human Drug Research developed a battery of pain-tasks. While the PainCart demonstrates effects of analgesics on nociception, a method to study affective components is lacking. A method which might help studying the affective component is to enhance the perception of a pain stimulus by using Virtual Reality (VR). We recently performed a preliminary study where subjects showed a small decrease in the pain tolerance threshold when presented with additional visual and auditory stimuli related to the stimulus strength. Here, we present these results and preliminary results of a reproducibility study.
Methods: 10 subjects will be included for the reproducibility study. The pain detection and tolerance threshold to electrical stimuli will be measured several times, and during multiple VR conditions. The conditions are (1) without VR, (2) with VR, but without additional visual and auditory stimulation, and (3) with VR and with additional visual and auditory stimulation.
Results: Preliminary results showed that the perception of pain was modulated when presented with VR and additional visual and auditory stimulation. Moreover, we present the results for the reproducibility in terms of ICC and CV.
Conclusions: Based on the available preliminary data, we present a method which temporarily enhances the perception of pain. While the effect is relatively small, this method might prove useful for future studies investigating the effects of analgesics.

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RELIABILITY ASSESSMENT OF THE CONDITIONED PAIN MODULATION PARADIGM WITH A CONTACT HEAT AS A CONDITIONING STIMULUS

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Background and aims: The objective of this study was to assess the ability and reliability of the contact heat applied to the forearm to produce conditioned pain modulation (CPM) phenomenon in a healthy population.
Methods: The study included 33 healthy subjects (mean age 25,73±5,35 years). Contact head applied via thermode on the forearm was used for the conditioning stimulus (CS). Pressure pain threshold (PPT) and heat pain threshold (HPT) were used as test stimuli at the paravertebral muscles of the lower back. CPM effect was calculated as a difference between pain thresholds after and before CS where positive results indicated pain inhibition, while negative results indicated pain facilitation. The retest was performed after two weeks in order to investigate the reliability of the CPM paradigm for both test stimuli.
Results: Differences between PPT and HPT measured after and before CS were significant (101,63±45,21 N/cm^2 vs 82,15±36,15 N/cm^2, t=-7,528, p< 0,001 and 47,08±2,19 °C vs 45,00±3,05°C, t=-6,644, p< 0,001) and indicated significant pain inhibition. Retest assessment showed good reliability for the PPT (ICC=0,636, 95%CI 0,240-0,825) while it was fair for the HPT (ICC=0,435, 95%CI -0,070-0,713).
Conclusion: Contact heat applied via thermode is able to trigger CPM, for both heat and pressure painful stimulus applied in the low back region. In this manner, we achieved fair to good reliability for heat and pressure painful stimuli, respectively.

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PAIN REPORTING ACCURACY AND PAIN RELATED PSYCHOLOGICAL FACTORS

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Background: Good clinical care relies on precise evaluation of patients´ conditions. We have recently developed the Focused Analgesia Selection Task (FAST), a method aimed to assess pain-reporting accuracy. The aim of the current investigation was to examine possible associations between pain-related psychological factors and pain-reporting accuracy.
Methods: The FAST is based on subjects´ pain reports in response to repeated administration of thermal noxious stimuli of various intensities. Performance in the FAST is based on relations between stimuli intensities and pain reports, quantified by R^2, Inter-class-correlations (ICC), and coefficient of variance (CoV). All subjects completed the Pain Sensitivity Questionnaire (PSQ), the Life Orientation Test-Revised (LOT-R) and Pain Catastrophizing Scale (PCS). Spearman's correlations were used to assess relations between measures.
Results: Seventy-five healthy subjects (18-53 YO, 39 F) completed the FAST. FAST R^2 positively correlated with the PSQ moderate sub-scale (r= 0.319, P=0.026). FAST ICC trended to negatively correlate with LOT-R optimism sub-scale (r=-0.215, P=0.06). When splitting the group by R^2 median, the high accuracy group (high R^2), are significantly more sensitive as assessed by the PSQ in both moderate and total sub-scales (Mann-Whitney, P=0.004, P=0.03 respectively). When splitting the group by FAST ICC median, the high accuracy group (high ICC), trended to less optimism as assessed by the Lot-R in both optimism and total sub-scales (Mann-Whitney, P=0.08, P=0.09, respectively).
Conclusions: Preliminary results suggest that accuracy of pain reports is associated with the pain sensitivity and optimism, such that the more accurate the person is, the higher his sensitivity, and less optimistic.

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MEASUREMENT PROPERTIES OF PATIENT-REPORTED UNIDIMENSIONAL PAIN INTENSITY SCALES USED IN ADULTS WITH CHRONIC PAIN - A SYSTEMATIC REVIEW

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Background and aims: Pain intensity has been recommended as a core outcome domain to be evaluated in each (chronic) pain trial, especially the Numerical Rating Scale-11 (NRS-11. Aim of this study is to provide the missing evidence regarding the measurement properties of unidimensional pain intensity scales.
Methods: In bibliographic databases (Medline, Embase, up to 9/2017) searches were performed on studies on measurement properties of unidimensional pain intensity scales, added by hand search. The quality of all eligible studies was assessed independently by two reviewers with the COSMIN "Risk of Bias Checklist". An evidence synthesis summarizing findings from different studies proposed by the COSMIN group was applied.
Results: 22 publications reporting on 6 pain intensity scales (NRS, VRS, VAS, Thermometer, and pain severity subscale of the Brief Pain Inventory) were included. Scales are very heterogeneous, not one was applied in the same way. The majority of the studies evaluated more than one scale but no study assessed all applicable measurement properties for a single scale as described in COSMIN guidelines. All studies were classified as having inadequate to adequate methodological quality. All scales presented inconsistent or indeterminate evidence for construct validity, test-retest reliability, measurement error and responsiveness. The study which assessed content validity highlights the limited comprehensibility of the NRS.
Conclusions: Based on the recent evidence on measurement properties, no scale can be recommended for use in adults with chronic pain. For pain-specific core outcome sets, caution is advised when recommending pain intensity as an outcome domain.

INSTRUMENTS FOR THE ASSESSMENT OF PAIN

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DIGITAL MAPPING AND TRACKING OF PAIN INTENSITY, DISTRIBUTION AND QUALITY FROM HOME IN PATIENTS WITH CHRONIC PAIN: PRELIMINARY INSIGHTS

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Background and aims
Changes in the spatial distribution of pain may provide insight into the trajectory of patients' conditions. This study aimed to map and track changes of pain intensity, distribution, and quality over time using a cloud-based digital mapping software.

Methods
Chronic spinal pain patients (N=87) participated in an online observational study where they submitted a weekly pain report for 12-weeks. Pain reports consisted of digital pain drawings detailing the quality, spatial distribution and pain intensity on a pseudo-3D digital avatar. Patient demographics, disability (Oswestry/Neck Disability Index) and pain catastrophizing scale (PCS) questionnaires were completed at baseline.

Results
Patients (26 male, 52.3±13.4-year-old, pain duration 8.5±7.1 years) submitted a total of 3,863 pain reports (59±66 per patient). Patients reported PCS of 22.3±12.4, and 64% of patients reported moderate to severe disability. Usual (5.4± 2.5) and current (5.9± 2.6) pain intensity weakly correlated with the total area of pain distribution (r_s=0.23 and r_s=0.25, respectively, $p< 0.001$). The most frequently reported pain qualities were "pain" (43.5%) and "dull aching" (19%). Additionally, the greatest pain area distribution was reported as "pain" and "dull aching". Pairwise comparisons showed fluctuations (increase/decrease) ($p< 0.05$) in usual pain intensity and total area of pain distribution over the 12-week period.

Conclusions
This is the first study to capture fluctuations in pain intensity and distribution digitally from home, over an extended period. Digital pain mapping and tracking reveals complex, multidimensional changes over time. These changes require new methods for analyses, and may provide valuable clues towards better pain assessment.

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WITHIN-SUBJECTS VARIABILITY OF PAIN INTENSITY REPORTS AND VARIABILITY OF REPORT OF OTHER BODILY SENSATIONS IN DANCERS

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Background: Previous studies showed that in healthy populations, within-subjects variability of pain report is not related with the variability of other bodily sensation reports. However, it is still unclear if in populations with higher awareness of their body, such as dancers, relations between variability in different sensory modalities can be found. The aim of the current study was to assess if in dancers there are relations between variability in pain and in variability in reporting other sensory modalities, as heartbeat and taste.
Methods: Pain variability was assessed using FAST, a procedure based on the induction of thermal noxious stimulus of different intensities. Taste variability was assessed exposing individuals to salty and sweet solutions of different intensities. Interoception was assessed through the Heartbeat Perception Task and the Multidimensional Assessment of Interoceptive Awareness. Pain threshold and tolerance, psychological characteristics, measured by the Perceived Stress Scale, Self-Consciousness Scale and Hospital Anxiety and Depression Scale, and memory performance were also assessed.
Results: Thirty-three dance students completed the study. Results showed significant relations between variability within the same modality, taste (Spearman's r=0.508, P=0.003), and between FAST and sweet taste (Spearman's r=0.356, P=0.042). No other between-modalities relations were found. Duration of dancing practice was related to lower within-subject variability in pain (Spearman's r=0.447, P=0.009).
Conclusion: Variability of bodily signals is mostly a within-modality characteristic, but further studies are needed to fully understand how practice could impact the variability of reporting different sensorial modalities.

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SENSORY-AUTONOMIC INTERACTION: A READOUT OF CENTRAL SENSITIZATION

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Background and aims: Central sensitization is a major factor contributing to the development and persistence of neuropathic pain. The lack of quantitative measures to objectively assess sensitization hampers the development of effective treatment options. As hyperexcitability is observed in both somatosensory and autonomic nervous systems, the aim was to investigate modulation of sensory-autonomic interactions in response to noxious pinprick stimulation after experimentally induced central sensitization.
Methods: Twenty healthy individuals underwent 3 blocks of 15 pinprick stimuli (256mN) to the volar forearm before (PRE) and after (POST) an experimental and control intervention, separated by 2 weeks. A repetitive phasic heat pain model was applied to induce secondary hyperalgesia to pinprick in the experimental, but not in the control intervention. The adjacent skin was stimulated to capture the effect of experimentally induced central sensitization on PEP and sympathetic skin response (SSR) habituation. QST was performed prior to the PRE and POST condition.
Results: PEP amplitudes (p=0.003) and pain ratings (p=0.0004) to pinprick were increased in the area of secondary

hyperalgesia, whereas no changes were observed in the control intervention. PEP habituation from the PRE to the POST assessment did not differ between the experimental and control interventions. Preliminary analysis showed increased amplitudes and reduced habituation of SSR.
Conclusions: PEP amplitudes in combination with SSR habituation may represent a useful tool to objectively quantify mechanical hyperalgesia in experimentally and pathology-induced central sensitization. This approach might contribute towards a comprehensive phenotyping of neuropathic pain patients and ultimately provide mechanism-based treatment options.

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DO WE NEED TELEMONITORING IN CHRONIC PAIN? A RANDOMIZED CONTROLLED TRIAL COMPARING A PAIN APP WITH AND WITHOUT CLINICAL ALARMS

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Background and aims: Ecological momentary assessment (EMA) using smartphone apps has been argued to be the gold standard monitoring method in chronic pain. It is unclear, however, whether assessment only or more sophisticated features are required to make EMA with apps relevant in pain practice.
Method: In this randomized controlled trial, we compare the utility of two app features: i) daily assessment only (EMA condition, *n*=34), to control for the placebo effect of reporting outcomes daily, and ii) daily assessment including an alarm system that informs physicians when a clinically relevant event occurs (i.e., pain severity and interference remain high despite treatment; EMA+alarm condition, *n*=41). Study duration was one month. All patients received the usual treatment for their pain. However, patients in EMA+alarm condition also received phone calls in the presence of an alarm, which could lead to changes in their treatment.
Results: A clinically significant change (CSC; >30% reduction) in pain intensity and pain interference on daily activities occurred, respectively, in 23.5% and 14.7% of patients in the EMA only condition. In the EMA+alarm group, percentages increased to 31.7% for pain severity and 26.8% for pain interference. Response rates were high and similar for the EMA (81.1%) and EMA+app conditions (82.6%).
Conclusions: Results are encouraging and suggest that the use of an app with clinical alarms (i.e., telemonitoring) might benefit patient outcomes. Another important finding was that EMA via app appears to be feasible, as revealed by high response rates, which should encourage its use in routine care.

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TEST-RETEST RELIABILITY AND CONSTRUCT VALIDITY OF THE OPTIMAL SCREENING FOR PREDICTION OF REFERRAL AND OUTCOME YELLOW FLAGS (OSPRO-YF) IN PATIENTS WITH SHOULDER PATHOLOGY

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Background and aims: Psychosocial factors such as negative attitudes and beliefs, depression and anxiety are associated with increased disability and less work productivity. The purpose of this study was to examine the reliability and construct validity of a recently developed screening tool, the Optimal Screening for Prediction of Referral and Outcome (OSPRO) which incorporates multiple psychosocial factors in one questionnaire.
Methods: This was a case-control study. The study group involved injured workers with an active compensation

claim for a shoulder injury. The control group was comprised of patients without a work-related shoulder injury. We examined reliability (internal consistency, test-retest) and validity (factorial, convergent and known-group). The Hospital Anxiety and Depression Scale (HADS), the QuickDASH and the short Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ-10) were used for comparison.
Results: Data of 240 patients (80 cases, 160 controls), mean age=51(12), 93 (39%) females, and 147 (61%) males were analyzed. The test-retest reliability was moderate to perfect for 10 items with high (>0.80) Cronbach Coefficient Alphas. The 10-item OSPRO-YF questionnaire had three distinct domains as conceptualized by the developers. The associations between the items and the similar theoretically derived scales were moderate to high and in the expected direction. All items of the OSPRO-YF were able to differentiate between patients with and without the work-related compensation (p values ranging from 0.028 to < 0.0001).
Conclusions: The 10-item OSPRO-YF demonstrated acceptable test-retest and internal consistency, reliability and factorial, convergent and known-group validity and may enhance identification of individuals at risk for pain-related psychological distress.

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CAN PEOPLE WITH CHRONIC NECK PAIN RECOGNISE THEIR OWN DIGITAL PAIN DRAWING?

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Aim: We investigate whether people with chronic neck pain (CNP) can recognise their own pain drawing (PD) in order to support the validity of the PD in reporting the experience of pain. Moreover, we examined the association between their ability to recognize their own PD with their extent of psychosocial and somatic features.
Methods: Individuals with CNP completed their PD on a digital body chart, which was then automatically modified with a range of distortions using a novel software. A series of 20 PD were then presented to each participant in a random order, with only two being their original PD. For each PD, the participants rated its likeness to their own original PD on a scale from 0 to 100 with 100 representing ‘this is my pain’.
Results: Overall, the participants rated their original PD with a median score of 92% similarity, followed by 91.8% and 89.5% similarity when presented with a PD scaled down to 75% and scaled up by 150% of the original size respectively. The PD with horizontal translation by 40 pixels (8%) and vertical translation by 70 pixels (12.8%) were rated as the most dissimilar to their original PD. Spearman’s correlation coefficient revealed a significant negative association between their ability to recognise their original PD and their Modified Somatic Pain Questionnaire scores.
Conclusion: People with CNP are generally able to identify their own PD but that their ability to recognise their original PD is negatively correlated with the extent of somatic awareness.

MEASUREMENT OF PSYCHOSOCIAL ASPECTS OF PAIN

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TWO PORTUGUESE BRIEF VERSIONS OF RELIGIOSITY MEASURES APPLIED IN A SAMPLE OF PORTUGUESE PATIENTS WITH CHRONIC PAIN

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Background and aims: Spirituality and religiosity (S/R) are universal aspects of human experience that have both benefits and costs on quality of life, well-being and health. Previous research with people with chronic pain supports the beneficial effects of R/S, as R/S are associated with lower pain and better psychological function. Brief, valid and reliable measures of S/R, and their translation and adaptation into different languages, are needed to confirm the role of S/R on the experience of chronic pain and to enable the cross-cultural comparison. This preliminary study sought to examine the psychometric properties of two brief measures of religiosity in a sample of Portuguese patients with chronic pain.
Methods: A convenience sample of 69 participants completed the Portuguese versions of the Duke University Religion Index (DUREL-P) and of the Belief into Action Scale (BIAC-P), and measures of pain and subjective well-being.
Results: Exploratory factor analysis supported a three-factor solution for the DUREL-P, and a two factor solution for the BIAC-P. The overall DUREL-P and the DUREL Intrinsic Religiosity subscale evidenced marginal to good reliability (.68< α< .91), while the overall BIAC-P and BIAC-P subscale evidenced good reliability (α=.81). DUREL Private Religious Activities subscale and overall BIAC-P were negatively associated with pain interference.
Conclusions: These findings support the construct validity and reliability of DUREL-P and BIAC-P, and its use with for research and clinical purposes with Portuguese patients with chronic pain. Future research is warranted to further develop the Portuguese version of these measures and to confirm its concurrent validity.

STRUCTURAL AND FUNCTIONAL IMAGING OF PAIN

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TOWARDS A MAGNETOENCEPHALOGRAPHY SIGNAL MARKER OF CHRONIC PAIN

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Background and aims: Objective disease markers are key for diagnosis and personalized interventions. For chronic pain, such markers are still not available, and therapy relies on individual patients' report. Objective markers derived from neurophysiology signals could contribute to improved clinical assessment. We aim to develop a marker, sensitive and specific enough to assess objectively, each pain patient's condition. We use magnetoencephalography (MEG) and derive a measure of slowing of dominant brain oscillations.
Methods: Five minutes resting-state MEG were recorded in chronic pain patients and in control subjects without pain. The power spectrum density was calculated at each of the 275 MEG-sensors. By calculating the ratio of low alpha (7-9 Hz) to high alpha (9-11 Hz) power, we assessed the potential slowing of dominant oscillations. Source

imaging was used to analyze the anatomical distribution of this ratio. Group differences were examined using randomized permutation t-tests.
Results: We report preliminary results from 27 chronic pain patients (14 female, 49±10 yo) and 24 control subjects (10 female, 48±11 yo). On average, pain patients showed higher ratios over frontal and lateral sensors, compared to control subjects. The accuracy of this average ratio as a classifier for chronic pain is 84%. Source imaging revealed significantly higher ratios ($p < 0.01$) for pain patients in the thalamus, cingulate cortex, insula and occipital regions.
Conclusions: Our findings show that the frequency of alpha oscillations is slower in almost each pain patient. This finding could be a first step towards a MEG signal marker for chronic pain.

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ALTERED RESTING-STATE FUNCTIONAL CONNECTIVITY IN WOMEN WITH TRAUMATIC AND NON-TRAUMATIC CHRONIC NECK PAIN COMPARED TO PAIN-FREE WOMEN: ASSOCIATIONS WITH PAIN OUTCOMES AND CENTRAL SENSITIZATION?

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Background and aims: Previous research revealed differences between patients with trauma-induced chronic whiplash associated disorders (CWAD) and patients with non-traumatic chronic idiopathic neck pain (CINP). Structural brain alterations have been observed in CWAD compared to CINP and controls, which were related to central sensitization (CS). Functional brain alterations, on the other hand, have not yet been investigated in this population. This study therefore aimed to examine resting-state functional connectivity alterations and associations with pain, cognitions, disability and CS in CINP and CWAD patients compared to pain-free controls.
Methods: Resting-state functional magnetic resonance images were acquired in 106 female participants (37 CINP, 37 CWAD, 32 controls). After data pre-processing, seed-based functional connectivity analyses were conducted using 11 pre-defined regions of interest implicated in (chronic) pain. Potential group differences as well as correlations with pain intensity, disability, pain cognitions and CS were examined.
Results: Patients with CWAD showed increased functional connectivity between right precuneus and left anterior parahippocampal gyrus compared to controls (β=1.76; p=.009). Across the entire sample, the strength of this connectivity was furthermore correlated with pain intensity (r_s=.31; p=.002), CS symptoms (r_s=.29; p=.003) and pain-related disability (r_s=.29; p=.004). Also, patients with CINP showed decreased functional connectivity between left posterior cingulate cortex and nucleus accumbens compared to controls (β=-0.73; p=.009). No other significant group differences or correlations were observed.
Conclusions: These findings are the first to demonstrate resting-state functional brain alterations in relation to clinical persistent complaints of women with CWAD. Further research should explore whether therapy reverses these brain alterations.

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EXPERIMENTAL ONGOING MUSCULOSKELETAL PAIN AFTER NERVE GROWTH FACTOR INJECTION INCREASES LOW AND HIGH FREQUENCY EEG ACTIVITY DURING REST

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Background and aims: Patients with musculoskeletal pain commonly report changes in pain sensitivity. It is unknown whether these changes are related to changes in the perception of ongoing nociceptive input or to neuroplastic changes within the central nervous system. Ongoing musculoskeletal pain can be reproduced in healthy volunteers with the nerve growth factor (NGF) model. The aim was to assess whether persistent pain would induce neuroplastic changes in healthy volunteers.
Methods: Twenty one healthy subjects participated in two sessions four days apart. Electroencephalography (EEG) was recorded during rest (REEG), sustained deep tissue painful and non-painful stimulation cuff pressure algometry over the right forearm. The extensor carpi radialis brevis was injected with NGF to induce ongoing muscle soreness after the first session. Three minutes of artefact-free EEG data were selected to assess the power spectrum (PS) of cortical source generators bands. The PS was calculated in 13 regions included in the salience network (SN), default mode network (DMN) and ascending nociceptive pathways (ANP). PS was compared between sessions trough point-by-point paired t-test on logarithm-transformed data.
Results: Preliminary results show that muscle soreness increased PS in the ANP and DMN during REEG. No differences were found during painful and non-painful stimulation before and after NGF.
Conclusions: Persistent pain induced by NGF injection likely produces neuroplastic changes. Increased low- and high-frequency activity of the ANP and DMN may reflect persistent perception of muscle soreness and altered function during rest.
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CORTICAL THICKNESS AS A PREDICTOR FOR RTMS TREATMENT OUTCOME IN ATYPICAL FACIAL PAIN

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Background and aims: Improvements in physical disability after chronic pain treatment have been associated with normalization of primary motor cortex (M1) thickness. Primary target for rTMS therapy is M1, while alternative targets related to pain processing, such as premotor cortex and secondary somatosensory cortex (S2) are also being studied. Here, we examined whether cortical thickness predicts the response to rTMS treatment.
Methods: 24 patients with severe unilateral (15 left, 9 right side) persistent facial pain (aged 35 to 75 years) were enrolled. Patients underwent two five-day high-frequency rTMS treatment courses separated by six weeks targeted to M1 area of lower face. Responders were defined as the ones who continued with maintenance treatment. Anatomic MRI obtained at baseline was analysed using Freesurfer (v6.0.0) for whole brain cortical thickness between responders and non-responders. Age was entered as a nuisance covariate to the GLM model, and uncorrected independent t-test was done.
Results: In the left hemisphere, responders had thicker cortex in face M1 whereas non-responders had thicker cortex in face S1. In the right hemisphere, responders had thicker cortex in parietal operculum while non-responders

had thicker cortex in the posterior insula. Additionally, non-responders had thicker cortex in prefrontal area.
Conclusions: Bilateral differences in cortical thickness were found between responders and non-responders. Structural differences may explain why only some patients benefit from rTMS treatment. Further studies are warranted to see if cortical thickness changes are similarly predictive in other chronic pain conditions and if they can be used as guidance for rTMS target selection.

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INCREASED NEURAL ACTIVATION FOR CONDITIONED PAIN RESPONSES FOLLOWING A FALSE LOW- VS HIGH PAIN CUE IS RELATED TO PAIN CATASTROPHIZING IN FIBROMYALGIA PATIENTS

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Background and aim: Behavioural studies have demonstrated aberrant safety-processing in fibromyalgia (FM), and suggested that patients accumulate new potential pain-related threats more effectively than extinguishing old threats that are not as painful or threatening anymore. The aim of the current study was to investigate the neural correlates of conditioned pain responses and its relationship to emotional distress in FM(n=67) and healthy controls (HC,n=34).
Method: Using functional magnetic resonance imaging (fMRI), we tracked conditioned pain responses to an identical mid-painful pressure (P3) depending on whether it was following a green (P3green) or red (P3red) cue, that was previously associated with low or high painful pressure stimuli, respectively. Subjects rated pain intensity following each stimulus.
Results: FM displayed increased P3green ratings over time, while P3red ratings remained elevated. HC adapted all pain ratings to resemble medium pain. FM exhibited increased activation for [P3green>P3red] in M1/aIns, whereas HC showed increased S2/aIns response to [P3red>P3green]. High pain catastrophizing ratings (PCS) in FM co-varied with heightened brain activation for [P3green] in dlPFC ($p_{(FWE)}$=0.021,t=4.56) and vmPFC/OFC ($p_{(FWE)}$< 0.001,t=4.34); and [P3green>P3red] in dACC/MCC ($p_{(FWE)}$=0.003,t=5.10), superior temporal pole extending to aIns($p_{(FWE)}$=0.007,t=4.85), bilateral thalamus ($p_{(FWE)}$< 0.001,t=4.63), and pIns($p_{(FWE)}$=0.001,t=4.56). Psycho-physiological connectivity for FM[P3green>P3red]*PCS revealed a significant negative interaction between thalamus and bilateral inferior parietal lobe.
Conclusion: In alignment with behavioral studies, the current data suggest that FM prioritize updating their cerebral representation to forming new potential pain-related threats rather than extinguishing old, less threatening ones. Increased response to pain-related threat in FM may contribute to dysfunctional pain-protective behaviors and disability.

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USING HIGH ANGULAR RESOLUTION DIFFUSION IMAGING TO INVESTIGATE PATHOPHYSIOLOGICAL CHANGES IN THE DORSAL DIENCEPHALIC CONDUCTING PATHWAY IN CHRONIC PAIN

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The dorsal diencephalic conducting system (DDCS) is a descending pathway that modulates midbrain monoamine concentrations. It transmits frontolimbic activity through the stria medullaris (SM) to the habenula, where it exerts control on midbrain monoamine concentrations through the fasciculus retroflexus. Stimulation of the habenula via the SM leads to the inhibition of serotonergic, noradrenergic and dopaminergic systems responsible for pain modulation

and behaviour. Normally, regulation of monoamines occurs in response to noxious stimulation in humans. In chronic pain states we believe that this modulation is altered leading to pathological behavior and modulation of incoming pain signals.
Methods: Ten human cadaver brains were examined for anatomical relationships and dimensions of the SM. Fifty subjects were scanned using High Angular Resolution Diffusion Imaging (61 directions, b-value 1500mm^3, 3T). Two independent raters isolated the SM using a tractography protocol. A neuroanatomist checked each completed tract.
Results: The SM was reconstructed with excellent inter-rater reliability (p-value 0.88). Tracts also exhibited consistent tract diffusion metrics (p-value 0.92).
Conclusion: This is the first time the SM has been reliably imaged and reconstructed. Diffusion metrics allows investigation of this pathways role as the main afferent pathway to the habenula, advancing research into the neuromodulatory role of the SM in chronic pain states. This is the first step in our research to look for structural and functional differences in this pathway in chronic pain states. Our imaging protocol will also allow us to look for functional and structural links between this system and the pain neuromodulatory centres.

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OBSERVATIONAL STUDY OF NALOXEGOL FOR PATIENTS WITH CANCER PAIN DIAGNOSED WITH OPIOID INDUCED CONSTIPATION. NACASY STUDY PRELIMINARY RESULTS

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Background: Naloxegol is a PEGylated derivative of the μ-opioid receptor antagonist naloxone indicated for the treatment of opioid-induced constipation (OIC) in adult patients who have had an inadequate response to laxatives. This real-world (RW) treatment study (*NCT03638440*) aims to evaluate safety and efficacy of Naloxegol in patients with cancer pain diagnosed with OIC.
Methods: Single-arm, open label, multinational, multicentre, prospective, RW observational study in adult subjects receiving treatment with opioids for at least 4 weeks, diagnosed with OIC that receive naloxegol in routine clinical practice. This study will recruit 315 patients from 32 European hospitals. Data for efficacy are collected through the patient´s diary during a 4 weeks period.
Results: Forty-four patients, median age 66 years, 52% women, have been included in this preliminary analysis. Main cancer locations were lung (39%), pancreatic (11%), breast (11%) and prostate (9%) cancer and 55% had metastasis. Most frequent opioid treatments were fentanyl (36%), codeine (16%) and tramadol (14%). Three patients had adverse events leading to study discontinuation: abdominal pain, abdominal pain and nausea and postherpetic neuralgia. Sixty-seven percent of the 15 patients who have completed the 28 days of the patient´s diary had three or more bowel movements per week in at least 3 weeks without the use of rescue laxative treatment in the previous 24 hours.
Conclusions: Preliminary results show a promising efficacy of naloxegol in this RW treatment study. RW evidence seems to be a useful methodology to assess the real life use of naloxegol and its efficacy in cancer patients._

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ANALGESIC EFFECTS OF MICA IN THE PARTIAL SCIATIC NERVE LIGATION-INDUCED NEUROPATHIC PAIN MICE MODEL

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MICA, an aluminosilicate mineral, was used to investigate the role of MICA nanoparticles injection in the alleviation of neuropathic pain induced by partial sciatic nerve ligation (PSNL) in mice. In the PSNL mice model, 4 days a week for one month treatments with MICA was given to evaluate its effects of neuropathic pain, respectively, which was followed by behavioral tests. In addition, we investigated whether the effects were mediated by neuroinflammatory cytokines and astrocyte, which contribute to protein synthesis required for neuroinflammation in spinal cord. We found that MICA injection alleviated PSNL-induced mechanical and cold allodynia. In addition, MICA induced a decrease in the expression of pro-inflammatory and anti-inflammatory cytokines, which were upregulated in PSNL model. MICA injection also inhibited immunoreactivity for the astrocyte marker, glial fibrillary acidic protein. These results illustrate that neuropathic pain can be alleviated by MICA injection, which may be ascribed principally to deactivations of neuroinflammatory cytokines in the spinal cord. Additionally, MICA seems to be involved astrocyte inactivation in preventing PSNL-induced neuropathic pain. On the basis of these results, we propose that MICA can contribute to the anti-nociceptive effect in PSNL mice.

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ACUPUNCTURE ALLEVIATES BOTH ALLODYNIA AND COGNITIVE DYSFUNCTION BY MODULATING SYNAPTIC PLASTICITY IN HIPPOCAMPAL NEURONS OF CHRONIC NEUROPATHIC PAIN

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Background and aims: Growing evidence reveals that neuropathic pain is frequently accompanied with emotional disorder, such as cognition. We investigated that specific acupoints of acupuncture have analgesic effects, and also improve cognitive dysfunction induced by neuropathic pain.
Methods: One week after the left partial sciatic nerve ligation (PSNL), acupuncture treatment on the acupoints Hwando (GB30)/Yanglingquan (GB34), Sinmun (HT7)/Baekhoe (GV20), or control points were performed for 4 weeks. We assessed the effect of repeated acupuncture on mechanical and cold allodynia, and also evaluated cognitive impairment at the pre- and post- acupuncture.
Results: In the PSNL model, nociceptive behavior and cognitive impairment was increased in the 1 week after surgery. We found that acupuncture treatment at acupoints GB30 and GB34 significantly attenuated mechanical and cold allodynia in PSNL model, and also significantly attenuated cognitive impairment symptom (in the novel object recognition and Y maze). By using long-term potentiation recording, double immunostaining and western blot methods, we demonstrated that acupuncture restored the reduced field excitatory post-synaptic potentials in hippocampus of neuropathic pain and was able to elevate the expression levels of glutamate receptors and synaptic proteins, which play pivotal roles in synaptic plasticity.
Conclusions: These results suggest that the analgesic effects of acupuncture on neuropathic pain may contribute to its long-term action on synaptic efficacy which is essential in cognitive functions.

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WHEN OPIOIDS FAIL IN CHRONIC PAIN MANAGEMENT: THE INTESTINAL EPITHELIAL BARRIER: A THERAPEUTIC TARGET?

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Background and aims: A significant role of the gastrointestinal microbiome in behavioural responses to opioids,

including the development of tolerance has been suggested.
Morphine-induced neuro-immune interactions cause direct intestinal functional consequences. Meng et al. (2013) demonstrated that morphine disrupts gut barrier function via a toll-like receptors (TLR)-dependent manner. Low dose naltrexone (LDN) acts on various gut mechanisms.
Methods: We have developed a treatment addressing gut brain axis interactions.
We report the effect of a combination treatment consisting of: Low dose naloxone (LDN), and pre probiotics aiming at a nutritional rehabilitation with focus on intestinal mucosa, microbiome and liver function and neuro-acupuncture on 10 patients with chronic refractory pain: fibromyalgia, multiple sclerosis, neurodegenerative disease, inflammatory bowel disease, endometriosis, postsurgical neuropathic pain, and post-traumatic stress syndrome.
Results: This approach resulted in pain relief, improved quality of sleep and quality of life with lower doses of analgesic drugs and reduction of the number of drug combinations, hence reducing the side effects.
Conclusions: Synergistic strategies acting on immune cells, glial cells and neurons, synaptic plasticity and pain are promising.
Current concepts of gut-brain interaction in analgesic tolerance to opioids suggest that peripheral mechanisms emanating from the gut can profoundly affect central control of opioid function.
Genetic variations may modulate the answer to treatment as does the inter-individual differences in the bacterial flora of the human digestive tract. Rapid progress in the understanding of the host microbial interaction has redefined pharmacokinetics of drug metabolism, allowing to improve the management of drug (ab) users.

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INTEGRATIVE MEDICINE APPROACH TO NEUROPATHIC PAIN TREATMENT - EFFECTIVE PAIN CONTROL WITH PHARMACOTHERAPY AND ACUPUNCTURE

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The aim of this paper is to present effective pain control with combination of antineuropathic analgesics and acupuncture in patient with neuropathic pain following tleft brachial plexus avulsion.
The male patient had a motorcycle accident with polytrauma (brain injury, left brachial plexus avulsion, bone fractures). In 2018 patient was referred to Pain Clinic in Kraków due to severe, intractable pain of left upper limb.
Patient´s complaints:constant pain (NRS 5) with paroxysms (NRS 10) 10-15 times per day, evoked by emotional stress and cold.
Clinical examination of left upper limb: trophic changes of skin, muscle atrophy and weakness, sensory abnormalities - decreased touch and cold sensations.
Treatment before referral to Pain Clinic: amitriptyline (50 mg OD), gabapentin (600 mg TID)
Treatment applied in Pain Clinic:
amitriptyline (75 mg OD), gabapentin (800 mg TID) - increased doses were not effective, but tapering off resulted in pain exacerbations
Tapentadol 100 mg BID - partially effective
Acupuncture - 30% pain relief during needle application in HeGu point
Treatment continuation:
Amitriptyline 50 mg OD, gabapentin 600 TID, tapentadol 100 mg BID
acupuncture with semi-permanent needles (Pyonex) in HeGu point (5 days on, 2 days off)
Outcome: Mild constant pain, 50% less pain paroxysms, less intensity of paroxysms, better functioning and well-being.
Conclusions: In patients with severe neuropathic pain integrative medicine approach should be considered, since it may result in better pain control and better patients' well-being. Acupuncture may be recommended due to its low costs and invasiveness, high safety and patients' acceptance.

INTERVENTIONAL BLOCKADE THERAPIES

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PERIPHERIC NERVE PULSED RADIOFREQUENCY FOR TRIGEMINAL NEURALGIA

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Background and aims: Gasser ganglion RFT (radiofrequency thermocoagulation) is an effective treatment modality for trigeminal neuralgia in patients who do not respond or tolerate medications. It also carries many potential risks. Pulsed radiofrequency (PRF) to periferal nerves is accepted as a more simple and safe method when it's compared with Gasser ganglion RFT. However, there is no clinical study on its efficacy.
The aim of this study was to retrospectively evaluate the effectiveness of PRF in patients with trigeminal neuralgia who responded with temporary relief to the local anesthetic block in the peripheric branches of trigeminal nerve.
Methods: Twenty one patients with trigeminal neuralgia who responded to the local anesthetic injection to the peripheral trigeminal nerve branches with temporary relief in pain were included to study. One day after the peripheric nerve block, 240 sec PRF were performed to same nerve branch. Pain intensity, duration of effectivity and complications were evaluated for all patients.
Results: Disturbution of the cases to peripheral nerves were; infraorbital nerve 8, mental nerve 7 and supraorbital nerve 6 patients. It was determined that the mean pain severity (visual analog scale) decreased from 9.2 ± 0,62488to 1.5 ± 0,87287. Duration of the analgesia (median) was 12(9-21) months and no complications occurred.
Conclusions: PRF procedure seems to be an effective and safe method in patients who respond to the block of the peripheral branches of the trigeminal nerve.

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CASE SERIES OF SUCCESSFUL SUPERIOR HYPOGASTRIC PLEXUS BLOCKS FOR LOWER ABDOMINAL AND PELVIC PAIN

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Background and aims: Lower abdominal and pelvic pain results in negative functional, psychological and social consequences. There is evidence that blocking the superior hypogastric plexus (SHP) is successful in diminishing abdominal and pelvic pain. However, these studies focus primarily on improvement in Visual Analogue Score (VAS) and less on functional improvement.
We present a series of 13 cases of successful SHP blocks for abdominal and pelvic pain in our institution. In particular, we aim to characterise the various functional improvements reported by our patients.
Methods: Patients who attended our specialist clinic and whom had undergone SHP block(s) from 2017-2018 completed a questionnaire following the block(s). The questionnaire included questions on VAS, functional improvement and patient satisfaction.
Results: 10 patients in our series all had lower abdominal and/or pelvic pain with different indications for SHP such as pain, bowel dysfunction, bladder dysfunction and sexual dysfunction. There was a 51% reduction in VAS score on average (7.3±1 to 3.7±1.2) for 3.9 ±1.5 months. 79% and 64% of blocks resulted in a reduction in VAS and pain medication respectively. Reported functional improvements included: bladder function improvement, bowel function improvement, sexual function improvement, mood improvement, sleep improvement, fewer bed days and improvement in employment. 92% of blocks were satisfactory and patients would repeat the procedure again. No complications occurred.
Conclusions: The SHP block is an effective method for improving lower abdominal and pelvic pain and function in this group of patients. As a result, a prospective study is underway and results will be reported.

MULTIDISCIPLINARY PROGRAMS

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PAIN REHABILITATION WITH LANGUAGE INTERPRETER, A SWEDISH MULTICENTER DEVELOPMENT PROJECT

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Background and aims: Non-native persons do more often than native born suffer from long-term pain and pain-related comorbidities. Persons who can not speak the domestic language are seldom included in multimodal rehabilitation programmes (MMR) or studies evaluating MMR effects. Two Swedish university rehabilitation departments developed MMR with language interpreter (MMRI) for patients who cannot participate in ordinary MMR due to insufficient knowledge of the domestic language.
The study aimed to explore if MMRI could affect the participants' experiences of symptoms and quality of life.
Methods: Data was collected at admission and discharge with questionnaires from the Swedish Quality Registry for Pain rehabilitation. The assessments included health related quality of life (EQ5D), anxiety and depression (HADS), fear of movements (TSK) and disability (PDI).
Preliminary results: From 2014 to 2018, 79 patients participated in the MMRI. Preliminary results showed improvement in fear of movements (TSK) (p=0.001), the other assessments showed no statistical change. Patients were satisfied with MMRI health care professionals treatment (88%) and they stated that the MMRI had improved their coping of their life situation (81%).
Conclusions: MMRI result in less fear of movement and improved coping strategies for patients in need of language interpretation.

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REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IN CENTRAL POST-STROKE PAIN: THE ROLE OF DOPAMINE D2 RECEPTOR GENE POLYMORPHISM IN TREATMENT OUTCOME

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Background and aims: We aimed to assess the effect of repetitive transcranial magnetic stimulation (rTMS) targeted to the primary motor cortex (M1) and the secondary somatosensory cortex (S2) in patients with central post-stroke pain (CPSP). As the efficacy of rTMS varies in chronic pain patients, we sought to find out individual characteristics affecting the treatment outcome. We were particularly interested in the role of the dopamine D2

receptor (*DRD2*) rs6277 genotype, as it has previously been associated with the analgesic effect of rTMS.
Methods: We used navigated rTMS targeted to M1 and S2 in 17 patients with CPSP in a sham-controlled randomized crossover trial (10 daily sessions, 5050 pulses per session at 10 Hz). Pain intensity on numeric rating scale (NRS) was recorded before, during and after each stimulation period. Three gene polymorphisms associated with plasticity, *DRD2* C>T (rs6277), *BDNF* G>A (rs6265), and *COMT* G>A (rs4680) were genotyped from sixteen subjects.
Results: Patients with the rs6277 T/T genotype benefited from the rTMS targeted to M1 whereas patients with the genotype C/T or C/C did not (median pain reduction 43% vs. 0%, $p = 0.009$). A similar trend was found for the S2 stimulation. The *COMT* genotype did not affect the treatment outcome. All subjects shared the *BDNF* (rs6265) genotype G/G.
Conclusions: *DRD2* rs6277 genotype was associated with the treatment response from M1 stimulation. This finding emphasizes the importance of subgroup analysis to account for the high interindividual variability in rTMS treatment responses.

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INTERLEUKIN -6 PROMOTES SPONTANEOUS FIRING OF SENSORY AFFERENT FIBRES IN THE RAT

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Background and aims: Spontaneous pain is thought to be driven by ectopic activity in damaged sensory afferent neurones. In this study we investigate the role of IL6 in engaging persistent pain mechanisms by *in-vivo* electrophysiological recordings and behavioural assessment to investigate its involvement in spontaneous pain.
Methods: Rats were implanted with osmotic minipumps filled with either 0.9% saline or IL6 inserted intrathecally at T10 delivering IL-6 (2mg/day) or saline for 3 days. Additionally, rats with spinal nerve ligation (SNL) received either anti-IL6 antibody tocilizumab, 8mg/kg or saline in a single i.p injection. Neural recordings and behavioural testing were carried out at day 3 post-implant/SNL. Behavioural testing continued to day 7 using the dynamic plantar aesthesiometer.
Results: Intrathecal IL6 induced spontaneous firing of sensory afferents that closely mimicked the spontaneous activity seen following SNL. In IL6-treated rats, spontaneously active fibres were found in 76±8% of strands. By comparison, 87±5% of strands in SNL rats contained ectopically active units. In SNL rats treated with tocilizumab, 68±1% strands were active. In behavioural studies, animals receiving IL6 intrathecally showed significant reduction of 20-33% in paw withdrawal thresholds to mechanical stimulation as compared to controls. Tocilizumab significantly attenuated the post-SNL increase in mechanical sensitivity for up to 7 days after treatment with a 21-35% improvement in the ipsilateral paw withdrawal threshold at day 2 to day 7 following injury, compared to control.
Conclusions: This study has established the involvement of IL6 in spontaneous firing of sensory fibres and mechanical hypersensitivity in rats following nerve injury.

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WHISPER RCT: AN UPDATED POST-HOC EVALUATION OF SUB-PERCEPTION SCS AT ≤1.2 KHZ IN PREVIOUSLY-IMPLANTED SUBJECTS

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Background and aims: Results from a recent randomized controlled trial (RCT) demonstrated that equivalent pain relief was achieved using a range of frequencies from 1 to 10 kHz spinal cord stimulation (SCS) with appropriate

neural dosing. The WHISPER RCT evaluates safety and clinical effectiveness of sub-perception SCS at ≤1.2kHz in a cohort of subjects previously implanted with a system for treatment of chronic, neuropathic pain.
Methods: WHISPER is a prospective, multicenter RCT with crossover design sponsored by Boston Scientific (ClinicalTrials.gov:NCT02314000). Subjects previously implanted with SCS and a baseline overall pain score ≥6 (with SCS off) at study start were enrolled. Eligible subjects were randomized to either receive sub-perception or supra-perception for a period of 90 days and then crossed over to receive vice versa. At completion of crossover, outcomes related to overall pain, satisfaction and preference were collected.
Results: The study met its primary endpoint, based on overall pain responder rate (≥ 50% improvement from Baseline) with no increase in medications, in a pre-specified cohort of 70 randomized subjects (interim analysis) who had been previously implanted for about 4 years and with a mean disability score (Oswestry Disability Index) of 69.4. For those subjects using sub-perception SCS, significant pain relief was sustained ($p < 0.001$) at 1 year. Post-hoc analysis demonstrated that multiple options provide superior outcomes when subjects could choose the most effective option.
Conclusions: The WHISPER RCT demonstrates that sub-perception SCS at ≤1.2kHz is safe and effective and that providing multiple neurostimulative options may reduce need for explantation.

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POSTERIOR INSULA AS A POTENTIAL TARGET FOR NEUROPATHIC PAIN TREATMENT - AN EXPERIMENTAL STUDY ON A CAT MODEL OF LOW AND HIGH FREQUENCY INSULAR STIMULATION

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Neuromodulation has been used for treating patients with neuropathic pain resistant to other therapeutic approaches. However, the efficiency of such methods only remains partial, hence the need to find a new target for neurostimulation. The posterior insula has been shown to represent a significant part of the nociceptive matrix as it partly embodies the first-order matrix in the cortical pain experience and has been suggested as a new target for analgesic neurostimulation. The aim of this study is to assess the effects of epidural electrical insular stimulation on the activity of the somatosensory thalamus, comparing the effect of low frequency stimulation (50 Hz, LF-IS) and high frequency stimulation (150 Hz, HF-IS), in a healthy cat model.
Epidural electrodes were placed over the posterior insular cortex in anesthetized cats. Then, a microelectrode was inserted in different thalamic nuclei (VPL and POm) to isolate an extracellular single-cell signal. After labelling 61 isolated thalamic cells as non-nociceptive (low threshold), nociceptive (high threshold) or wide dynamic range, their firing rate was recorded before, during and after a 10-minute LF-IS or HF-IS.
Our preliminary results show that LF-IS could have better modulatory effects on the somatosensory thalamic activity than HF-IS as it significantly reduces the spontaneous burst firing rate of nociceptive cells, whereas it significantly enhances the spontaneous tonic firing rate of non-nociceptive cells.
This data supports the hypothesis that the posterior insula could be a potential neuromodulation target for central anti-nociception, and thus for the treatment of refractory neuropathic pain.

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CORTICAL AND SUB-CORTICAL RESPONSES TO REAL AND SHAM MOTOR CORTEX REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IN FIBROMYALGIA INVOLVE DISTINCT FUNCTIONAL CONNECTOME SUB-SYSTEMS

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Background and aims: Long-term symptomatic relief following motor cortex repetitive transcranial magnetic stimulation (M1-rTMS) in fibromyalgia syndrome (FMS) patients has been proven, yet the accompanied neuroplastic changes are unknown. Therefore, we investigated how resting-state functional connectivity (rsFC) changes along with pain intensity, affect, and daily function in FMS patients following M1-rTMS.
Methods: Twenty-five female FMS patients underwent two 10-day series (real; sham) of 10Hz right M1-rTMS. Resting-state functional magnetic resonance imaging scans and clinical assessment took place before and after each series. rsFC was investigated in sensory and modulatory pain, and motor-related regions; and resting-state networks (RSNs) implicated in pain: salience (SN), executive-control (ECN), sensorimotor (SMN), and default-mode (DMN) networks. Treatment-specific post>pre-differences in FMS symptoms were regressed against changes in rsFC.
Results: Real, but not sham, M1-rTMS, resulted in a significant symptomatic relief. Real M1-rTMS relief involved rsFC changes mainly of M1-connected cortical and subcortical, and DMN areas, in correlation to improvement in pain intensity and functioning. However, sham M1-rTMS relief was restricted to the affective and functional domains, involving mainly SN and M1-anterior cingulate rsFC changes.
Conclusions: 1. rsFC changes occurred following both real and sham M1-rTMS, but were related to separate outcome measure domains
2. Symptom relief in FMS accompanied rsFC changes expanding from M1-connected areas, to include RSN function
3. Sham responses diverged from real, occurred mainly in affective and salience areas, and depended on individual ability to benefit from an underlying M1-rTMS placebo effect
This study was supported by the Israeli Science Foundation Grant #508/12.

NEUROMODULATIVE THERAPIES

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SPINAL CORD STIMULATION FOR REFRACTORY ANGINA PECTORIS - A 3-YEAR FOLLOW-UP STUDY OF TREATMENT-RELATED COMPLICATIONS

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Background and aims: Spinal Cord Stimulation (SCS) alleviates angina symptoms and improves health related quality of life in patients with refractory angina. However, there are few long-term studies assessing SCS treatment-related complications in patients with refractory angina. The aim of this study was to assess SCS treatment-related complications in patients with refractory angina.
Methods: All patients referred for SCS treatment at 10 European centres during 2003-2005 were consecutively included in the prospective study “European Angina Registry Link” (EARL). A permanent SCS system was implanted in 121 patients and the patients were followed up to 3 years. Complications associated with SCS treatment were registered prospectively.
Results: In total, 44 out of 121 patients reported one or more SCS treatment-related complication. There were 67 complications and 61 of these required re-operation. The majority of complications (n=59, 88 %) were resolved. Most complications were technical, i.e. related to device use, including lead migrations (n=14), lead fractures (n=12) and

IPG (implantable pulse generator) dysfunctions (n=20). Most common non-technical complications were pain over implantation site (n=8) and infection (n=3). There were 40 pre-term study terminations, of which the majority were due to death (n=23, 19%).
Conclusions: SCS treatment-related complications are common in patients with refractory angina but the majority of them can be resolved through revision surgery. This should be considered in preoperative evaluation and patient information. Patients with refractory angina treated with SCS require careful follow-up regarding both angina symptoms and SCS treatment for optimal efficacy.

P400

CONTRASTING THE EFFECT OF LIVE AND RECORDED HYPNOSIS: IS ONE APPROACH MORE EFFECTIVE TO REDUCE EXPERIMENTAL PAIN?

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Background and aims: European data suggests that actual treatments are insufficient to reduce pain for up to 40% of pain sufferers. Hypnosis, given in the presence of therapist (live hypnosis) or, alternately, via pre-recorded audio interventions, could be interesting non-pharmacological approaches to reduce pain and discomfort in various situations. The aim of this study was to compare the hypoalgesic effect of hypnosis during live versus recorded hypnotic interventions.
Methods: Sixty healthy volunteers (18-45 years old, mean age 26±5) were assigned to receive 30 min of a live (hypnotherapist in the room) or pre-recorded hypnosis session (using earbuds). The content of both sessions was identical and contained phases of induction, deepening, analgesia suggestions and de-induction. Experimental pain was evoked with a 10 cm^2 thermode applied on the left forearm for 2 min, during which the participant had to evaluate pain intensity with a 0-100 computerized visual analogue scale. Pain measures were taken before (baseline) and during hypnosis (immediately after suggestions of analgesia).
Results: Both hypnotic interventions (live and pre-recorded) reduced pain intensity when compared to baseline (all p-values < 0.01) and produced a clinically important change (average pain reduction of 21 points). Pain intensity at baseline and during hypnosis, as well as pain decrements (delta score reflecting hypoalgesic response) were comparable between the two groups (all p-values > 0.37).
Conclusion: Our results suggest that live hypnosis and pre-recorded hypnosis confer comparative hypoalgesic effects on experimental pain. Future studies, looking into the efficacy of pre-recorded hypnosis sessions in clinical populations are warranted.

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LONG-TERM RESULTS FROM FEEDBACK-CONTROLLED SCS USING EVOKED COMPOUND ACTION POTENTIALS (AVALON STUDY)

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Background and aims: Currently marketed spinal cord stimulation (SCS) systems operate in a fixed-output stimulation configuration without sensing or adjusting to the nerves' response (open-loop). A new SCS system uses evoked compound action potential (ECAP) to automatically adjust the stimulation current to maintain consistent SC activation (closed-loop). A prospective, multi-center, single-arm study was designed to demonstrate the safety and performance of closed-loop SCS system.

Methods: Seventy subjects with chronic pain were enrolled. Fifty subjects were implanted with a closed-loop SCS system (ACTRN12615000713594). Post-implantation subjects were followed over 12 months to assess therapy effectiveness and safety.
Results: At 12 months, back pain was reduced from 81.3 mm (± 1.4) to 22.7 mm (± 4.1) and overall pain was reduced to 21.0 mm (± 3.4) from 81.3 mm (± 1.6). Leg pain responded similarly well to the therapy (Table). At 12 months, 83.7% of subjects reported significant, favorable change as described via PGIC and 88.4% of subjects were "satisfied" or "very satisfied" with their treatment (Table). At baseline, 18.0% of subjects were minimally or moderately disabled on the ODI; at 12 months, this proportion increased to 74.4% (Table).
Conclusions: The study to date has demonstrated sustained high rates of VAS pain reduction through 12 months. We postulate that the stable level of SC activation is the main factor contributing to achieving this profound level of pain relief. This study continues to monitor the outcomes for subjects through a 2-year follow-up period.

Table. VAS scores, PGIC and patient satisfaction and sleep quality over time.

	Baseline	3 Month	6 Month	12 Month
Mean Percent Improvement in VAS Scores (SEM)- Back pain [a]	--	69.2% (4.3%)	72.6% (4.3%)	72.0% (5.0%)
Mean Percent Improvement in VAS Scores (SEM)- Overall pain [a]	--	71.2% (4.0%)	71.7% (4.5%)	73.6% (4.3%)
Mean Percent Improvement in VAS Scores (SEM)- Leg pain [a]	--	75.7% (4.3%)	78.9% (4.6%)	72.1% (6.1%)
Mean Raw VAS Score, mm (SEM)- Back pain [a]	81.3 (1.4)	24.9 (3.4)	22.6 (3.7)	22.7 (4.1)
Mean Raw VAS Score, mm (SEM) - Overall pain [a]	81.3 (1.6)	22.8 (2.9)	22.6 (3.5)	21.0 (3.4)
Mean Raw VAS Score, mm (SEM)- Leg pain [a]	77.7 (1.8)	18.6 (3.4)	15.7 (3.2)	21.1 (4.7)
PGIC score of 5-7 [b]	--	36/45 (80.0%)	40/46 (87.0%)	36/43 (83.7%)
Patient satisfaction (satisfied and very satisfied)	--	42/45 (93.3%)	36/46 (78.3%)	38/43 (88.4%)
ODI Minimal and moderate disability [c]	9/50 (18%)	30/45 (66.7%)	33/44 (75.0%)	32/43 (74.4%)

[a] Subjects with VAS <60mm at baseline excluded from analysis.
[b] Patient's Global Impression of Change, 5 (Moderately better, and a slight but noticeable Change), 6 (Better, and a definite improvement that has made a real and worthwhile difference), 7 (A great deal better, and a considerable improvement that has made all the difference)
[c] Oswestry Disability Index (ODI):0 to 20% (minima disability), 21% to 40% (moderate disability)

[Table]

P402

EFFECTS OF SPINAL CORD STIMULATION ON HEART RATE VARIABILITY IN PATIENTS WITH FAILED BACK SURGERY SYNDROME

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Background and aims: Building on the recent finding that chronic pain patients with impaired functioning of the descending nociceptive inhibitory system (DNIS) present lower resting heart rate variability (HRV), this study aims

to investigate the impact of spinal cord stimulation (SCS) on HRV in people with Failed Back Surgery Syndrome (FBSS). More precisely, we hypothesize that SCS influences the DNIS, with increased parasympathetic tone as a consequence, as measurable by HRV analysis.
Methods: Twenty-two patients diagnosed with FBSS and treated with SCS participated in this study. HRV was measured with a 2-lead ECG registration tool during on and off state of SCS. HRV analysis for time, frequency, time-frequency and nonlinear domain parameters was based on a 5-minute recording segment.
Results: The mean heart rate and low frequency power were significantly lower when SCS was activated. HRV, absolute and normalized high frequency power significantly increased during SCS compared to without SCS. The ratio of low frequency/high frequency ratio's, as parameter for global sympathetic-parasympathetic equilibrium, significantly decreased when SCS was activated.
Conclusions: When SCS is switched off, patients with FBSS present relatively stronger sympathetic tone and weaker parasympathetic activity. Activation of the SCS, possibly via stimulation of the DNIS, restores this disbalance of autonomic activity.

P403

EFFECTS OF TRANSCRANIAL DIRECT CURRENT STIMULATION (TDCS) ON CLINICAL AND EXPERIMENTAL PAIN IN PATIENTS WITH FIBROMYALGIA

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Background and aims: Previous literature reports that tDCS over the primary motor cortex (M1) may improve pain symptoms in patients with fibromyalgia (FM). We aim to provide evidence on this treatment and compare the effects of stimulation over M1 vs. operculo-insular cortex (OIC), a more specific pain processing area.
Methods: 78 FM female patients were randomly assigned to 3 treatment groups (left M1, OIC or sham). We delivered 15 consecutive (3-week) 20-minute sessions of 2-mA anodal tDCS. Visual Analogue Scales (VAS) for pain and other core symptoms of fibromyalgia, and quantitative sensory testing (mean algometry at the 18 tender points), were applied before and after treatment. During the intervention, adverse effects were controlled using a standardized questionnaire.
Results: The three groups were comparable in the severity of FM symptoms prior to the intervention. The treatment effect was significant for pain assessed by VAS, regardless of the group: all patients, including those under sham stimulation, showed improvement in perceived pain. In contrast, tDCS had no effect on pain thresholds obtained by algometry. No major adverse effects were reported.
Conclusions: Stimulation over M1 and OIC did not show greater pain relief than sham stimulation, and thus treatment effects may be considered non-specific. Given our results and previous literature, we suggest that the outcome variables choice is critical to assess the effectiveness of tDCS, a safe intervention. Due to the complexity of FM symptomatology, further analyses of the effectiveness of tDCS in other comorbid symptoms (as depression or cognitive dysfunction) are needed.

PALLIATIVE CARE

P404

ESSENTIAL PALLIATIVE CARE MEDICINES IN ARMENIA

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Background and aims: In some countries there is a lack of access to pain and palliative care medicines. The aim of this work is to assess availability and affordability of essential palliative care medicines in Armenia.
Methods: To assess availability of tracer medicines the List of medicines registered in Armenia (2019) and pricelists of 4 main wholesalers (for 2019) were analyzed. Affordability of medicines was calculated using methodology developed by World Health Organization and Health Action International. Data on prices were collected from 5 community pharmacies in Yerevan.
Results: Only 80% of all the 20 medicines for pain and palliative care listed in the World Health Organization (WHO) Model Essential Medicines List of 2017 are authorized are available in pricelists. However, calculation made with taking into account dosage forms and doses of essential medicines, allowed to reveal that only 52.3% of 44 pharmaceutical forms and 44.4% of 63 strengths recommended by WHO for pain and palliative care medicines are authorized. Only 50.0% of recommended pharmaceutical forms and 33.3% of strengths were found in pricelists of local wholesalers. Cost of treatment with use of two essential medicines for palliative care (lactulose, oral liquid, 3.1-3.7 g/5 ml and midazolam, injection, 5 mg/ml) is not affordable.
Conclusions: Despite the most of medicines recommended by the WHO for pain and palliative care are available in Armenia, most of recommended pharmaceutical forms and strengths for these essential medicines are not supplied due to which there is a lack of access to these essential medicines.

PHARMACOLOGICAL THERAPIES

P405

A FIRST-IN-HUMAN CLINICAL TRIAL TO ASSESS SAFETY, TOLERABILITY, PHARMACOKINETICS AND PHARMACODYNAMICS OF STR-324, A DUAL ENKELPHALINASE INHIBITOR AND THERAPEUTIC CANDIDATE FOR PAIN MANAGEMENT

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Background and aims: Dual Enkephalinase Inhibitors (DENKIs) inhibit the metallopeptidases NEP and APN and increase the bioavailability of enkephalins, which regulate nociception of pain via opioid receptors. STR-324 is a human endogenous compound belonging to the DENKI pharmacological class. This first-in-human study evaluated the safety, tolerability, pharmacokinetics and pharmacodynamics of STR-324 in healthy male subjects.
Methods: This study was a placebo-controlled partial cross-over study following an interleaving dosing schedule in 30 subjects in two groups, each receiving four dose levels (0.00425-11.475mg/h) of STR-324 or placebo (ratio 4:1) by 4-hour intravenous infusion over four treatment periods (part 1). In part 2, 48 subjects divided in three groups received either the active drug or placebo (ratio 3:1) by 48-hour intravenous infusion. The three dose levels (1.25-11.25mg/h) were selected based on tolerability in part 1 and on expected analgesic activity.
Treatment-emergent (serious) adverse events (TE(S)AEs), pharmacokinetics and effects on neurocognitive tasks

and on a nociceptive test battery were evaluated.
Results: No specific pattern of AE was identified. No clinically relevant changes in ECG, vital signs or laboratory tests were observed. Analyses of the analgesic effects and the pharmacokinetic profile of STR-324 are ongoing.
Conclusions: STR-324 displayed favourable safety and tolerability profiles in healthy subjects at all doses up to 11.475mg/h. Final results on pharmacokinetic and pharmacodynamic endpoints will be presented at the conference.
Disclosure: This study was supported by Stragen France SAS.

P406

POPULATION PHARMACOKINETICS OF OXYCODONE AFTER EPIDURAL AND INTRAVENOUS ADMINISTRATION

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Background and aims: Oxycodone is nowadays the most used opioid agonist to treat moderate to severe pain.[1]Despite that, the knowledge on epidural administration of oxycodone is sparse. Here we establish a population pharmacokinetic (PopPK) model for oxycodone concentration in plasma and cerebrospinal fluid (CSF) after epidural and intravenous administration.
Methods: 30 women undergoing gynaecological surgery with postoperative epidural analgesia were administered a single dose of oxycodone 0.1 mg/kg either epidurally or intravenously. A spinal catheter was inserted at L3/4 for CSF collection and indwelling venous catheter for plasma collection. A PopPK model for oxycodone was built using the NONMEM software package.
Results: Oxycodone concentrations in plasma and CSF were described using separate central compartments for plasma and CSF, and separate peripheral compartments for plasma and CSF. Epidural space served as a depot compartment with transfer to both central compartments of plasma and CSF.
Conclusions: A PopPK model describes oxycodone time-concentration data with high precision and accuracy. The model can be used for future pharmacodynamic-pharmacokinetic modelling of intravenously and epidurally administered oxycodone.
Reference: 1. Kinnunen et al. Clin Pharmacokinet. 2019
Acknowledgements: Declaration of Interest: No potential conflict of interest was reported by the authors.

Variable	IV-group (n=12)	EPI-group (n=18)
Age (years)	52 (26-60)	56 (27-64)
BMI (kg/m2)	26.5 (20.5-35.5)	25.9 (19.0-34.6)

[Table 1. Patients' characteristics, median (minimum-maximum).]

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A NEW *N*-ACYLHYDRAZONE AS A POTENTIAL ANTINOCICEPTIVE AGENT

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Background and aims: LASSBio-1822 is a new N-acylhydrazone (NAH). Due to the diversity of biological actions of NAHs in this work our aim was to investigate the antinociceptive potential of the new molecule LASSBio-1822.
Methods: Female Swiss Webster mice (22-25 g, n=4-6) were treated orally with LASSBio-1822 (0.003-0.3 mg/kg), morphine (2.5 mg/kg) or vehicle. Antinociceptive effects were evaluated in chemical (formalin-, glutamate- or capsaicin-induced licking) or thermal (hot plate, HP) models. Area under the curve (AUC) was calculated in Prism Software 5.0. Statistical analysis was performed by ANOVA/Bonferroni´s post-test. Protocols for animal use received number #DFBCICB015-04/16.
Results: In chemical models, 0.3 mg/kg significantly inhibited in 38.4% and 46.7% the 1st and 2nd phases of formalin-induced licking, respectively, and in 63.8% and 82.5% the capsaicin- and glutamate-induced nociception, respectively. All doses increased, in a dose dependent manner, the AUC (in HP) in 308%, 583% and 1053%, for 0.003, 0.03 and 0.3 mg/kg, respectively when compared to vehicle-treated group. The antinociceptive effect was also significant even when compared with morphine (which presented an increase of 76%).
Conclusions: Our data indicate that LASSBio-1822 demonstrated a significant antinociceptive effect even when compared with morphine and can be suggested as a promising prototype for the development of a new analgesic drug.
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VOLUNTARY ORAL ADMINISTRATION OF THE PRO-RESOLUTION MEDIATOR MARESIN 1 ATTENUATES MECHANICAL ALLODYNIA IN THE SPARED NERVE INJURY MODEL OF NEUROPATHIC PAIN

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The resolution of inflammation is an active process that involves a group of endogenous lipid molecules - the specialized pro-resolution mediators (SPMs). Maresin 1 (MaR1) is a recently identified SPM with analgesic, anti-inflammatory and pro-resolution actions. We evaluated the effects of voluntary oral administration of MaR1 on mechanical allodynia in the spared nerve injury (SNI) model of neuropathic pain (NP) in mice.
SNI was induced in 11-week-old C57BL/6J male and female mice, which were randomly assigned to 2 groups: SNI-MaR1 (n=8) and SNI-vehicle (n=8). MaR1 (50 µg/kg) was administered from post-surgical days 3 to 5 by voluntary oral intake. On each treatment day, a mixture of strawberry jam *plus* MaR1 saline suspension (SNI-MaR1) or plain saline (SNI-vehicle) was fed to each mouse (mice were previously trained to voluntarily ingest the jam). Mechanical withdrawal thresholds were assessed at baseline and on postoperative day 10 with von Frey filaments.
All animals completely ingested the jam mixture within less than 5 min, wherefore this administration route appears to be an effective, less-stressing alternative to either i.p. injection or oral gavage. Treatment with MaR1 resulted in increased mechanical withdrawal thresholds on day 10 ($P < 0.001$). No differences between sexes were found at baseline, or on the effects of the treatment.

Oral treatment with MaR1 attenuates SNI-induced mechanical allodynia in mice. MaR1 may be a potential therapeutic strategy to treat peripheral NP.
Supported by Universidade do Porto/FMUP and European Social Fund (NORTE-08-5369-FSE-000011-Doctoral Programmes) - LTS fellowship, and Fundação Grünenthal (Bolsa Jovens Investigadores em Dor 2018).

P409

ADVERSE DRUG REACTIONS DURING S-KETAMINE INFUSION IN PATIENTS WITH CHRONIC PAIN: 5 YEARS OF EXPERIENCE

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Background and aims: S-ketamine has been used for over a decade to treat chronic pain syndromes, such as Complex Regional Pain Syndrome. There is limited information on the incidence of adverse drug reactions of S-ketamine infusions at subanesthetic doses. The aim of present study was to evaluate adverse drug reactions (ADR) in a cohort of patients receiving S-ketamine for chronic pain.
Methods: In this retrospective observational study, patients receiving S-ketamine infusions for chronic pain from January 2012 to December 2017 at University Medical Centre Utrecht were included. S-ketamine was administered in a daycare setting starting with a 5 mg bolus, followed by a gradual dose increase from 5 to 30 mg/hour during five hours on average. Patient characteristics, ADR, and reasons for premature protocol cessation were collected from medical charts.
Results: During the 5-year period, 201 included patients received 511 S-ketamine infusions (range 1-20 infusions per patient) with a mean dose of 104.3 mg (range 20-200 mg). In 93% of the first S-ketamine administrations ADR were reported including dizziness (40.3%), somnolence (30.3%), nausea (28.4%), vomitus 14.4%, hallucinations (tactile 18,9%, visual 17.9%, emotional 10.0%) and urine retention (10%). During all subsequent infusions ADR were reported. Premature ending of protocol based on side effects was recorded during first infusion (25.4%) and subsequent infusions (5.8%).
Conclusions: Adverse drug reactions during S-ketamine infusion for chronic pain are common. Physicians should be highly alert on these reactions, inform patients about these reactions prior to treatment and consider (preemptive) administration of anti-emetic drugs, benzodiazepines and/or α2-agonists.

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REAL-WORLD EFFICACY OF TAPENTADOL: ANALYSIS OF DATA FROM THE GERMAN PAIN PRACTICE REGISTRY (GPPR)

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Background and aims: Innovative analgesics with dual mode of action like Tapentadol (TAP), are often used in late stages of chronic non-tumour-induced pain. We analysed data from GPPR to evaluate TAP usage patterns and their outcomes in real world.
Methods: Patients with chronic pain (spine/low back) on TAP were retrospectively analysed using propensity scoring, for age, gender, chronification and graded pain scale (von Korff). Patients were assigned to 3 groups based on prior treatment, WHO1 non-opioids, 2 -weak opioids and 3-strong opioids (group 1, 2 and 3). The primary endpoint (PE) was % of patients with a ≥50% decrease in pain intensity at week 12, others were modified pain disability index in daily life (MPDI) and neuropathic cardinal symptoms (NCS).

Results: Of 174,222 patients in GPPR, 48,506 (27.8%) received analgesics, with 10,389 (6.0%) receiving TAP. The PE was achieved by 82.5/71.0/60.7% of patients (groups 1/2/3); vs. baseline, similarly in the mPDI 68.7%, 58.7% and 50.0% of patients benefitted, especially in reduction of sleep impairment, and other domains like household activities, social interactions and self-care. In the domain of NCS 54.8%, 41.3% and 31.7%, patients benefitted in respective Groups of 1,2 and 3. Generally group 1 exhibited higher/better responses than group 2, which was better than group 3.
Conclusions: Real-world evidence of TAP usage showed robust analgesic efficacy in all groups, however switching to TAP earlier from WHO 1&2 analgesics in chronic pain was associated with better outcomes.

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THE EFFECTS OF LONG-TERM OPIOID TREATMENT ON THE IMMUNE SYSTEM: A SYSTEMATIC REVIEW

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Background and aim: Opioids have been increasingly prescribed for various pain conditions including chronic non-cancer pain (CNCP). An association between long-term opioid treatment (L-TOT), infections and cancer due to a possible suppression of the immune system has been shown. This systematic review aimed at determining the effect of L-TOT on the immune system in CNCP patients.
Methods: A systematic search of MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials and the CINAHL for relevant articles in English, Danish, Norwegian or Swedish was performed. Studies examining the immune system in adult CNCP patients in L-TOT (>4 weeks of intake) were included. Outcomes and level of evidence were analyzed (The Cochrane Collaboration Tool, a modified version of the Newcastle-Ottawa Scale and Rating of Recommendations Assessment, Development and Evaluation working group).
Results: Three-hundred-eighty-two studies were screened, 376 were excluded and one RCT and five cross-sectional studies were included. L-TOT compared to no treatment was associated with a decreased percentage of NK cells, a decreased amount of $CD56^{bright}$ NK cells, an increased amount of IL-2 activated NK cells and increased levels of IL-1b as a response to toll-like receptor agonists stimulation. No other significant differences were observed. Generalizability of the results was limited due to a lack of consistency in outcomes and an overall low quality of the studies.
Conclusion: Evidence is weak, but it suggests that L-TOT may have an immune suppressing effect in CNCP patients. This imposes caution on opioid prescription for CNCP until further studies clarify this issue.

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PAIN ROUTER: A GUIDE TO THE MECHANISM-ORIENTED PAIN THERAPY IN CHRONIC NON-MALIGNANT PAIN

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Introduction: The widespread use of the WHO-Guidelines for non-cancer pain has led to the uncritical use of opioids, especially in the United States.
Methods: In order to make it easier for the physicians to use the mechanism-oriented use of medication, we have developed a clear and simple therapeutic scheme, the so called “Pain Router”.

Description of the use of the Pain Router: After a detailed history and diagnostics, the pain is classified according to the underlying mechanisms into a nociceptive, nociceptive-inflammatory, neuropathic or nociplastic / dysfunctional pain. In the next step, we select analgesics that most effectively influence the underlying mechanisms. The medications can be easily found out by using the Pain Router.
Results: The Pain Router in clinical practice: In the years 2015-July 2017, we trained 1,400 physicians in the use of the "Pain Router" and applied it in practice with several case studies. The question "Is the PAIN router useful for daily practice was answered by 1391 physicians. 87% of the participants found the Pain Router a useful tool for the selection of pain medications. 85% of the doctors considered the Pain Router to be more useful than the WHO Guidelines for chronic non-malignant pain.
Conclusion: The "Pain Router" is a clear, simple and short therapy guideline . It describes a mechanism-oriented selection of pain medications. The pain router can help to reduce the early and frequent use of opioids in chronic non-malignant pain.
Doctors rated the Pain-Router as more meaningful than the WHO-Guidelines.

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INVOLVEMENT OF SEROTONERGIC, NORADRENERGIC AND GABAERGIC SYSTEMS IN THE ANTINOCICEPTIVE EFFECT OF A KETAMINE-MAGNESIUM SULFATE COMBINATION IN ACUTE PAIN

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Background and aims: Ketamine and magnesium can interact in additive, supra-additive and antagonistic manners in analgesia or anesthesia. Ketamine is a non-competitive NMDA receptor antagonist. Magnesium is an endogenous non-competitive NMDA antagonist that causes anion channel blockade in a dose-dependent manner. It has been established that ketamine and magnesium interact synergistically in the tail-immersion test in rats.
To determine the role of serotonergic, GABAergic and noradrenergic systems in analgesia induced by the ketamine-magnesium sulfate combination.
Methods: Experiments were performed on male Wistar albino rats (200-250 g). Antinociception was evaluated by the tail-immersion test.
Results: Methysergide (0.5 and 1 mg/kg, sc) administered alone did not affect nociception in rats. Methysergide (0.5 and 1 mg/kg, sc) antagonized the antinociceptive effect of the ketamine (5 mg/kg)-magnesium sulfate (5mg/kg) combination. Bicuculline (0.5 and 1 mg/kg, sc) given alone did not change the threshold to thermal stimuli in rats. Bicuculline (0.5 and 1 mg/kg, sc) antagonized the antinociceptive effect of the ketamine (5 mg/kg)-magnesium sulfate (5 mg/kg) combination. Yohimbine (0.5, 1 and 3 mg/kg, sc) applied alone did not change nociception. Yohimbine at a dose of 0.5 mg/kg did not influence the effect of ketamine (5 mg/kg)-magnesium sulfate (5 mg/kg), while yohimbine at doses of 1 and 3 mg/kg antagonized the antinociceptive effect of this combination.
Conclusions: Serotonergic, noradrenergic and GABAergic systems participate, at least in part, in the antinociceptive effect of the ketamine-magnesium sulfate combination in acute pain in rats.

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ANALGESIC EFFECT OF NOVEL MONOCLONAL ANTIBODY AGAINST NAV1.7 IN PERIPHERAL NEUROPATHIC PAIN MODELS

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Background and Aims: Voltage-gated sodium channel 1.7 (Nav1.7) is predominantly expressed in sensory and sympathetic neurons. Loss of function mutation of SCN9A coding for Nav1.7 causes congenital insensitivity to pain and its gain of function is associated with the induction of erythromelalgia and small fiber neuropathy. Therefore, Nav1.7 could be promising targets for relieving chronic pain such as neuropathic pain.. In this study, we produced monoclonal antibodies targeting Nav1.7-specific extracellular domain and investigated whether the antibody could be effective for neuropathic pain in rats.
Methods: Monoclonal antibodies were established by hybridoma technology after the immunization in mice. Voltage-gated sodium current was measured in HEK293 cells expressing Nav1.7 by manual patch clamp. The antibody was injected intraplantarly or intravenously for behavioral tests.
Results: We found some mouse monoclonal antibodies with strong affinity to Nav1.7 and high selectivity among other Nav subtypes. Our mouse antibody (mClone5) inhibited the voltage-gated sodium current. An intraplantar or intravenous injection of mClone5 reduced pain-related behaviors in rat neuropathic pain model induced by partial sciatic nerve ligation (pSNL). In addition, an intravenous injection of humanized antibody developed from mClone5 (hClone5) produced strong and persistent inhibitory effect on pain-related behaviors in pSNL rats. Furthermore, hClone5 inhibited pain-related behaviors significantly in two types of diabetic neuropathic pain models produced by streptozotocin (STZ), pregabalin-responsive and resistant models, in rats.
Conclusions: These results suggest that our novel antibody against Nav1.7 are effective for neuropathic pain. Nav1.7 might be promising analgesic target in the patients with chronic pain such as neuropathic pains.

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ROLE OF CANNABIS AND CANNABINOIDS IN PAIN MANAGEMENT AND SOCIAL ASPECTS OF MEDICAL CANNABIS LEGALIZATION

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Background and aims: Aim of the study was to review the quality, safety and efficacy of medical cannabis (MC). Botanical, regulatory and social-epidemiological aspects were included.
Materials and methods: We did a search of PubMed, Elsevier and the Cochrane databases up to 30th of April, 2019 using “cannabis”, “cannabinoids” as key words. We identified 46 studies meeting our inclusion criteria.
Results: 568 molecules and 104 cannabinoids are identified from Cannabis. Number of pharmaceutical forms are available including capsules, tinctures, oils, dermal patches, sprays, smoking formulations. The variety of active compounds and absence of pharmacopoeia articles for quality standardization makes difficult to classify and study safety and efficacy of MC in pain control. In the latest research, MC based therapy reduced pain 10,7% compared to placebo (4,5%) using VAS in patients with chronic pain, however some studies showed no change. Nabiximols showed reduction in muscle spasms by 1.3 compared to placebo - 0.4 points. Consumption of marijuana in US by 2004 reached 7.13% in states with and 3.57% without medical cannabis laws (MCL) as well as marijuana abuse 1,27% and 2,61% respectively. In 2016 Israel became the leading country for cannabis consumption as the prevalence rate after MCL implementation reached 27% of the entire adult population.
Conclusions: Implementation into pharmacopoeia monographs for MC quality control is mandatory and larger scale studies are required to determine therapeutic benefits of cannabis medication. MC legalization causes the increase of cannabis abuse and it may negatively affect public health situation on a country level.

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EFFECTIVENESS AND TOLERABILITY OF THC:CBD OROMUCOSAL SPRAY FOR CHRONIC PAIN - RESULTS OF A LONGITUDINAL ANALYSIS FROM THE GERMAN PAIN UNITS REGISTRY

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Since the March 2017 German regulation on cannabis derived products medicinal use, its use in chronic pain when no other alternatives work is possible. Standardized prospective data of patients in THC:CBD oromucosal spray for chronic pain for at least 12 weeks within the German Praxis Register Schmerz 132 centres network are presented. 800 subjects were treated (57.0% female, age: 46.3±9.7 (range: 19-77) years). Failing an average of 9.7±2.3 (range 4-17) prior medicines, 67.9% suffered persistent dysfunctional chronic pain >1y. Commonest diagnoses were back pain (29.3%), Failed Back Surgery Syndrome (18.5%), shoulder/neck pain (11.4%), and post-herpetic neuralgia (9.0%).
After 12W 82.3% achieved ≥30% pain VAS reduction, 67.5% showed ≥50% and 43.3% ≥70%. Neuropathic pain patients (by PDQ7) were 62.1% and benefited the most regardless of the underlying condition: mean reduction in VAS -33.6±14.1, while mixed pain patients (31.1%) achieved -14.2±10.5. In the whole sample improvements (all $p < 0.001$) of the pain index (PIX: 46.8-20.0 mm VAS), pain-related everyday impairments (mPDI: 66.2-31.6 mm VAS), physical/mental QoL (SF12-KS: 34.7-47.5; PS: 42.6-48.1), general well-being (MFHW: 1.5-2.8), depression (DASS-D: 16.5-7.1), anxiety (DASS-A: 14.4-7.0) and stress (DASS-S: 17.9-6.8) were seen. Beyond pain phenotype, stress, anxiety and pain intensity were predictors of good response.
THC:CBD W12 mean dose was 7.1±1.4 (median: 7, range: 3-11) sprays/day. 9.5% patients abandoned by W4, a further 8.6% by W12. 35.6% could stop at least one of pre-existing long-term analgesic medication, 47.9% could abandon at least one rescue medications.
The use of THC:CBD in difficult neuropathic pain results highly effective.

PAIN THERAPIES WALK 4

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PATTERNS OF OPIOID PRESCRIBING FOR PATIENTS BEFORE REFERRAL TO A UNIVERSITY HOSPITAL SECONDARY CARE PAIN MEDICINE SERVICE IN LIVERPOOL, UK

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Background and aims: Opioids are often prescribed to patients with chronic non-malignant pain before referral to specialist pain services, but the evidence to support their use in this setting is limited. This study aims to assess the prescribing of opioids for patients before referral to a secondary care Pain Medicine Service (PMS) in relation to the wider opioid prescribing pattern for the patient population in primary care across Liverpool Clinical commissioning Group (CCG).
Methods: A retrospective analysis of opioids prescribed to patients referred to the PMS at the Royal Liverpool and Broadgreen University Hospitals NHS Trust between June and November 2018. The data were compared to an audit

of opioid prescribing in primary care across Liverpool CCG between April and September 2018.
Results: 430 patients referred to the PMS met the inclusion criteria; 279 patients (64.5%) were prescribed opioids on referral; and 21 (4.9%) patients were prescribed high-dose opioids ≥120mg/day morphine equivalent. The PMS reduced the dose of opioids in 61.2% of patients who were prescribed high-dose. City wide; 43280 (8.2%) of the patient population (527,646) were prescribed opioids, 610 prescribed high dose, with 79% of patients prescribed high-dose opioids not under the care of any PMS in the city.
Conclusions: Only a small number of patients prescribed high-dose opioids in primary care are referred to the PMS. The Royal College of Anaesthetists recommends multidisciplinary assessment for patients prescribed ≥120mg/day morphine equivalent. This highlights opportunities for greater collaborative working between primary and secondary care for this patient group.

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THE USE OF NON-OPIOID ANALGESICS IN PATIENTS TAKING ANTIPLATELET DRUGS AND ANTICOAGULANTS, WHAT TO LOOK FOR IN CLINICAL PRACTICE

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The use of non-opioid analgesics in patients with cardiovascular disease is associated, inter alia, with an increased risk of bleeding complications. The risk is particularly high among patients receiving antiplatelet drugs (acetylsalicylic acid, clopidogrel, cilostazol, ticagrelor) and anticoagulants (acenocumarol, warfarin, dabigatran, rivaroxaban, apixaban) simultaneously with analgesics.
We observed 84 patients who due to cardiovascular diseases and accompanying inflammatory pain had to simultaneously take non-opioid analgesics and antiplatelet or anticoagulant drugs. The occurrence of potential bleeding complications was monitored in all patients.
In a group of 84 patients haemorrhagic complications occurred in 16 patients who simultaneously took warfarin with paracetamol, while in the next 11 bleeding occurred when warfarin was combined with dabigatran and rivaroxaban with meloxicam, diclofenac and piroxicam. In the antiplatelet group, bleeding occurred in 8 patients using acetylsalicylic acid and ticagrelor with ibuprofen and meloxicam.
The obtained data show that pharmacokinetic interactions have an important role in the occurrence of bleeding complications, for example the intensification of the anticoagulant effect of warfarin in the case of concomitantly used paracetamol. An important risk factor is the long half-life of NSAIDs used, eg meloxicam, piroxicam. It is worth noting that dexketoprofen and ketoprofen cause adverse interactions with acetylsalicylic acid.

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IMPROVED SAFETY OF OPIOID ANALGESIC OLICERIDINE COMPARED TO MORPHINE ASSESSED BY UTILITY FUNCTION ANALYSIS

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Full μ-receptors agonists produce analgesia, by activation of the G-coupled signaling pathway, and dose-dependent respiratory depression (with apnea at high doses) by activation of the b-arrestin pathway. Recent focus has been on the development of biased ligands, which are μ-receptors agonists that selectively engage the G-coupled signaling pathway while avoiding the b-arrestin pathway. We compared the respiratory and analgesic effects of 3 intravenous doses of the biased ligand Oliceridine (1.5, 3 and 4.5 mg) and one morphine dose (10 mg) in 30

volunteers. We performed a population pharmacokinetic-pharmacodynamic analysis and constructed utility functions. Utility functions are objective assessments of the probability of analgesia relative to the probability of respiratory depression. The morphine steady-state plasma concentration causing 25% ventilatory depression was 11±2 ng/mL (median±SE) and for concentration causing a doubling of the pain tolerance 34±10 ng/mL; the equivalent values for Oliceridine were 27±4 ng/mL (ventilation) and 28±5 ng/mL. The values indicate a 2.5-fold greater morphine respiratory potency compared to Olicerdine while equipotency was observed for analgesia efficacy of the two opioids. Additionally, Oliceridine equilibrates more rapidly than morphine with its effects compartment. The two utility curves that were constructed, i.e. the probability of analgesia minus the probability of respiratory depression and the probability of analgesia without respiratory depression, were all in favor of Oliceridine compared to morphine, indicating that following treatment with Oliceridine the probability of analgesia exceeds that of respiratory depression, over the dose range studied. In contrast, the probability of respiratory depression exceeded that of analgesia following morphine treatment.

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DIETARY ASCORBIC ACID RESTRICTION IN GNL/SMP30-KNOCKOUT MICE UNVEILS THE ROLE OF ASCORBIC ACID IN REGULATION OF $CA_V3.2$-DEPENDENT PAIN

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Background and aims: $Ca_V3.2$ T-type calcium channels, expressed in the primary afferents, play a pronociceptive role, and their function is regulated by a variety of extracellular substances; e.g. Zn^{2+} reduces $Ca_V3.2$ activity by binding to His^{191} in $Ca_V3.2$, an effect cancelled by L-cysteine and H_2S, a gasotransmitter. Interestingly, ascorbic acid (vitamin C) suppresses $Ca_V3.2$ activity through metal-catalyzed oxidation of the Zn^{2+}-binding His^{191}. The present study thus examined the role of ascorbic acid in nociceptive processing, using the mice lacking gluconolactonase (GNL)/SMP30, an enzyme essential for ascorbic acid biosynthesis.
Methods: T-type calcium channel-dependent currents (T-currents) were determined in NG108-15 cells that abundantly express $Ca_V3.2$. GNL/SMP30-KO and wild-type mice were subjected to dietary ascorbic acid restriction. Ascorbic acid levels were measured by HPLC. Somatic allodynia and referred hyperalgesia were assessed by von Frey test.
Results: NaHS, an H_2S donor, enhanced T-currents in NG108-15 cells, an effect abolished by ascorbic acid. The somatic allodynia and referred hyperalgesia following intraplantar and intracolonic NaHS, respectively, and paclitaxel-induced neuropathic allodynia in wild-type mice were suppressed by ascorbic acid or T-type calcium channel blockers. Dietary ascorbic acid restriction caused systemic ascorbic acid deficiency in GNL/SMP30-KO, but not wild-type, mice. The ascorbic acid restriction enhanced the NaHS-induced somatic and visceral hypersensitivity and paclitaxel-induced neuropathy in GNL/SMP30-KO mice, while it had no such effect in wild-type mice.
Conclusions: Our data unveil the critical role of ascorbic acid in regulating $Ca_V3.2$-dependent somatic and visceral pain hypersensitivity.

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TOPICAL MORPHINE FOR THE TREATMENT OF CANCER-RELATED PAINFUL MUCOSAL AND CUTANEOUS LESIONS: A DOUBLE-BLIND, PLACEBO-CONTROLLED CROSS-OVER CLINICAL TRIAL

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Background and aims: Painful mucosal and cutaneous lesions are often less responsive or even refractory to systemic opioid analgesics. There is evidence that suggests the effectiveness of topical morphine be restricted to inflammatory pain. The aim of this study was to assess the effectiveness and safety of the topical morphine for the pain related to mucosal lesions and skin ulcers.
Methods: The study was a 14-days randomized placebo-controlled cross-over trial with a 28-days follow-up open phase (OP). The trial was conducted in adult patients with localized cancer-related pain and treated with systemic opioids. The patients administered 0.2% gel on the mucosal lesion or 0.2% ointment on the skin lesion by themselves. The primary measurements were mean pain intensity (MPI) and mean pain relief (MPR) in NRS 0-10, and ITT analysis was performed.
Results: 35 patients were randomized to the RCT, and all of them finished 14-day observation. The MPI before the treatment was NRS 5.9 and decreased to 2.5 after morphine ($p < 0.0001$ vs. placebo). The MPR was 57% after morphine, and 77% of the patients using topical morphine reached clinically significant (at least 50% of the starting value) pain relief, statistically different to placebo. The analgesic effect sustained over the 28-day OP period ($p = 0.00001$). No side effects were reported, except for two cases of moderate pruritus.
Conclusions: Topical morphine appeared fast-acting, highly effective, and safe medication for mucosal and skin lesions in palliative patients, with sustainable pain relief effect over the 28-day observation period.

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THE ASSOCIATION BETWEEN ACCEPTANCE AND PSYCHOLOGICAL AND PHYSICAL FUNCTION IN PORTUGUESE WOMEN IN CHRONIC PAIN DUE TO ENDOMETRIOSIS

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Background and aims: Endometriosis is a significant chronic health condition, affecting about 10% of adult women worldwide. One major symptom of this illness is chronic pain. Both endometriosis itself and pain associated to it greatly impact these patients' well-being. Previous research shows that mindfulness-based interventions may be effective in increasing the well-being in women with endometriosis. This cross-sectional study sought to examine: (a) the association between acceptance and awareness, on one hand, and psychological and physical function, on the other; (b) the moderation effect of acceptance and awareness in the association between physical and psychological function, in a sample of women with chronic pain due to endometriosis.
Methods: A sample of 189 Portuguese adult women with endometriosis completed measures of acceptance and awareness, psychological function, pain and physical and social impact of the condition.
Results: Participants presented a mild depression, a moderate level of anxiety and severe distress. Acceptance, but not awareness, was significantly negatively correlated with psychological function. Physical and psychological function were significantly positively correlated. Neither acceptance nor awareness moderated the association between physical and psychological function.
Conclusions: These results suggest the need to rethink the clinical intervention with women with endometriosis. Psychological intervention programs should promote acceptance as a resource for promoting psychological adjustment. Future research should examine the role of meaning attributed to the condition and associated pain, as well as the role of the social support network.
Keywords: Endometriosis, Chronic pain, Acceptance, Psychological function, Physical Function

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CONTRIBUTION OF MINDFUL SELF-COMPASSION PROGRAM IN SELF-CARE PRACTICE AND NEGATIVE MOOD IN CHRONIC PAIN PATIENTS

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Background and aims: Chronic pain is a complex health problem because it involves psychological, emotional and cognitive aspects that affect patient's quality of life. In order to manage pain experience, people develop different psychological coping strategies that can impact their life in a negative way. Mindfulness based interventions work with body, emotions and cognitive aspects that can improve and develop coping strategies to manage and accept pain experience. The aim of this study was to analyze the contribution of Mindful Self-Compassion Program (MSC) in self-care practice and negative mood in chronic pain patients.
Method: We developed eight post-intervention focus group with chronic pain patients referred from Pain Unit of La Paz University Hospital. Half of the patients had been through a Behavioral-Cognitive Program and the other half of the patients had been through MSC. In a qualitative phenomenological methodology, we explored MSC contribution self-care and negative mood of the sample of patients with chronic pain.
Results: Both interventions were effective in order to improve coping with pain because they provided ways to accept it and manage it in an active way. However, MSC allowed patients to connect with their own vitality, changing pain experience perception from something bad to something that helped them to increase self-knowledge. Also, MSC led patients to be more careful with themselves, improving their quality of life.
Conclusions: MSC improved pain experience of the patients because it included self-care practices, and this allowed them to develop better coping with chronic pain.

PHYSICAL / OCCUPATIONAL THERAPIES

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DO CHANGES IN DEPRESSIVE SYMPTOMS MEDIATE THE EFFECT OF EXERCISE AND ADVICE FOR SUB-ACUTE LOW BACK PAIN?

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Background: The mechanisms by which exercise and advice cause less pain and disability in patients with subacute low back pain are unknown. Objective was to estimate how much of the effect of a physiotherapist-directed exercise and advice intervention on pain and disability is mediated via changes in depressive symptoms.
Methods: Secondary causal mediation analysis of a randomized controlled trial. We measured our hypothesized mediator - depressive symptoms (Depression, Anxiety, Stress Scale-21) at 6 weeks, and the outcomes - pain (numerical rating scale) and disability (Roland Morris Disability Questionnaire) at 3 months. We pre-specified a causal model to identify potential confounders of the mediator-outcome effect and conducted a sensitivity analysis to assess the robustness of the Average Causal Mediation Effect (ACME) under varying levels of unknown

confounding.
Results: Data from 240 patients were analyzed (average age 50.5 (SD 15.6) years, 52% male, median depression score 4). Exercise combined with advice had a significant effect on pain (-1.19, 95%CI -1.85 to -0.48), and disability (-1.70, 95%CI -2.89 to -0.57), but this effect was not mediated via depressive symptoms: ACME on pain (0.05, 95%CI -0.24 to 0.15), ACME on disability (-0.10, 95%CI -0.59 to 0.38).
Conclusions: Depressive symptoms did not mediate the effect of exercise and/or advice in this population. However, depressive symptoms were associated with pain and disability.

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EFFICACY OF TOPICAL VIBRATORY STIMULATION FOR REDUCING PAIN DURING TRIGGER POINT INJECTION TO THE GASTROCNEMIUS: A RANDOMIZED CONTROLLED TRIAL

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Objective: To evaluate the efficacy of topical vibratory stimulation for reducing pain during TPI.
Design: Double-blind randomized placebo-controlled clinical trial.
Participants: A total of 136 participants were recruited, 65 were excluded because of exclusion criteria and 11 because of refusal to participate. In total, 60 participants with myofascial pain syndrome affecting the gastrocnemius were enrolled. No participants had been dropped out.
Intervention: Participants were randomly assigned to the vibration group or control group. TPI was performed with 0.5% lidocaine using a 25-gauge needle. Vibrator was applied to the popliteal fossa for 3-5 seconds prior to and during TPI to the gastrocnemius; 100 Hz vibration was turned on for the vibration group and turned off for the control group.
Main Outcome Measures: The intensity of pain during TPI was assessed using a 100-mm visual analogue scale (VAS) as a primary outcome, and participant's satisfaction and preference for repeated use were measured using five-point Likert scales as a secondary outcome. These parameters were evaluated immediately after TPI by self-reporting.
Results: VAS scores for pain during TPI was significantly lower in the vibration group (30.30; 95% confidence interval [CI], 22.65-39.26) compared with the control group (47.58; 95% CI, 38.80-56.52; P=.01). The mean difference in VAS scores between the two group was 17.27 (95% CI: 5.24-29.30). Participant's satisfaction and preference for repeated use were significantly higher in the vibration than in the control group (P< .05). No participants showed any side effects.
Conclusions: Topical vibratory stimulation significantly decreased pain during TPI of the gastrocnemius.

P426

MULTIMODAL PAIN THERAPY AND WHAT THEN? A RE-EVALUATION OF THE THERAPEUTIC SUCCESS 3 YEARS AFTER COMPLETION OF THE TREATMENT

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Introduction: In May 2012, a multimodal treatment program for people with chronic pain was introduced at our hospital. Approximately 800 patients with back pain, headaches and musculoskeletal pain had completed the therapy.
The multimodal pain therapy is a group therapy (8 - 10 people) and lasts four weeks. The therapy takes place on a daily basis and also includes so-called refresher days and refresher weeks.
The success of the therapy is evaluated on an ongoing basis and the interest in the before-and-after changes in the

following areas applies:
Pain perception, pain experience, impairment of pain, quality of life, anxiety and depression, psychopathology / depression, patient satisfaction.
Currently, we are interested in patients who have completed their therapy in the first three years (2012 - 2015).
Methods: All 380 patients who participated in the Multimodal Therapy for the first 3 years received a questionnaire which records all of the variables mentioned above (treatment discontinuation was not reported).
Patients were contacted by the Multimodal Pain Management Secretariat by telephone to maintain a high frequency of recurrence.
Start of the survey was in early March 2018, the emissions were made at weekly intervals.
Results:
- response rate 44% (167 out of 380)
- 60% of patients report that their health has improved significantly or significantly since therapy
- 93% are satisfied with the therapy to very satisfied
- 60% are still working
- A significant reduction in pain can be seen
- The subjective quality of life is significantly increased

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COMPARING THRUST VERSUS NON-THRUST SPINAL MANIPULATION TECHNIQUES RELATIVE TO SHAM COLD LASER ON PAIN AND DISABILITY IN CHRONIC LOW BACK PAIN

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Low back pain (LBP) is one of the most common reasons for seeking medical care. Spinal manipulative therapies, a common treatment for LBP, are often applied using a thrust (manipulation) or non-thrust technique (mobilization), yet few studies have compared the effectiveness of these two techniques. Accordingly, we conducted a single-blinded (investigator-blinded) sham-controlled study with three arms (ClinicalTrials.gov Identifier: NCT01854892) to determine the effectiveness of spinal manipulation versus spinal mobilization on reducing pain and disability in patients with chronic low back pain compared to each other as well as to a control group that received sham cold laser. Adult participants (n=162; 18-45 years of age) with chronic low back pain were randomly assigned to one of three treatment arms and received six treatment sessions of 1) spinal manipulation, 2) spinal mobilization, or 3) sham cold laser therapy over a 3-week period. The co-primary outcome measures were the change in numerical pain rating (NPR) and the change in disability assessed with the Roland Morris Disability Questionnaire (RMDQ) at 48-72 hours following completion of the six treatments. At the primary endpoint, there was no effects of manipulation (p=0.88) or mobilization (p=0.98) on the change in NPR. Further there was no effects of manipulation (p=0.80) or mobilization (p=0.54) on the change in disability measured using the RMDQ. Participants in this trial, in general, presented with mild chronic LBP, which may have reduced the impact of the interventions. We conclude that neither spinal manipulation nor mobilization appear to be effective treatments for mild chronic LBP.

P428

THE IMMEDIATE EFFECTS OF KINESIOLOGY TAPING ON EXPERIMENTALLY-INDUCED PAIN IN OTHERWISE PAIN-FREE HEALTHY HUMAN ADULTS

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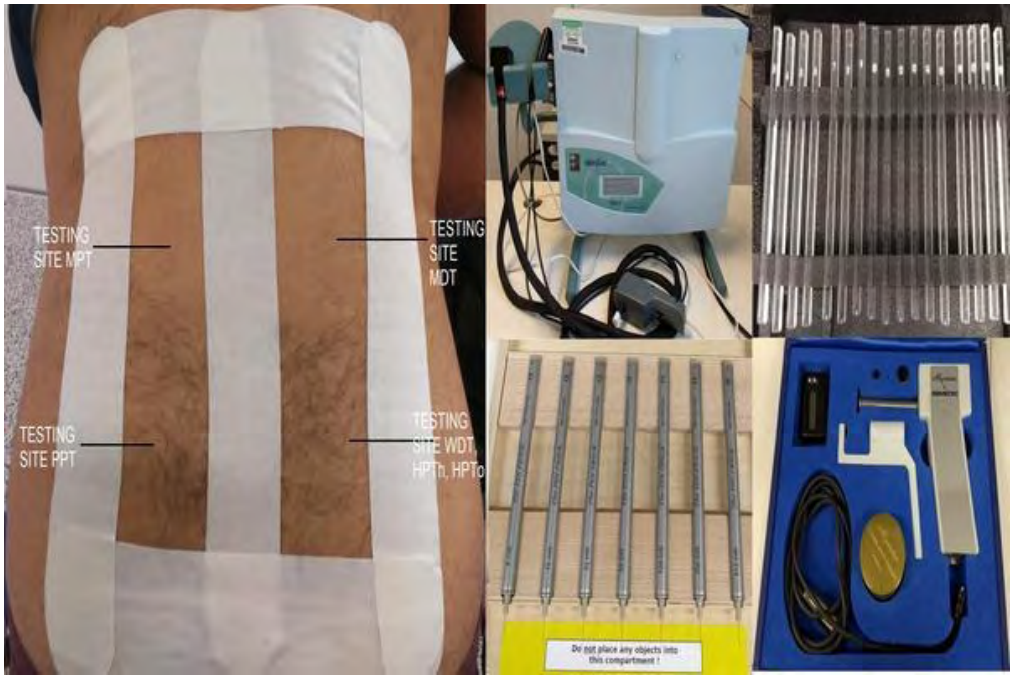
Background: Kinesiology taping (KT) is used to manage musculoskeletal-related pain. There is a paucity of studies evaluating the effect of KT on stimulus-evoked experimental pain. The aim of the study was to investigate the effect of KT on cutaneous somatosensation to noxious and innocuous stimuli in healthy humans using quantitative sensory testing (QST).
Methods: 54 pain-free participants were randomly allocated to one of the three interventions: (i) KT (ii) ST (standard taping) (iii) ShT (sham taping). QST measurements were taken at the lumbar region [Figure 1] pre- and during-intervention with the tape in-situ. Sequence of measurements was warm-detection-threshold (WDT), heat-pain-threshold (HTPh), heat-pain-tolerance (HPTo), mechanical-detection-threshold (MDT), mechanical-pain-threshold (MPT) and pressure-pain-threshold (PPT).
Results: Mixed ANOVA revealed statistically significant interaction between Intervention and Time on MDT and MPT but not on WDT, HPTh, HPTo and PPT datasets. There was a significant main effect of Time but not Intervention on WDT, HPTh, HPTo. There was no significant main effect of Time nor Intervention on PPT. There was no significant simple main effect of Intervention on MDT and MPT; Tukey's HSD post-hoc tests showed ST and KT groups had higher MDT and MPT than the ShT group. There was a significant simple main effect of Time on MDT and MPT for the KT and ST groups but not the ShT group.
Conclusion: KT does not influence cutaneous thermal and deep pressure nociception but may modulate cutaneous mechanosensation in humans with normally functioning nociceptive system.



[Figure 1 QST testing site and apparatuses]

P429

ENDOGENOUS MODULATION OF PAIN - NO APPARENT DIFFERENCES IN THE MAGNITUDE OF INHIBITORY RESPONSE BETWEEN EXERCISE-INDUCED HYPOALGESIA AND CONDITIONED PAIN MODULATION

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Background and aims: Recent findings suggest that there may be a link between the tolerance to stretch and endogenous inhibitory pain mechanisms which can be induced with paradigms of exercise-induced hypoalgesia (EIH) and conditioned pain modulation (CPM). Although both methods are known to increase pain tolerance in healthy adults activating a CPM response seems to induce a greater inhibitory response compared with exercise. The aim of the study was to compare the magnitude of inhibitory response induced by EIH and CPM.
Methods: Nineteen healthy male participants were included in this randomized, repeated-measures cross-over study conducted in two sessions (EIH & CPM) on separate days. Passive knee extension range of motion (PROM) and pressure pain thresholds (PPT) were assessed before and after the induction of an EIH and CPM response. The EIH was assessed following a 3-minute isometric muscle contraction of the hand flexors and CPM was assessed following a cold pressor test. The difference in PROM and PPTs between measurements was extracted for data analysis.
Results: A statistically significant increase in PROM ($p < 0.034$) and PPT ($p < 0.027$) was found after both EIH and CPM. However, no differences in PROM or PPTs were seen when comparing EIH and CPM ($p = 1.00$). Also, moderate and significant correlations in pain sensitivity responses were found between EIH and CPM (Rho = 0.562, $p = 0.01$).
Conclusion: Engaging endogenous pain modulatory systems results in a significant increase in PROM and PPTs however, no differences were seen when comparing EIH and CPM.

PAIN IN GENERAL

P430

LONG-TERM EFFECTS OF MULTIMODAL REHABILITATION IN PRIMARY CARE FOR PATIENTS WITH CHRONIC PAIN

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Objective: To investigate the effects of multimodal rehabilitation programmes (MMRP) for patients with chronic pain, both as a whole and for men and women separately. A second aim was to identify predictive factors for being employable at follow-up.
Design: A prospective, longitudinal cohort study of 234 patients. Pain, physical and emotional functioning, coping, health-related quality of life, work-related factors, sick leave and sickness compensation/disability pension were evaluated prior to and one year after MMRP.
Setting: Primary care settings in two county councils in Sweden.
Participants: 234 patients, 34 men and 200 women, aged 18-65 years.
Main outcome measurements: Pain, physical and emotional functioning, coping, health-related quality of life, work-related factors, sick leave and sickness compensation/disability pension.
Results: Patients reported small but significant improvements at one-year follow-up for all measures except

satisfaction with life. The size of the effects was larger for women than for men. The proportion of patients on sick leave decreased significantly at follow-up while there was no significant difference regarding the proportion of patients on sickness compensation/disability pension.
Conclusion: This study indicates that MMRP in primary care can be beneficial for patients with chronic pain and seems to have positive effects on pain, physical and emotional functioning, coping, and health-related quality of life, at least for women.
Keywords: Multidisciplinary, Multimodal, Rehabilitation, Pain, Primary care, Outcome, Gender

P431

IMPACT OF HIGH FREQUENCY SPINAL CORD STIMULATION AT 10 KHZ ON BLADDER SYMPTOMATOLOGY: AN OBSERVATIONAL CASE SERIES

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Background and aims: Persistent neuropathic pain after spinal surgery, or failed back surgery syndrome (FBSS), is a frequently observed medical condition. It is the primary indication for consideration of spinal cord stimulation (SCS) trial in our center.
We identified back pain patients with self-reported bladder problems at the time before the High Frequency Spinal Cord Stimulation at 10 kHz (SCS-HF10) trial.
Methods: Five patients (3 male, age range: 46-63 years) underwent assessment of bladder function. Urogenital Distress Inventory Short Form (UDI-6) and Incontinence Impact Questionnaire (IIQ-7) administered at baseline and 2-6 months post-implantation. Ensured cauda equina compromise not in medical history of patients.
Result: All patients described some reduction or stoppage in medications (either anti-convulsant, anti-depressants and/or opioids) in response to SCS-HF10. When asked, patients described their improved bladder symptoms as representing a major contributor to the positive outcome of their SCS-HF10 treatment.
Conclusions: This small case series demonstrate improvement in bladder symptoms and consequently quality of life following SCS-HF10 to treat FBSS. The mechanism underlying the change in symptoms observed on the study group remains to be explored in future studies.

P432

THE OSLO UNIVERSITY HOSPITAL PAIN REGISTRY: A DIGITAL REGISTRY WITH BASELINE DATA FROM 1,712 CHRONIC PAIN PATIENTS

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Background and aims: To evolve the efficacy of pain treatments, we need to describe chronic pain conditions in their most relevant aspects, and have real-world outcomes of clinical interventions. This insight is best obtained through analyses of data from large registries where patient characteristics, treatment characteristics, treatment outcomes and patient outcomes are recorded.
Methods: This study describes the design and baseline data of the Oslo University Hospital Pain Registry (OPR). OPR is the local registry of the largest university and interdisciplinary outpatient pain clinic in Norway. Recording of patient data started in October 2015, with approximately 1,000 patients were assessed and treated at the clinic yearly. During the 2 years of running, 1,712 patient baseline reports were recorded from 2,001 patients. Clinicians enter data about relevant treatments and interventions. The patients complete an electronic registration immediately before their first consultation at the outpatient pain clinic. The baseline questions of the OPR cover: Basic demographics; Pain characteristics; And biopsychosocial aspects (i.e., quality of life, distress, self-efficacy, fatigue,

sleep, pain catastrophizing, experienced injustice).
Results: Baseline data show that chronic pain patients experience a large negative impact in all aspects of life.
Conclusions: The OPR describes relevant aspects of chronic pain conditions, and efficacy of interventions in a real-world setting. The OPR may serve as a registry model for other pain clinics, and the OPR cohort may also serve as a historical control in future studies.

P433

ADMINISTRATION OF LOCAL ANALGESIC (ROPIVACAINE) WITH DEXAMETHASONE ON THORACOLUMBAR FASCIA REDUCES SERUM LEVEL OF CHEMOKINE EXPRESSION IN OPERATIVE INCISION AFTER EXPERIMENTAL MODEL LAPARATOMY

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Background: Our studies were directed towards determining if administration ropivacaine with dexamethasone alter chemokine production in serum after experimental model of laparatomy.
Methods: A rats operative model laparatomy was used to measure the effects of ropivacaine with low dexametasone administration on nociceptive thresholds and chemokine production in serum 45 minutes, 4 hours after incision. Examination 48 rats, undergoing operative incisional model laparatomy, first group receive combination ropivacaine with dexamethasone on thoracolumbar fascia, second group without analgesic administration.
Results: Operative incised abdominal wall displayed profound allodynia which was reduced by ropivacaine with dexamethasone combination in the 4 hours following incision. Serum blood in samples harvested from these rat showed enhanced levels of MCP-1 (chemokine). MCP-1 levels in serum were determined by ELISA in 10 rats, control subjects (C), 18 rats - ropivacaine with dexamethasone combination (RD), and in 20 rates without analgesic administration (WA). Statistical analysis utilised Mann-Whitney test, Fisher´s exact test, and Spearman´s rank correlation ($P < .05$). In comparison to control subjects (C; median/interquartile range: 237/124 pg/mL), MCP-1 serum levels were increased in without analgesic administration (WA: 384/370 pg/mL, $P < .001$) and not increased in ropivacaine with dexamethasone combination (RD: 232/127 pg/mL). ($p < 0.001$).
Conclusions: Ropivacaine with dexamethasone administration on thoracolumbar fascia reduces serum chemokine expression. These studies suggest that ropivacaine with dexamethasone administration on thoracolumbar fascia may alter the inflammatory reaction.

P434

THE IMPACT OF PAIN ON MALTESE CITIZENS: A CROSS SECTIONAL STUDY

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Background: The objectives of this research were to obtain information on the extent of the impact of pain on Maltese citizens, to discern the frequency of diverse pain including chronic & severe pain and to profile the burden of pain among adult sufferers in Malta,
Method: A cross-sectional survey (N = 1100) was undertaken across the Maltese Islands, using mixed methodology approaching sample partially online (70%) and partially by phone (30%) amongst adults aged over 18 years in Malta between December 2017 and January 2018. Qualitative research through 2 focus groups was also carried out in February 2018. The tool of measurement for the quantitative telephone interviews was the SF-36v2® Health Survey tool with 36 questions to measure functional health and well-being from the patient´s point of view. This was back

translated into Maltese.
Results: 52.4% have experienced some extent of pain in the last 3 months while 22% indicated that this pain was moderate to very severe and impacting greatly on their quality of life; 37.8% of respondents indicated that they had been experiencing pain for over 2 years. Almost 65% of respondents experiencing pain identified as being musculoskeletal in nature. 70% of respondents identified their GP as their first point of contact either in the private or public health sector
Conclusion: Comparisons with other European studies shows that chronic pain in Malta is equally common to most countries. Most of respondents suffering from chronic pain are generally satisfied with their given treatment.

P435

FACTORS ASSOCIATED TO A PERCEPTION OF DEPENDENCE ON OPIOID ANALGESICS FOR PSYCHOACTIVE EFFECTS ACCORDING TO NON-CANCER CHRONIC PAIN PATIENTS AND PAIN SPECIALISTS

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Preventing opioid and gabapentinoid use disorders in chronic non-cancer pain patients is a worldwide challenge. Chronic pain and emotion diseases are strongly interrelated. Factors associated to the perception of dependence on psychoactive effects of analgesics were investigated.
Methods: This French multicentric cross-sectional study was based on the responses to self-administered questionnaires dedicated to patients and to pain specialists. The patient/physician pair was classified in the group of “dependence on pain medications for psychoactive effects” as soon as either the patient or the pain specialist or both of them answered yes to this question. Factors associated to this dependence were researched by multivariate logistic regression model.
Results: Among the sample population (N=187), a quarter of patients and/or pain specialists had the perception that patient attachment to pain medications included dependence on their psychoactive effects. Anxiolysis was the main desired psychoactive effect.
An increase of OR of this perception was observed when patients were older in age ([OR]: 1.39, 95% CI: 1.03-1.90), if they feel psychological signs of analgesic withdrawal ([OR]: 2.85, 95% CI: 1.25-6.76) and if they have sometimes an irrepressible desire to use their analgesics for their psychoactive effects ([OR]: 4.22, 95% CI: 1.43-12.76).
Discussion/conclusion: The results suggest that in non-cancer chronic pain patients for whom anxiety and/or depression are frequent, psychological signs of opioid analgesics inter-doses withdrawal and craving for psychoactive effects represent determinants of a psychological dependence.

P436

ONE NIGHT OF TOTAL SLEEP DEPRIVATION AFFECTS CENTRAL AND PERIPHERAL PAIN PATHWAYS IN HEALTHY PARTICIPANTS

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Background and aims: Chronic pain patients often suffer from insomnia or impaired sleep which has been associated with increased pain sensitivity but a limited amount of studies have investigated the effects of total sleep deprivation (TSD) on central pain mechanisms. Therefore, the aim of this study was to determine the effects of total sleep deprivation on temporal summation, conditioned pain modulation, thermal and pressure pain sensitivity in healthy participants.
Methods: Twenty-four healthy participants took part in this two-session trial. The measurements were conducted after a night of habitual sleep (baseline) and following 24 hours of TSD. Detection thresholds for cold and warmth and pain thresholds for cold and heat were assessed. Cuff induced pressure pain detection and tolerance thresholds, temporal summation and conditioned pain modulation were assessed with user-independent, computer-controlled cuff algometry.
Results: Conditioned pain modulation was significantly impaired ($P < 0.05$), temporal summation was significantly facilitated ($P < 0.05$) and pain sensitivity to pressure and cold pain were significantly increased ($P < 0.05$) at follow-up compared with baseline.
Conclusion: This study found that one night of TSD impaired descending pain pathways, facilitated spinal excitability and sensitized peripheral pathways to cold and pressure pain.

ACUTE PAIN

P437

A NOVEL APPROACH TO COUNTERBALANCE PAIN-INDUCED REDUCTION IN CORTICOMOTOR EXCITABILITY

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Background: Musculoskeletal pain strongly reduces corticomotor excitability as measured by transcranial magnetic stimulation (TMS) motor-evoked potentials (MEPs). Contrarily, action-observation (AO) and motor imagery (MI) strongly facilitate MEPs. This study aimed to determine if AO and MI (AOMI) counterbalance the reduction in corticomotor excitability evoked by acute experimental pain.
Methods: 12 healthy subjects (6 females) partook in 3 cross-over, randomized sessions (1 week separated). AOMI session: AOMI was performed by observing index finger abduction-adduction for 10 mins. PAIN session: Hypertonic saline was injected into the first dorsal interosseous muscle and participants remained at rest for 10 mins or until pain-resolve. AOMI+PAIN session: An injection of hypertonic saline in the FDI muscle was given prior to performing AOMI. Pain intensity was evaluated on a numerical rating scale (NRS). TMS-MEPs were assessed from the FDI muscle at baseline, during, immediately after, and 10 mins after AOMI or PR. Multiple contrasts (baseline versus 2-4 mins, and post-pain) were corrected by false-discovery rate (P-values< 0.017 considered significant).
Results: MEPs increased during AOMI at 2-4 mins (165±22.9% and 177±25% of baseline, respectively, $P < 0.017$), whereas pain reduced MEPs at four mins (71.8±9.3% of baseline, $P < 0.017$). Performing AOMI counterbalanced pain-induced MEP reduction at 2-4 mins and post-pain in the AOMI+PAIN session (122±15.7%, 103±13%, and 77.8±9.6% of baseline, respectively, $P > 0.017$). Pain NRS scores were similar between the two pain sessions ($P = 0.71$).
Conclusion: An acute intervention with AOMI counterbalances pain-induced reduction in corticomotor excitability, and may seed the development of novel approaches for rehabilitation in musculoskeletal pain conditions.

PAIN IN CHILDREN

P438

THE ANALGESIC EFFECT OF VIRTUAL REALITY IN PEDIATRIC PROCEDURAL PAIN: A SYSTEMATIC REVIEW

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Background and aims: Procedural pain is an important source of fear and distress for children. Distraction is a widely used non-pharmacological approach to manage pediatric pain. A new distraction method is Virtual Reality (VR) technology; it combines multiple senses to provide a feeling of presence into a virtual world. Most reviews so far assessed the effect of VR distraction in adults. This systematic review of randomized controlled trials aims to evaluate the analgesic effect of VR distraction in procedural pain in children.
Methods: A systematic search was conducted using MEDLINE (through PubMed), Embase, CENTRAL and Web of Science from the earliest date until October 2018. By determining a set of inclusion and exclusion criteria, 17 trials were retrieved and qualitatively analyzed using the Cochrane risk of bias tool. Selected studies were grouped by type of procedure.
Results: Children distracted by VR during painful procedures had overall less pain when compared to standard of care. The analgesic effect is better using active VR distraction than passive VR distraction. Mainly for minor procedures (wound care and venipuncture), VR technology seems to be an appropriate technique to redirect children's attention away from the painful stimulus. This was not the case for port catheter access (with EMLA) and lumbar puncture (compared to EMLA topically and sedation).
Conclusion: This study provides support for further implementation of VR technology in daily medical practice on the children's ward.

P439

TRANSLATION AND VALIDATION OF THE PARENT FEAR OF PAIN QUESTIONNAIRE FOR A FRENCH SPEAKING POPULATION

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Introduction: The negative effects of fear and avoidance of pain in children and adolescents is broadly accepted (Asmundson et al., 2012). Recent research showed the parental influence on fear and avoidance in children and adolescents. To assess parental fear about their children's pain, a questionnaire was developed, in English (Simons et al., 2015). The aim of this study was to formally translate and validate this questionnaire in French.
Method: A total of 154 parents of adolescents with (n=96) or without (n=58) chronic pain completed the PFOPQ. Adolescents completed measures of fear of pain, catastrophizing and functional disability. Items of the PFOPQ were translated and back translated. Chronbach's Alpha, Structural Equation Modelling (SEM) and Pearson's correlations were performed.
Results: Chronbach's Alpha showed good internal validity (.92). SEM revealed that our data did not fit the four-dimension model proposed by the author of the original questionnaire. Therefore we observed residual correlations and created eight items-pairs, to improve the model (^{2}(175)=315.834, p< .001; ^{2}/ ddl=1.80; CFI=.90, RMSEA=.07). Pearsons correlations showed significant positive correlations between the items of the questionnaire. Scores of the PFOPQ (and for each subscales) were significantly correlated with scores of the adolescent's questionnaires. Stronger correlations were found for adolescents with chronic pain.
Discussion: The French-validation of scales is rare but necessary for leading research and inspiring clinical work in a French-speaking population. The validation of the PFOPQ might support research that considers the crucial role of the family context in paediatric pain.

PAIN IN THE ELDERLY

P440

SUPERIOR GLENOHUMERAL SUBLUXATION IN PAINFUL AND MAJOR ROTATOR CUFF PATHOLOGY

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Background and aims: Massive rotator cuff tears (RCT) are associated with significant pain and disability and affect the position of the humeral head in the glenoid. The purpose of this study was to examine the accuracy of superior migration of the humeral head on plain radiographs using magnetic resonance imaging (MRI) as the gold standard.
Methods: This was a prospective diagnostic study. The superior subluxation of the humeral head was measured in two radiographic views. The validity indices examined the accuracy of acromiohumeral distance (AHD) of < 6m and ≥6m in relation to MRI findings.
Results: 150 consecutive patients (mean age 59, SD 11, 57 females) were assessed at a tertiary shoulder centre. The AHD of < 6m was highly specific in both views for muscle wasting (98%), presence of tear (98%), tear size (96-98%) and fatty infiltration in supraspinatus and infraspinatus muscles (93-96%). Absence of AHD of < 6m was highly correlated with lack of advanced fatty infiltration (sensitivity values ranging from 91% to 100%). Sensitivity values were low for all other MRI findings ranging from15% to 56%.
Conclusion: Superior migration of the humeral head with respect to glenoid is an important radiological sign that can be reliably measured in various views. The strong correlation between reduced AHD and advanced RC pathology in patients with painful and disabling rotator cuff tears assists with clinical decision-making for appropriate surgical intervention. In cases with a massive RCT, a reverse arthroplasty may be indicated as the repair is usually not feasible.

PAIN SYNDROMES WALK 9

P441

PAIN COPING AND FUNCTION IN CHILDREN WITH PAIN

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Background and aims: Pain coping has been associated with function in children with pain. The objective of this study was to better understand the role that coping strategies play in the adjustment to pain in a non-clinical sample of school-age children with pain.
Methods: Two hundred and forty-five children (60% girls; age (SD): 11.73 (2.24) years old, range=7-15) who reported having pain in the previous three months provided demographic and pain-related information (pain location, frequency, and intensity), and completed measures assessing pain interference, anger, depression severity, and pain coping strategies (approach, problem-focused avoidance, internalizing/catastrophizing and externalizing coping strategies). Zero-order correlation analyses were used to estimate the associations between pain coping strategies and the study criterion variables. Three mediation analyses were performed to evaluate the extent to which pain coping strategies mediate the association between pain intensity and measures of function.

Results: Problem-focused avoidance coping was significantly and negatively associated with pain interference, anger and depression, whereas internalizing/catastrophizing and externalizing coping were positively and significantly associated with pain intensity, pain interference, anger and depression. Internalizing/catastrophizing was found to mediate the association between pain intensity and anger (β=0.11, CI= 0.03 to 0.22 at 95% confidence), and pain intensity and depression severity (β=0.12, CI= 0.02 to 0.24 at 95% confidence).
Conclusions: Internalizing/catastrophizing emerged as a primary pain coping strategy that mediates the association between pain intensity and emotional function. This suggests the possibility that targeting reductions in internalizing/catastrophizing may improve emotional function in children with pain; research to evaluate this possibility is warranted.

P442

ALTERED PREFRONTAL CONNECTIVITY DURING RESTING STATE IS LINKED TO AGE-RELATED CHANGES IN PAIN PERCEPTION

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Background and aims: Aging process directly affects the organization and functioning of pain and resting-state networks by causing atrophy in its main components. However, the consequences of these alterations in pain perception in older individuals have not yet been examined. This study employed seed-based functional connectivity (FC) analysis of resting-state fMRI data by using regions from default-mode, salience and pain networks to investigate resting-state and pain perception changes in old participants.
Methods: 36 older (mean age 66.94±4.10; 16 males) and 34 younger healthy participants (mean age 20.53±2.27; 15 males) underwent 10 minutes' eyes-closed resting-state scanning. We examined the relationship between extracted FC parameters with pressure and thermal pain thresholds and subjective pain ratings.
Results: Older participants showed higher pressure pain thresholds and higher associated pain ratings than younger participants. Compared to younger, older participants showed increased FC between medial prefrontal cortex (PFC) and areas including thalamus and basal ganglia. The strength of these connections was positively associated with pressure pain ratings. We also found reduced connectivity of dorsolateral PFC and anterior cingulate cortex (ACC) with bilateral insula in older compared to younger participants. Dorsolateral PFC-insula connectivity was positively correlated with thermal pain ratings and ACC-insula connectivity was negatively associated with pressure pain thesholds.
Conclusions: These preliminary results suggest that functional changes in regions belonging to the cognitive and emotional divisions of the pain-network are related to the documented abnormalities in pain thresholds in older people. Furthermore, these alterations could explain the greater vulnerability for chronic pain disorders in older individuals.

P443

THE DESTRUCTION OF DISTRACTION? NEURAL MECHANISMS OF REDUCED TASK-RELATED ANALGESIA WITH AGING

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Background and aims: Neuroimaging studies have shown that a simultaneous cognitive task reduces pain-related brain activity, while increasing prefrontal cortex (PFC) activation. Little is known about this analgesic effect of distraction in older adults. Because of its reliance on attentional resources, and its mediation by the PFC, we

expected distraction to be less efficient at reducing pain with increasing age. Our aim was to investigate the influence of aging on task-related analgesia, and explore its neural mechanisms.
Methods: So far, 24 young (M = 26.7yrs) and 13 older (M = 71.7yrs) participants took part. fMRI images were acquired during a pain distraction paradigm. Participants engaged in either an easy (0-back) or an adaptive difficult (2-back) cognitive task, while receiving painful and non-painful heat stimuli to the lower arm. They rated the intensity and unpleasantness of the thermal stimuli on a computerized VAS.
Results: Preliminary results indicate that older participants showed a smaller reduction in pain ratings during the difficult distraction task than young participants. This reduced distraction effect in the older group is mirrored by less reduction in activation in pain-related brain regions. Moreover, they showed a less strong recruitment of PFC regions during the distraction condition than young participants.
Conclusions: These preliminary results suggest that older individuals may indeed benefit less from distraction in decreasing pain perception. This reduced distraction effect may result from age-related PFC atrophy and declining attentional/executive resources. Demonstrating impaired top-down cognitive control of pain in older people has important consequences for pain management strategies.

P444

REDUCED INCIDENT MUSCULOSKELETAL CONSULTATION FOR PATIENTS WITH DEMENTIA: A RETROSPECTIVE COHORT STUDY OF THE UK CLINICAL PRACTICE RESEARCH DATALINK (CPRD)

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Background and aims: Painful musculoskeletal conditions are common for older adults with and without dementia. Clinical features of dementia (e.g. cognitive deficits and associated communication difficulties) may result in challenges of pain recognition/assessment for clinicians. This study investigated the incidence of musculoskeletal consultation for people with dementia compared to older adults without dementia.
Methods: A dementia cohort (*n*=21,093) was identified in a UK primary care electronic healthcare record database. Older adults (no evidence of a dementia diagnosis) were matched one-to-one on age, sex, and practice. The date of dementia diagnosis defined the index date. Neither cohort had evidence of musculoskeletal consultation during the 12-month period before index date. Person-time incidence rates were calculated, and multivariable Cox regression models estimated adjusted hazard ratios (aHRs) with 95% confidence intervals (95% CI).
Results: 15,015 incident musculoskeletal consultations were identified over a 5-year time period from index date. Incident rate per 100 person-years was 16.3 (95% CI. 15.9 to 16.7) for the dementia cohort, and 22.2 (95% CI. 21.8 to 22.7) for the older adult cohort. Mean time until identified incident musculoskeletal consultation was longer for the dementia cohort than the older adult cohort (1263 days vs 1094 days, respectively), with the dementia cohort having a reduced rate of incident musculoskeletal consultation (aHR 0.67, 95% CI 0.65 to 0.69).
Conclusions: Dementia is associated with a lower rate of incident musculoskeletal consultation, indicating potential issues with recognition and assessment of musculoskeletal conditions for patients with dementia.

P445

THE ANNUAL PREVALENCE OF MUSCULOSKELETAL CONSULTATION AFTER DIAGNOSIS OF DEMENTIA: A RETROSPECTIVE COHORT STUDY OF THE UK CLINICAL PRACTICE RESEARCH DATALINK (CPRD)

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Background and aims: Musculoskeletal pain conditions are common in older adults. However, the clinical features of dementia (e.g. cognitive deficits and associated communication difficulties) may result in difficulties in pain recognition/assessment for clinicians. This study investigated the prevalence of musculoskeletal consultation for people with dementia compared to older adults without dementia.
Methods: A dementia cohort (n=36,582) was identified in a UK primary care electronic healthcare record database. Older adults (no evidence of a dementia diagnosis) were matched one-to-one on age, sex, and practice. The date of dementia diagnosis defined the index date. The prevalence of musculoskeletal consultation was stratified into annual time blocks from index date for 5 years. Multivariable conditional logistic regression reporting adjusted odds ratios (aOR) with 95% confidence intervals (95% CI) estimated the association between dementia and musculoskeletal consultation.
Results: In the first year after index date, 24.5% (95% CI 23.9 to 25.0) of the dementia cohort consulted for a musculoskeletal problem, lowering to 19.5% (95% CI 18.3 to 20.8) during the fourth to fifth year. However, the prevalence remained consistent for the older adult cohort (year 1=30.8%, year 5=31.0%). The dementia cohort had lower odds of musculoskeletal consultation, which increased each year from the index date (year 1=aOR 0.82, 95% CI 0.78 to 0.85, to year 5=aOR 0.61, 95% CI 0.54 to 0.68).
Conclusions: The prevalence of musculoskeletal consultation lowered for people with dementia as the time from dementia diagnosis increased. Painful musculoskeletal conditions may be inadequately identified for patients with dementia, especially as dementia progresses.

P446

DISCOVERY OF NOVEL AND CONSERVED NOCICEPTIVE PATHWAYS IN CONGENITAL INSENSITIVITY TO PAIN

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Congenital insensitivity to pain (CIP) syndromes are a group of rare genetic disorders of the peripheral nervous system marked by the absence of pain perception, due to dysfunctional or absent sensory neurons. Studies of CIP syndromes have been instrumental in uncovering molecular mechanisms underlining pain perception. We, and others, have shown mutations in methyl transferase PR-domain containing member 12 (PRDM12) to cause a type of autosomal recessive CIP syndrome. PRDM12 plays an important role in the development of the neural crest in several species and plays a potential role in pathogenesis of chronic myeloid leukemia in humans. We showed that PRDM12 is a key regulator of sensory neuronal specification in *Xenopus leavis* and necessary for nocifensive behavior of *Drosophila melanogaster*. However, very little is known of the downstream targets of PRDM12 activity and of the potential role it might play in nociceptor physiology in vertebrates. We use various genetic mouse models to delineate the function of PRDM12 in pain perception, and uncover its downstream molecular targets. We find that PRDM12 is expressed in a specific subtype of nociceptors within the dorsal root ganglia, where it regulates their survival and function. We also uncover several novel downstream targets of PRDM12, previously unknown to participate in nociception. Here, we characterize homeobox protein MOX-2 (MEOX2) and its role in pain perception in a MEOX2-deficient mouse model. These studies enhance our knowledge of basic molecular mechanism underlying pain perception, as well as to provide novel research avenues for pain therapeutics.

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INTERDISCIPLINARY APPROACH FOR THE EVALUATION AND PREVENTION OF CHRONIC POSTOPERATIVE PAIN

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Background and aims: The incidence of chronic postoperative pain in cardiac surgery (CPOP) varies up to 56%. The identification of risk factors for CPOP may contribute to its prevention.
Methods: Retrospective analysis was performed for 153 patients. The working definition of CPSP initially proposed by Macrae was used. Patients was assessed with visual analogue scale (ranging 0-100), DN4 questionnaire, McGill Pain Index, Pain Catastrophizing Scale, Hospital Anxiety and Depression Scale (HADS).
Results: 56 patients (36,6%) reported CPOP. Neuropathic component (DN4 ≥4) was found in 35,7% patients with CPSP. No statistically significant difference was found between the CPSP group and non-CPSP group including age (p=0,612), female gender (p=0,54), past medical history of diabetes (p=0,97) or connective tissue dysplasia (p=0,24). The incidence of chronic pain was not different between the different types of surgery (p=0,51). At once, J-shaped ministernotomy was found to be a significant risk factor for CPSP after cardiac surgery compared to full sternotomy (p=0,041).
The intensity of chronic pain correlated with the level of catastrophizing (p = 0.045, r = 0.48), anxiety and depression (p = 0.049, r = 0.47).
Conclusions: CPOP was reported by 36,6% of the responding patients. Identifying psychologically vulnerable patients and early intervention pre- as well as post-operatively may help prevent the development of chronic pain in these patients.

Age Male/Female	58,9 (ranging 24- 79) 120 (78,4%)/ 33 (21,6%)
Diabetes mellitus Dysplasia Autoimmune diseases	21 (13,7%) 11 (7,2%) 12 (7,8%)
Bypass surgery Aorta and valve replacement Bentall procedure Combined surgery	71 (46,4%) 31 (20,3%) 38 (24,8%) 13 (8,5%)

[Table 1. Patient characteristics]

PAIN IN VULNERABLE GROUPS

P448

IDENTIFYING REHABILITATION NEEDS OF WOMEN FROM THE MIDDLE EAST WITH CHRONIC PAIN - A CHALLENGING EYE-OPENER

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Background and aims: Primary healthcare faces an increased number of people with complex pain problems resulting from forced resettlement. Not being able to direct treatment towards the individual woman's needs, neither being able to meet her expectations lead to a frustration from both the patient's and care provider's perspective. Based on previous research, there is a need to support health care professionals within primary care in the meeting with resettled women from the Middle East suffering from chronic pain.
This study aimed to evaluate the use of an interview guide from a healthcare professionals' perspective to identify the rehabilitation needs of women from the Middle Eastern diaspora who are living with chronic musculoskeletal pain.
Methods: Intervention study using quantitative and qualitative methods of data collection to evaluate the healthcare professionals' perspective.
Results: The interview guide was perceived as relevant, contributing to the identification of the patient's needs, with an overall representation of the patient's problems with regards to how her background and current life situation has affected her health. The interview guide also highlighted the need to collaborate across professional boundaries within healthcare as well as within society.
Conclusions: The organization and compensation within primary healthcare control the time and structure of each patient's consultation, with consequences that will affect patients who will not have their needs properly addressed. The results indicate a need of changes to routines and to include intersectionality and a person-centered approach within primary healthcare to avoid putting the patient at a disadvantage.

P449

THE VITA-OK PROTOCOL FOR CHRONIC GYNECOLOGICAL PAIN: TOLL-LIKE RECEPTOR TARGETED TREATMENT IN VULVODYNIA

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Background and aim: Vulvodynia is a disabling cause of chronic gynaecological pain, with poorly understood pathogenesis. A dysregulated proinflammatory and immune signalling by toll-like receptors (TRLs) may play a role in vulvar pain. Our project aims to use polietilen-anandamide(PEA) and curcumin as therapy tailored on the specific TLRs state.
Methods: In this stratified randomized controlled trial, we will reach statistical significance with a sample size of 92 patients with a clinical diagnosis and symptoms of vulvodynia. Recruited patients will undergo vulvar in-office examination and biopsy to assess TRLs expression and activity. According to the biopsy, data patients will be randomized defining four groups. Patients with high levels of TLRs treated using PEA (TAH-group) or PEA+Curcumin (TBH-group); patients with lower levels of TLRs treated using PEA (TAL-group) or PEA+Curcumin (TBL-group). We will evaluate by physical examination, questionnaires and tests the recruited patients to define pain characteristics, quality of life and sexual life, at T0 (recruiting phase), T1 (20 days post-treatment), T2 (60 days post-treatment) T3 (120 days post-treatment).

Results: The study will last for at least 24 months; preliminary results will be furnished. According to data published in previous literature and our clinical experience, we expect a decrease in pain entity of 50% in the TAL and TBL-groups, 70% TAH-group, and 80% in TBH-group.
Conclusions: PEA or PEA+Curcumin based treatments may be alternatives to the currently available therapeutic approaches that are not satisfying, in term both of failed therapeutic response and high recurrence rate.

ACUTE PAIN

P450

EFFECT OF SINGLE-DOSE DEXAMETHASONE ON ACUTE POSTOPERATIVE PAIN AFTER MAJOR SURGERY

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Background and aims: Single-dose dexamethasone may reduce postoperative pain, nausea and vomiting. But the optimal dose of dexamethasone has not been tested in major surgery. This study aimed to evaluate efficacy of different doses of dexamethasone for acute pain relief after major surgery.
Method: A double-blind randomized-controlled trial was conducted. Patients were allocated into one of the following groups: Group I -Normal saline, Group II- dexamethasone 0.15 mg/kg and Group III- dexamethasone 0.3 mg/kg at induction of anaesthesia. All patients underwent standardized general anaesthesia. Postoperative pain was managed by patient controlled analgesia with morphine. All patients were followed up to 24 hours postoperatively, visual analogue pain scores and morphine consumption were recorded at recovery room, 4 hours and 24 hour post-surgery.
Results: A total of 37 patients were enrolled, 13 patients each in Groups I and II and 11 patients in Group III. There was a statistically significant decrease in pain scores in the recovery room and at 4-hours post-surgery both at rest (p=0.01) and movement (p=0.03) with the use of dexamethasone 0.3 mg/kg dose at induction, compared to saline and dexamethasone 0.15 mg/kg. However, there was no significant difference in pain scores at 24-hours within the groups. Also there was no significant difference in the overall opioid consumption within the groups.
Conclusions: Dexamethasone in the dose of 0.3 mg/kg had a significant effect on early postoperative pain relief after major surgical procedures, although there was no significant impact after 24 hours and also the overall opioid consumption.

P451

FACTORS RELATED TO AMOUNT OF ANALGESIC REQUIREMENT IN POST-ANESTHESIA CARE UNIT (PACU): A PROSPECTIVE STUDY

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Background and aims: Moderate to severe immediate postoperative pain remains frequent after major and even minor-to-medium level surgical procedures. Pain relief has been found to be undermanaged and distressing to patients and staff alike. This prospective study aims to determine the predictive factors of opioid requirement of patients in PACU.
Methods: We collected details from adult patients undergoing elective surgery who were admitted to PACU including characteristics as well as anesthetic-related, surgical-related and PACU-related data. Continuous and categorical

variables are compared between patients who received and did not receive opioids in PACU, using univariate analysis. Associations between potential predictors and use of opioid are evaluated using multivariate logistic regression.
Results: Of 1,977 patients, 848 patients (42.9%) received opioid in PACU. From multivariate analysis, anesthetic techniques including monitor anesthesia care (MAC), target controlled infusion (TCI), spinal anesthesia and neuraxial block are predictive factors for not using opioid in PACU. General surgery, gynecological surgery, reoperation, intraoperative blood transfusion and verbal numerical pain score (VNRS) upon PACU arrival are predictive factors for receiving opioid in the immediate postoperative period.
Conclusions: The predictive factors for patients' requirement of opioid in PACU are general and gynecological surgeries, reoperation, intraoperative blood transfusion as well as VNRS.

P452

INTRAVENOUS OXYCODONE IN PROCEDURAL PAIN

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Introduction: Procedural pain is a clinical manifestation of intense episodic pain (IEP) following an invasive therapeutic procedure. Oxycodone iv has aroused great interest and we propose our clinical experience in patients who are sedated with dexmedetomidine.
Methods: After approval of the Local Ethics Committee and informed consent, we enrolled 20 ICU patients who needed thoracentesis and thoracic drainage. Inclusion criteria were: presence of a pleural effusion (US confirmed) requiring drainage, stable hemodynamics, stable sedative profile for at least 12 hours (patients sedated with dexmedetomidine at 0.5 mcg / kg / h). Patients who required simultaneous administration of other opioids were excluded from the study.Intravenous administration of oxycodone (5 mg bolus) was performed 10 minutes before the start of the procedure. Pain was assessed with NRS in three phases: T0 = start of the procedure; T1 = end of the procedure; T2 = 4 hours from the procedure. An acceptable NRS with a mean value of ≤ 4 was evaluated. In the study we provided a second administration of oxycodone to T2 for those patients with NRS> 4.
Results: All patients demonstrated an NRS ≤ 4 at T0 and T1. Of these, 13 patients required a second bolus at T2, as they presented NRS> 4. All patients 12-hour after the procedure have a satisfactory NRS< 4.
Conclusions: iv oxycodone for the control of procedural pain has proved to be a satisfactory approach in the management of procedural pain in patients mildly sedated hospitalized in ICU, reducing the use of other opioid drugs.

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SUPERIORITY OF TRAMADOL/DEXKETOPROFEN ANALGESIA VERSUS TRAMADOL/PARACETAMOL IS MAINTAINED IN PATIENTS WITH SEVERE ACUTE PAIN

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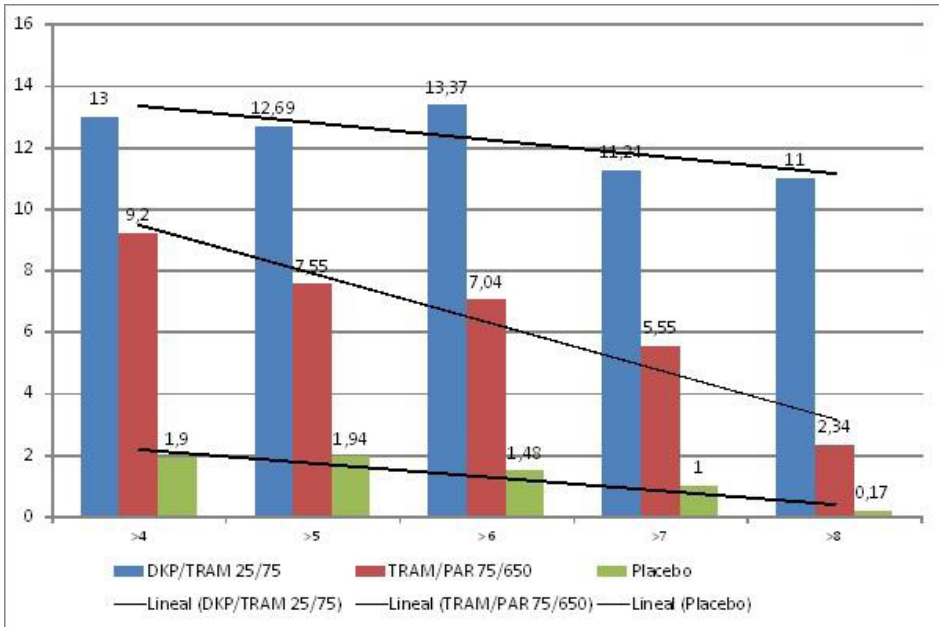
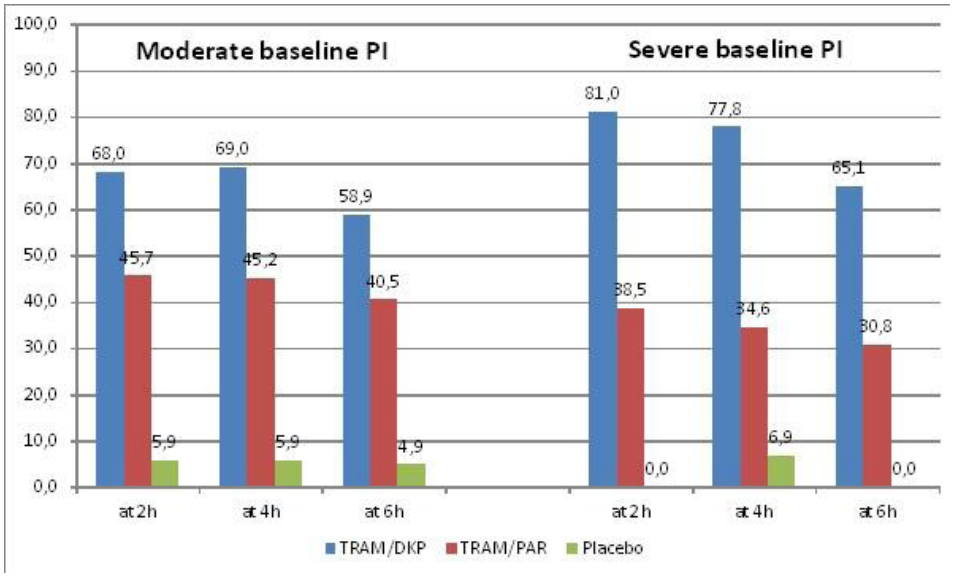
Background and aims: The effect of the severity of pain on the analgesia obtained following single dose of tramadol/dexketoprofen 75/25mg (TRAM/DKP) versus tramadol/paracetamol 75/650mg (TRAM/PAR) was evaluated in a randomised, double-blind, placebo-controlled trial in 650 patients with moderate to severe pain after impacted

third mandibular molar extraction.
Methods: Total pain relief (TOTPAR6, primary end-point), calculated as the weighted sum of pain relief scores over 6h, was analysed by baseline pain intensity (PI: 0-10 numerical rating scale, NRS) score higher than 4, 5, 6, 7 or 8. Percentage of responders (patients achieving at least 50% of the theoretical maximum TOTPAR at 2, 4, and 6 hours) overall and their distribution in the two baseline PI categories of severity (moderate: 4 to 6; severe: 7 to 10) was also analysed.
Results: TRAM/DKP maintained higher analgesic efficacy (as per TOTPAR6) across PI levels of severity at baseline; while TRAM/PAR analgesia was reduced with increasing PI at baseline.



[Total pain relief over 6 hours (TOTPAR6) by baseline pain intensity scores]

Percentages of responders at 2, 4, and 6 hours were consistently higher in the TRAM/DKP group (71.2%, 71.2%, and 60.4%) than in the TRAM/PAR group (44.3%, 43.1%, and 38.5%). The superiority persisted when responders were categorised by moderate to severe baseline PI.



[Percentage of responders by baseline pain intensity severity category]

Conclusions: TRAM/DKP (75/25 mg) is equally effective in patients with baseline pain intensity ranging from moderate to severe. In contrast, the TRAM/PAR analgesia was markedly decreased in patients with more severe baseline pain.

P454

PERIOPERATIVELY USE OF KETAMINE IN OPIOID DEPENDENT PATIENTS UNDERGOING SPINAL SURGERY: VAS RECORDS AND USE OF MORPHINE RESCUES

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Background: Postoperative pain management in opioid-dependent patients undergoing spinal surgery is complicated. According to the ASP recommendations(1), a new analgesic protocol was implemented in Hospital del Mar (Barcelona). Intraoperatively, ketamine continuous infusion is administered (0.2mg / kg / h dose). During the first 48 post-surgery hours, a PCA morphine-ketamine (1mg: 1mg) is used. Previous to the implementation of this protocol, PCA morphine or tramadol (100mg / 6h) were administered postoperatively.
Method: VAS records and morphine ev. rescue administered during 48 hours after surgery between 2018 and 2017 were compared. The demographic characteristics, the interventions performed and the preoperative opioid treatment are similar in both years. Statistical analyses of data were by chi-square-test.
Results: An improvement in the VAS records was observed after 2h and 48h post-surgery in 2018 ($p < 0.05$). The mg of rescue morphine administered has been reduced ($p< 0.05$). In 2018, only 3% of patients received analgesic rescue on the 2nd postoperative day compared to 30% in 2017.
Conclusion: The use of ketamine during the first 48 postoperative hours contributes to improve significantly the pain management of opioid-dependent patients undergoing spinal surgery
References:
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P455

PAIN SENSITIVITY MEDIATES THE LINK BETWEEN CATASTROPHIZING AND MILD TRAUMATIC BRAIN INJURY HEAD PAIN FOLLOWING MOTOR VEHICLE COLLISION

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Background: Understanding variability of mTBI head-pain consequent to motor vehicle collision (MVC) is integral for determining proper acute and long-term intervention. Research points to catastrophizing as a key cognitive factor in pain perception. However, it is integral to consider other cognitive features that may not be reflected by pain catastrophizing scale (PCS) such as the pain sensitivity questionnaire (PSQ) which addresses daily life potentially painful situations.
Aim: To investigate the manner in which PSQ alongside PCS affects head pain intensity at the very-early acute stage of mTBI.
Methods: 133 mTBI post-MVC patients (age 37 ± 12.5, range 19-67, 55F) were assessed for head and neck pain intensity, PCS and PSQ within the 72-h after accident. The association between these two cognitive features and

pain intensity were explored using correlation analyses and Hayes mediation model.
Results: No correlation was observed between level of PCS and head or neck pain intensity. However, the mediation model showed that the association between PCS and headache is fully mediated by PSQ (R^2=.129, p=0.006), demonstrating that without the PSQ there is no direct association between catastrophizing and head pain. Age or gender were not significant factors.
Conclusion: The PSQ, which represents trait-like memory and imagined facets of pain, offers insight into the cognitive representation dimension of pain experience. Using both PCS and PSQ together may add significant contribution to the construction of post-accident pain evaluation and may be relevant to the clinical setting as well.
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P456

SUBLINGUAL SUFENTANIL IN ZALVISO SYSTEM FOR KNEE ARTHROPLASTY IN OUR EXPERIENCE. PRELIMINARY RESULTS

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Background: The surgery of knee arthroplasty produces intense postoperative pain and its management is still a challenge.
The aim of the study is to evaluate the analgesic efficacy and safety of sublingual sufentanil in the postoperative of total knee arthroplasty.
Methods: The study prospectively compares a group of patients who underwent knee replacement and received postoperative femoral block and sublingual sufentanil by Zalviso system (n = 31) versus a historical cohort of patients (n = 33) operated of knee arthroplasty who have received double block femoral + sciatic and rescues of subcutaneous methadone.
Results: Patients of both groups are comparable in age, comorbidities and type of surgery.
In the Zalviso group we found 8 patients with adverse effects (25%). Nausea and vomiting in 1 (3.2%). Dizziness in 3 (9.6%). Constipation in 3 (9.6%). Insufficient analgesia in 1 (3.2%) Disorientation in 2 (6.45%)
In the control group, 8 patients (24%) presented adverse effects.Pain in 2 (6%). Constipation in 3 (9%). Intolerance to methadone 1 (3%) and disorientation in 2 (6%)
In both groups of patients, the mean VAS corresponded to controlled pain.
Regarding the hospital stay, the difference has not been statistically significant.
The patients at the end of their hospital stay evaluated the satisfaction with the analgesic technique used on a scale of 1 to 10. The Zalviso group obtained the score (8.61 vs. 6.82, p = 0.000).
Conclusion: Sublingual sufentanil in Zalviso device is an option for pain control in the postoperative period of total knee arthroplasty.

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INFLUENCE OF ESMOLOL ON POSTOPERATIVE PAIN IN PAITENTS UNDERGOING LUMBAR SURGERY

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Background and aims: Esmolol is an ultra-short acting intravenous β-blocker having a rapid onset and offset of effect. When used as an adjunct, it has been shown to improve the postoperative recovery by reducing postoperative pain intensity and intraoperative anesthetic and opioid requirements and preventing opioid-induced hyperalgesia. The aim of this study is to evaluate the effect of esmolol on postoperative PCA consumption in patients undergoing

lumbar surgery.
Methods: With the approval from our institutional review board, we obtained written informed consent from all participants. Forty patients (aged 18-70 years) scheduled for posterior lumbar fixation surgery were enrolled. Patients in Esmolol group received a 0.5 mg/kg IV loading dose of esmolol before anesthesia, followed by infusion of 10 µg/kg/min throughout the operation. Patients in Saline group were infused with the same volume of normal saline. Anesthesia was induced with propofol, remifentail and rocuronium. Anesthesia was maintained with desflurane and remifentanil. PCA was applied immediately after extubation. PCA was made of fentanyl 1mg mixed in normal saline 100ml and administered in basal rate of 1 ml/hr and bolus dose of 1 ml with lockout interval of 10 min.
Results: The accumulate amount of PCA use were significantly lower at 8 hr (17.98 ml vs 33.02 ml), 24 hr (44.03 ml vs 71.94 ml), 48 hr (70.53ml vs 99.06 ml) after surgery in Esmolol group than those were in Saline group (p value < 0.05).
Conclusions: Intraoperative esmolol infusion reduced postoperative PCA consumption in patients receiving lumbar surgery.

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IMPACT OF INSOMNIA ON ACUTE POSTSURGICAL PAIN: A CASE-CONTROL STUDY

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Psychological factors play an important role in predicting postsurgical pain; however the impact of chronic sleep disturbances on postsurgical pain is unknown. The aim of our study was to investigate the relationsship between insomnia and acute postoperative pain.
We performed a case-control study among patients undergoing elective laparoscopic cholecystectomy. Patients with an Insomnia Severity Index (ISI) score >14 were classified as insomnia group (n=35) . The control group (n=35) consisted of patients with an ISI score of < 7. Patients were asked to rate their current level of pain in answering the numeric rating scale(NRS) at 1, 2, 4, 8, 12, and 18 hours after the surgery.
Age, gender, body mass index, ASA score and duration of surgery didn't differ between the groups. Insomnia patients had higher NRS scores, requested more tramadol (280.0±33mg vs.235.0±36mg;p< 0.001) and rescue analgesics (Paracetamol)(;1.04± 0.8g.vs.0.35±0.7g.;p< 0.001) after the operation than controls. ANCOVA analysis revealed an interaction between insomnia and preoperative pain experience (F=7.004;p=0.01) and an impact of insomnia on mean NRS score (F=12.52;p=0.001).
Our study revealed that insomnia may be a significant factor in predicting acute postsurgical pain in patients undergoing cholecystectomy as an elective surgery.

postoperative NRS Score Time in hours	1	2	4	8	12	18
Insomnia Group;median+-SD	8.92+-2.1*	7.64+-2.2**	6.19+-2.1**	4.40+-1.9**	3.25+-1.6**	2.35+-1.6**
Control;median+-SD	7.61+-2.3*	5.83+-2.1**	3.47+-2.1**	1.29+-2.0**	0.24+-1.3**	0.16+-1.3**

*[Postoperative NRS Scores in both groups; *p=0.02, **p<0.001]*

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POSTOPERATIVE PAIN RESULTS BETWEEN DIFFERENTS TYPES OF ANAESTHESIA. PAINOUT STUDY

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Background and aims: Our aim is to compare postoperative pain between different anesthetic techniques (AT) used in traumatology surgery. We compare if pain perception, interference with activities, emotions and adverse effects were affected.
Methods: A cross-sectional study was carried out on 105 patients who underwent into traumatology surgery from February to April 2018. Questionnaires were filled out by the patients to analyze pain intensity, frequency of severe pain, interference of pain at rest, movement, sleeping, coughing, emotions, side effects (dizziness, nausea, vomits, itching, drowsiness) and patient satisfaction The Score of all analyzed items ranged from 0 to 10 and were compared with AT. Descriptive and ANOVA statistical analysis was performed with the SPSS program.
Results: General anesthesia (GA: 23%), general anesthesia with peripheral nerve block (GA+PNB: 32%), spinal anesthesia (SA: 19%), and spinal anesthesia with peripheral block (SA+PNB: 26%) were performed. We found significant differences in all items except for pain caused by cough and itching. GA showed the highest results in intensity of pain (Max, Min, Severe pain), sleep interference and patient satisfaction. Moreover, GA + PNB reflect the highest results for pain interference with activities outside bed, anxiety, depression and feeling helpless. Side effects showed more favorable scores in SA + PNB (drowsiness) and SA (nausea or vomits).
Conclusion: The type of anesthesia can affect different aspects of postoperative immediate pain. Regional anaesthesia patients have fewer side effects compared to those who underwent general anaesthesia, but the perception of pain and the patient's global satisfaction is worst.

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THE PATIENT JOURNEY IN PERIPHERAL NEUROPATHIC PAIN (PNP): REVEALING GAPS BETWEEN GUIDELINES AND REALWORLD PRACTICE

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Background and aims: Peripheral neuropathic pain (PNP) is a major health burden. Guidelines recommend stepwise pharmacotherapy involving first-line antidepressants and antiepileptics followed by opioids and topical/local agents, and appropriate and timely referral to specialist pain management. We conducted qualitative research to explore how PNP is treated in clinical practice to deliver a detailed picture of the patient journey.
Methods: Interviews of 183 healthcare professionals (HCPs: pain specialists [PS], non-pain specialists, primary care physicians, pain nurses) and 70 patients (with painful diabetic peripheral neuropathy (PDPN), post-herpetic neuralgia, postsurgical PNP, or cancer-related PNP; for ≥12 months) in Europe (France, Germany, Italy, the Netherlands, Spain).
Results: Referral to a PS was usually within 6-12 months. Many triggers for referral were common across aetiologies: persistent pain despite multiple treatment lines, HCPs avoiding responsibility for managing PNP, challenging/demanding patient. Key drivers of differences in referral were: aetiology (low priority for PDNP, high for cancer-related PNP); pain severity; HCP location, attitude/experience; patient attitude/experience. Patients reported that PNP placed a major burden on their quality of life. For those referred, being treated by a PS was a milestone in the patients' journey. Follow-up was patient-driven; i.e. patients' decision to return for consultations and push for better treatments. Patient dissatisfaction stemmed from interaction with HCPs who did not listen to their concerns or had limited knowledge of PNP.
Conclusions: We identified broad common factors for all PNP journeys; e.g. disconnects in perceptions of pain clinics, patient expectations of management, and referral triggers.

PAIN SYNDROMES WALK 10

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POSTOPERATIVE ANALGESIA FOLLOWING SHOULDER ARTHROPLASTY: ROLE OF SUFENTANIL SUBLINGUAL TABLET SYSTEM

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Background and aims: Shoulder arthroplasty provides long-term benefits in terms of pain relief and functionality [1]. Opioids are part of a multimodal approach in post-operative pain management. The sufentanil sublingual tablet system (SSTS) is an innovative, non-invasive patient controlled analgesia (PCA), which has been shown to be effective in hip and knee replacement [2]. The aim of this study is to evaluate its efficacy and safety in patients undergoing shoulder arthroplasty.
Methods: Adults undergoing shoulder arthroplasty under general anesthesia received post-operative SSTS 15 mcg, with a 20-minute lockout interval, as requested for pain, over the 72-hour study period. The primary endpoint was postoperative pain on a 11-point numeric rating scale (NRS). Secondary endpoints were the Patient Global Assessment (PGA) on a 5-point categorical scale (excellent, very good, good, fair, poor), pain interference on sleep on a 11-point scale, and occurrence of side effects.
Results: 16 patients were enrolled. Average age was 68.7 years (SD 15.4 years), with 68.7% being over 65 years. Average baseline pain intensity was 3.0 (SD 2.2) and it remained ≤ 2 along all the study period. Required SSTS doses ranged from 5 to 36 in 72 hours (mean 18.31). 67.7% of the doses were required in the first 24 hours. Mean duration of SSTS therapy was 45.7 h. Mean pain interference with sleep was 1.67, 1.36, and 0, in the first three postoperative days. No patients prematurely interrupted the treatment for inadequate analgesia or side effects.
Conclusions: SSTS was effective and well accepted by patients undergoing shoulder arthroplasty.

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ASSESSING PAIN INTENSITY FOR EVALUATION OF ACUTE POSTOPERATIVE PAIN MANAGEMENT - A SYSTEMATIC LITERATURE REVIEW

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Background and aims: Assessment of pain intensity is a hallmark of clinical trials assessing pain - related outcome after surgery; however, there is no consensus on certain patient related outcome measures (PROMs) to be used to assess pain intensity. Aim of the presented systematic literature search is to investigate PROMs for the domain “pain intensity” in the field of postoperative pain.
Methods: The systematic search followed the recommendations of the Cochrane Collaboration and focused on four surgical procedures: total knee arthroplasty, thoracotomy/sternotomy, breast surgery and laparoscopy. The studies retrieved were screened by two independent researchers. Eligibility criteria consisted of randomized controlled and prospective observational trials, targeting effectiveness of postoperative pain management. PROMs related to the domain “pain intensity” and all of their characteristics were extracted.
Results: PROMS related to the domain “pain Intensity” are already extracted from 434 included studies. A high variety of construct labels, scales and anchors as well as time points of assessment were identified. The most commonly applied construct labels were “pain intensity” (unspecified) and “pain at rest”. Visual analogue scales were

the most frequently applied scales with “no pain” and “worst pain imaginable”/“worst imaginable pain”, respectively, as anchors.
Conclusions: The assessment of pain intensity in postoperative pain management after surgery is divergent and heterogeneous and may lead to invalid conclusions. Harmonizing of outcome assessment for pain intensity in postoperative pain management, e.g. in form of core outcome sets, is urgently required.
This work has received support from the EU/EFPIA/InnovativeMedicinesInitiative [2] Joint Undertaking (IMI-PAIN-CARE) grant n°777500.

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PAIN AS A FACTOR DETERMINING SLEEP IN ICU IN A HOSPITAL IN NORTHERN POLAND

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Background and aims: Sleep plays an important part in human wellbeing. Sleep deprivation has serious deleterious effects on any subject of life. The most obvious and well documented adverse consequences are focused on the immune system and cardiopulmonary function. The aim of the study was to assess factors disturbing sleep in ICU patients.
Methods: Over 8 months, 83 persons were examined as part of the recruitment of patients hospitalised in the ICU. The interviewer conducted interviews with the patients on the third day following their discharge from the ICU. Patients had to successfully complete the Short Portable Mental Status Questionnaire. The patients whose results reflected their normal mental status were administered a modified Freedman questionnaire was then administered.
Results: It was discovered that factors which disturb sleep most include the measurement of vital signs (3.38/10) and light (3.18/10). It was also determined that the higher the VAS reported during the first day in the ICU, the higher the importance of pain in sleep disturbance in the ICU, $Z = -2.65$; $p < 0.05$.
Conclusions: The inability of ICU patients to report pain because of mechanical ventilation, concomitant use of sedatives, or as a consequence of loss of consciousness should not preclude pain control. It should be remembered that the patient´s condition and the length of may pretend to experience pain. It is advisable to maintain current analgesics for the night time in ICU patients.

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VERY-EARLY ACUTE PRO-NOCICEPTIVE PAIN MODULATION PREDICTS CHRONIC AREA-OF-INJURY PAIN IN MTBI PATIENTS SIX-MONTH POST INJURY

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Background and aims: 20-30 million people worldwide are involved in traffic collisions. Up to 50% will suffer from chronic pain, which has enormous personal, social and financial cost. Previous research has found that static QST testing in whiplash patients can predict occurrence of chronic pain.
Study aim - To identify improved, more accurate, very early-acute post-collision psychophysical predictors for chronic pain among mTBI patients with neck pain at baseline.
Methods: 66 post-MVC (age range 19-67, 25F) patients with an mTBI were recruited and followed for6 months. Scores of head pain, neck pain, static and dynamic QST measures were compiled within 72h post-accident. Pain

scores collected again at 6m. Linear correlation performed between patients mean area-of-injury pain ratings at 6 month and CPM-related psychophysical correlates: a.) Pain50 temperature (the temperature which participants defined as pain of 50 on scale of 0-100) b.) Average of 30 phasic heat stimuli pain scores standalone c.) Averaged pain score of 30 phasic heat stimuli while under conditioning (cold water immersion) d.) CPM value (the difference between c&d)
Results: Higher 6m pain was associated with lower Pain 50 temperature (r=0.27, p=0.026), higher heat pain magnitude tested under conditioning (r=0.32, p=0.009) and less-efficient CPM (r=0.28, p=0.021).
Conclusions: Pro-nociceptive pattern of pain modulation at the very-early acute post-accident stage can predict chronic mTBI-associated pain. In that, functional evaluation of pain inhibitory control holds the potential for a useful predictive tool for pain chronification.
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KINESIOPHOBIA CONTRIBUTES TO PAIN-RELATED DISABILITY IN BREAST CANCER SURVIVORS: A CROSS-SECTIONAL STUDY

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Background: Pain is one of the most prevalent and impairing problems reported by breast cancer survivors, as it results in disabilities on different domains of functioning and severely hamper ones quality of life. Unraveling the multifactorial character of pain yields possibilities to improve current treatment modalities. Therefore, the aim of this study was to determine the degree of pain-related disability and clarify the contribution of associated risk factors for its occurrence in breast cancer survivors.
Methods: Seventy women who had completed their primary breast cancer treatment were included in this cross-sectional study. The following outcome measures were evaluated as independent variables for their contribution to pain-related disability (measured by the Pain Disability Index, with a maximum score of 70): pain intensity, self-reported degree of central sensitization, fatigue, illness perception, pain catastrophizing and kinesiophobia. At first, bi- and multivariable regression methods were conducted. Secondly, a stepwise regression was performed to determine the explained variance of the PDI.
Results: Mean score on the PDI was 16 (14) at 4.5 years post-surgery. Multivariable regression analysis revealed higher levels of kinesiophobia as the main contributor to pain-related disability. Ultimately, stepwise regression showed that up to 40% of variance in pain-related disability could be explained by kinesiophobia, negative perceptions related to illness consequences and pain catastrophizing.
Conclusions: We show that breast cancer survivors portray moderate self-reported pain-related disability. Fear of movement emerged as the main predictor of pain-related disability at this time point, which could shine a light on the improvement of treatment modalities for pain management in this population.

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NOT JUST CUTTING IT - A NEW FRONTIER IN THE MANAGEMENT OF INTRACTABLE CANCER PAIN

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Background: Cancer patients suffering from severe refractory pain may benefit from targeted neurosurgical procedures in central pain pathways in the spinal cord or brain. Patients often present multiple medical problems. An interdisciplinary team composed of a palliative care specialist, a pain specialist and a neurosurgeon was established for patient selection. We present our considerations in patient selection and outcome of interventions.
Methods: Retrospective review of all patients who underwent neurosurgical interventions for cancer pain in the Tel Aviv Medical Center (March 2015 to April 2018). All had advanced metastatic cancer with limited prognosis and intractable oncological pain.
Results: Sixty patients were operated during the period. 43 with localized pain underwent disconnection of the spinal pain pathways: 34 percutaneous-cervical, 5 open-thoracic cordotomies, 2 stereotactic mesencephalotomies and 2 midline myelotomy for abdominal visceral pain. 39 of 42 who underwent procedures (93%) had immediate post-operative pain relief, which maintained at 1-month for 30/36 (83%) available for follow-up, with 1 case of hemiparesis.
20 patients with diffuse pain underwent stereotactic cingulotomy. 19 patients reported substantial pain relief immediately. At 1-month good pain relief was maintained in 13/17 patients (76%) and at 3-months in 7/11 patients (64%), with no major morbidity or mortality. Transient confusion or apathy was present in 9/20 (45%). Three patients underwent other pain procedures as they hadn't improved following the initial procedure.
Conclusions: With appropriate patient selection and tailoring the appropriate procedure, our experience indicates that neurosurgical procedures are safe and effective in alleviating suffering in patients with intractable cancer pain.

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FUSION PROTEINS OF ANTI-INFLAMMATORY CYTOKINES TO TREAT CHEMOTHERAPY-INDUCED NEUROPATHY

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Background and aims: Anti-inflammatory cytokines can provide endogenous negative feedback to resolve chronic pain. To fully engage such feedback circuits, anti-inflammatory cytokines need to work in concert of each other. Therefore we developed a technology to fuse endogenous anti-inflammatory cytokines to improve their therapeutic potential. We successfully applied this technology to treat persistent inflammatory pain with an IL4-IL10 fusion protein (IL4-10FP). Here we investigated whether this technology is also suited to treat chemotherapy-induced neuropathic pain.
Methods: IL4-10FP or IL4-13FP were produced in HEK293 cells. Chemotherapy-induced neuropathic pain (CIPN) was induced by intraperitoneal injections of Paclitaxel or Oxaliplatin. Fusion proteins or neutralizing antibodies were injected intrathecally.
Results: Blockade of endogenous IL4 and IL13 prevented the resolution of transient paclitaxel-induced CIPN. *In vitro*, IL13 but not IL4 or IL10 protected sensory neurons against chemotherapy-induced neurotoxicity, indicating cytokine may have neuroprotective properties. Established paclitaxel-induced persistent CIPN was transiently inhibited by IL4-10FP, whilst IL4-13FP resolved CIPN permanently. IL4-13FP also resolved established oxaliplatin-induced CIPN.IL4-13FP was superior in resolving CIPN compared to the individual cytokines or the combination of IL4 and IL13. Similarly, *in vitro*, IL4-13FP provided stronger protection to neurons against chemotherapy-induced neurotoxicity than the combination of IL4 and IL13.
Conclusions: IL4-13FP resolves CIPN, at least in part, through direct effects on the sensory system. Thus, fusion of anti-inflammatory cytokines represents a novel therapeutic approach for the treatment of debilitating CIPN.

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SEROTONIN RECEPTOR 2A (5-HT2A) POLYMORPHISMS ARE ASSOCIATED WITH PINPRICK HYPERALGESIA IN NEUROPATHIC PAIN PATIENTS

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Background and aims: The serotonin 2A (5-HT2A) receptor has been described as facilitation mediator of spinal nociceptive processing leading to increased spinal nociceptive transmission and central sensitization. Contribution of 5-HT2A single nucleotide variants (SNV) on neuropathic pain susceptibility and sensory perception of neuropathic pain patients is largely unknown. The aim of this study was to elaborate whether selected 5-HT2A variants influence pain susceptibility in general and/or the extent of sensory abnormalities in neuropathic pain patients.
Methods: This study included 240 neuropathic pain patients and 248 healthy volunteers. Patients were phenotypically characterized using quantitative sensory testing (QST) and divided into two subgroups (gain/loss of function). Patients and controls were genotyped by pyrosequencing of three SNVs in 5-HT2A (452C>T, 102C>T, -1438G>A). Differences in genotype distribution between patients and controls were analyzed using Chi-squared test. Differences in somatosensory profiles and in frequencies of abnormal QST parameters of patients were assessed. Statistical analysis was performed using SPSS 22.0.
Results: Due to not fulfilled Hardy-Weinberg equilibrium 452C>T was excluded for analysis. There was no significant difference in 102C>T and linked -1438G>A genotype distribution of patients and controls. However, the 102C>T variant allele was associated with lower thresholds for noxious mechanical stimuli, indicating mechanical hyperalgesia and increased mechanical pain sensitivity (MPT; p=0.002; MPS; p=0.009).
Conclusion: There was no evidence for a direct association between 5-HT2A variants and presence of neuropathic pain. However, the 102 C>T variant was associated with central sensitization of the nociceptive system (pinprick hyperalgesie) supporting an involvement of 5-HT2A in pain facilitation.

CANCER PAIN

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SEVEN MONTH-LONG EPIDURAL ADMINISTRATION OF ANALGESICS INTENDED FOR METASTATIC BONE PAIN TREATMENT - A CASE REPORT

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Epidural analgesia is one of the available treatment options when it comes to metastatic bone pain treatment, especially if the disease has entered into its advanced, metastatic stage; however, the administration of such analgesia is often limited in duration due to threatening complications, cessation of analgesic effect and/or catheter-related complications. This case report deals with a prostate cancer patient with metastatic spread into the pelvis and lower extremities. Once the oral and transdermal analgesia ceased to yield sufficient effect and following the completion of an active oncological treatment, the patient was provided with an epidural catheter in order to be able to cope with pain that rendered his walking impossible. An epidural catheter had been in place for seven months in a row, until the time of death. The patient had self-administered analgesics (bupivacaine + fentanyl) at home in form of intermittent boluses 3x a day through the epidural catheter. The catheter itself and its insertion point had been changed every 3-4 weeks. Owing to the epidural analgesia, the patient was able to walk again, to avoid systemic analgesic effects and to cope with pain. This case report aims at highlighting the possibility of multi-month successful administration of analgesics via a regularly changed epidural catheter subject to asepsis maintenance

CENTRAL NEUROPATHIC PAIN

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MODULATION OF CENTRAL NEUROPATHIC PAIN DEVELOPMENT BY REPEATED MULTIPOLYPHENOLIC EXTRACT TREATMENT DURING THE INJURY ACUTE-PHASE IN SPINAL CORD-INJURED MICE

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Background and aims: Considering the preclinical evidences showing that polyphenolic compounds may exert antinociceptive effects, the present work aimed to study preventive effects of a new vegetal multipolyphenolic extract (GSE) in spinal cord injury-induced central neuropathic pain (CNP) development in mice.
Methods: Female CD1 mice were subjected to mild spinal cord contusion (SCI) and daily treated with either GSE or (-)-Epigallocatechin gallate (EGCG) during the first week post-surgery (10 or 15 mg/kg for each treatment; i.p.). Thermal hyperalgesia (Hargreaves test), mechanical allodynia (Von Frey filaments) and locomotor functional recovery (Basso mouse scale; BMS) were weekly evaluated up to 21 days post-injury (dpi). At the end, immunohistochemical analyses were performed to study astrogliosis (GFAP) and microgliosis (Iba1). To obtain the GSE, the vegetal material was boiled with saline solution and filtered before administration. Polyphenols quantification was performed by Folin-Ciocalteu method, using gallic acid as standard.
Results: Total polyphenols concentration of GSE was 1104 mg/L. Significant attenuation of CNP development throughout the acute phase of spinal cord injury was observed in animals treated with either GSE or EGCG. Moreover, both GSE15 and EGCG15 prevented CNP development but GSE15 may exert better gliosis modulation during the SCI acute phase. No major impairment in locomotor function was detected according to BMS test results.
Conclusion: GSE treatment may be a suitable therapeutic strategy to prevent spinal cord injury-induced neuropathic pain development in mice.
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PREVALENCE OF CENTRAL AND PERIPHERAL NEUROPATHIC PAIN AND IMPACT OF DEPRESSION, ANXIETY AND SLEEP DISORDERS ON THE INTENSITY OF PAIN AND QUALITY OF LIFE

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Background and aims: To estimate the prevalence of pure central (CNP) and peripheral neuropathic pain (PNP) among patients attending pain clinics in Spain. To analyse factors associated with pain intensity and QoL.
Methods: Cross-sectional study involving most of the pain clinics in Spain was carried out, 53 patients with pure CNP and 281 with pure PNP were included. Pain specialists used the revised grading system proposed in 2008 to decide definite, probable or possible diagnostic of NP.
Results: The prevalence of CNP was 2.4% (CI95%:1.7;3.1) and 12.9% (CI95%:1.5;14.3) of PNP patients. Both group of patients had a high frequency of co-morbid anxiety, depression or sleep disorders, being higher in CNP patients (51.1 %, 71.4%, 71.4%, respectively).
Definite CNP was more likely in patients with lower limbs pain location. In PNP patients, definite diagnostic was more frequent in upper limbs pain location.
Pain intensity in PNP patients was associated with the presence of depression and sleep disturbances, however, in CNP patients, was related to lower limbs pain location.
The impairment of QoL was greater in CNP patients than PNP patients, being pain location, presence of depression and sleep disturbance the factors most negatively affecting QoL. Among PNP patients, women and those with higher pain intensity had worse QoL, however, older age and diagnostic certainty were positively related to QoL.
Conclusions: Pain intensity and QoL are affected by different factors in patients suffering central or peripheral neuropathic pain. Identifying these factors could serve to guide therapeutic strategies and improve QoL of patients.

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LONG-TERM DEEP-TMS DOES NOT NEGATIVELY AFFECT COGNITIVE FUNCTIONS IN STROKE AND SPINAL CORD INJURY PATIENTS WITH CENTRAL NEUROPATHIC PAIN

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Background: Deep-TMS (dTMS) modulates deeper cortical structures such as the posterior superior insular (PSI) and the anterior cingulate cortices (ACC) and has been used to treat conditions not previously responsive to superficial-TMS. However, to date no study has assessed the effects of dTMS on cognition after several sessions of stimulation in a comprehensive manner, especially in patients with baseline cognitive dysfunction due to SNC structural lesions.
Methods: We present secondary outcome results form a three-arm parallel randomized trial on the effects of active 10Hz dTMS to either the ACC or PSI against sham dTMS on neuropsychological assessment of 98 central neuropathic pain patients undergoing a 12-week (16 sessions) course of treatment. Cognitive channels were assessed in a blinded design (attention, inhibitory control, processing speed, mental flexibility, verbal fluency,

memory, global cognition) at baseline and after the stimulation sessions.
Results: There were no effects of either posterior insular (PSI) or anterior cingulate cortex (ACC) compared to sham dTMS on clinical pain, despite the finding of a significant anti-nociceptive on thermal thresholds after PSI d-TMS and a significant anxiolytic effect of ACC d-TMS compared to sham stimulation. We found no significant effects of active stimulation to either the PSI or to the ACC compared to sham stimulation in any of the cognitive domains.
Conclusions: Long-term repetitive-session high frequency ACC/PSI-dTMS is safe in patients with structural SNC lesions who have baseline significant structural brain lesions and cognitive impairment.
Keywords: Insula, anterior cingulate cortex, transcranial magnetic stimulation, stroke, spinal cords injury, neuropathic pain, cognition

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ANTI-GLUTAMATE MECHANISM OF ANALGESIC ACTION OF ANTIDEPRESSANTS AMITRIPTYLINE AND DESIPRAMINE

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The pathogenesis of neuropathic pain includes hyperactivation of glutamatergic transmission. Earlier, we showed that the antidepressant inhibition of the NMDA receptor by potential-dependent mechanism leads to pain relief , and the sodium-calcium exchanger (NCX) is responsible for the calcium-dependent desensitization of the NMDA receptor .
To study the analgesic mechanism of antidepressant action and the functional relationships of NCX and NMDAR as targets for neuropathic pain management, we used electrophysiological techniques (patch clamp registration of NMDAR transmembrane currents in the “whole cell” configuration) and molecular modeling methods (QSAR, docking, molecular dynamics).
Amitriptyline and desipramine in high concentrations (100 μM) have been shown to cause potential-dependent inhibition of NMDAR currents, which little depends on the concentration of extracellular calcium in the perfusion solution; they act as classical channel blockers. At low therapeutic concentrations (< 10 μM), the drugs inhibit NMDAR currents along the calcium-dependent pathway, not blocking the receptor channel, but affecting the NCX, which greatly enhances the NMDAR-dependent desensitization. Molecular modeling methods have determined the binding sites of antidepressant molecules with NMDA and NCX. The interaction energies have been calculated. The antidepressant molecule binds inside the NMDAR channel near the site of Mg ion sorption; the NCX binding site is located outside and does not intersect with the binding sites of sodium and calcium ions. For both receptors, the binding strength of the antidepressant molecule is mainly determined by electrostatic interactions.
Desipramine is more strongly bound to NMDAR and NCX, which correlates with its higher analgesic efficacy compared to amitriptyline.

HEADACHE

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CERVICAL PHYSICAL DYSFUNCTION IN PATIENTS WITH CHRONIC PRIMARY HEADACHE. SYSTEMATIC REVIEW AND META-ANALYSIS

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Background and aims: 90% of the world population will suffer from headache at some point of their lives and 3% will suffer chronic primary headache (CPH). The neck disability index (NDI) is often high and has been associated with the daily impact of headache in these patients. The aim is to describe the features of cervical physical dysfunction in patients with CPH.
Methods: Protocol was carried out according to PRISMA guidelines. MEDLINE, EMBASE, WOS, MEDES, PEDro and CINHAL databases were assessed. Inclusion criteria were: observational design, neck physical examination and adults diagnosed with CPH, comparing to episodic primary headaches (EPH) or asymptomatic subjects. Two experimented reviewers independently with the Newcastle-Ottawa Scale (NOS) evaluated the methodological quality. Qualitative analysis was categorized in 5 evidence levels. To be included in the Meta-Analysis, the analysed data had to be present in at least three studies with six or more points in the NOS.
Results: 14 cross-sectional studies (1124 subjects) were included to the qualitative synthesis and 10 (726 subjects) to the meta-analysis. Overall studies showed a moderate methodological quality [7.28 (± 1.94)]. Studies included to the qualitative synthesis reported limited or no evidence levels comparing CPH with episodic or asymptomatic subjects in six different variables of neck physical function. Meta-analysis revealed differences comparing the forward head posture (FHP) between CPH and EPH (N=268, Hg=0.39, P< 0.01) and asymptomatic participants (N=275, Hg=0.68, P< 0.01).
Conclusion: The meta-analysis shows that CPH patients presents cervical physical dysfunction such as FHP compared to EPH and asymptomatic subjects.

LOW BACK PAIN AND LUMBORADICULAR PAIN

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CENTRAL SENSITIZATION, WADDELL'S NON-ORGANIC SIGNS, AND LIFTING CAPACITY IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Background and aims: Lifting capacity of patients with Chronic Low Back Pain (CLBP) is influenced by physical and non-organic (behavioral) factors. Central Sensitization (CS) can be present in CLBP. What previously was interpreted as ´non-organic´, may have an organic explanation: CS.
Aim: To explore the relationship between CS, non-organic signs (NOS), and lifting capacity in patients with CLBP.
Methods: Observational cross-sectional. Adult patients with CLBP.
Measurements:

- CS: Central Sensitization Inventory part-A.
- Floor-to-Waist standardized lifting test.
- NOS: Waddell's Signs.

Statistical analyses:

- Multiple regression: Lifting capacity (dependent); CS and NOS (independent); adjusted for confounders.

Results: Data collection is ongoing. Preliminary results based on n=27, n>45 are anticipated for September. Higher CSI score and more prevalent NOS were related to each other (r=0.43) and to lower lifting capacity (r=-0.59 and r=-0.54 respectively). The association between CSI score and lifting capacity differed for men and women (r=-0.68 and r=-0.35, respectively).
In the final model for lifting capacity (R^2=57.4%), CS and NOS remained negatively and moderately related after correcting for sex ($r_{partial}$=-0.38 and $r_{partial}$=-0.46, respectively); although only NOS scores were significantly related to lifting.
Conclusions: Higher CS and more prevalent NOS were related to lower lifting capacity. In the preliminary final model, CS and NOS remained negatively and moderately related to lifting performance.
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Disclosure: Nothing to declare.

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IMPACT OF SOCIAL AND *PSYCHOLOGICAL*FACTORS ON PERSONS WITH ACUTE AND CHRONIC LOW BACK PAIN

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Background and aim: Low back pain is a common cause of disability in general population. It was observed that the psychosocial factors have a substantial impact on evolution of pain and are often associated with an unfavorable prognosis. The aim of the study is to evaluate the clinical context of psychosocial factors in persons with acute and chronic low back pain .
Methods: Data of 46 patients with acute and chronic low back pain was collectected using Roland Morris Disability Questionnaire, PHQ 9 - Patient Health Questionnaire, Fear-Avoidance Beliefs Questionnaire (FABQ). Linear statistical analysis of was conducted
Results: The mean age of the group constituted 46,9 (from 21 to 65) with presence of acute pain in 46 %; female-male ratio was 74 to 36 %; patients from urban area constituted 46 % and 54 % from rural; the rate of unemployment was 43%. According to Roland Morris Questionnaire, disability was significantly higher in patients with acute versus chronic pain (83.3% vs 72.3%). On the other side patients with chronic pain are more like to present an avoidance behavior and limitation of physical activity (FABQ score > 34 points was 59 % for patients with chronic and 22% in acute). Also a high incidence of depression was registered constituting 85 % , most affected age group was from 36 to 50 years.
Conclusion: Psychosocial factors represent a risk for deconditioning and disability in patients with low back pains and should be evaluated the management of patients with low back pain.

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TEMPORAL SUMMATION AND PAIN CATASTROPHIZING IS ASSOCIATED WITH PAIN AFTER 12 WEEKS: A PROSPECTIVE COHORT STUDY OF PATIENTS WITH LOW BACK PAIN IN GENERAL PRACTICE

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Background and aims: Patients with low back pain (LBP) may show sensitization of central pain mechanisms and have a high degree of pain catastrophizing, and present with psychological distress. It is unclear if these features increase the risk of a poor prognosis following pain management provided by a general practitioner. This prospective non-placebo controlled cohort study investigated if baseline central pain mechanisms, the pain catastrophizing scale (PCS), and the prognostic STarTBack Screening Tool (SBST) were associated with pain in LBP patients assessed 12-weeks later.
Methods: In 45 LBP patients, pain detection thresholds, temporal summation of pain (TSP), and conditioned pain modulation (CPM) were assessed by cuff-algometry, and PCS and SBST scores were collected before treatment. Worst pain within 24-hours was assessed on a visual analogue scale (VAS) before inclusion and 12-weeks later.
Results: VAS-scores were reduced during the 12 weeks (reduction: 1.98cm, 95%CI:1.08-2.87cm, P< 0.05). Compared with the medium and low risk groups, patients categorized as “high risk of a poor prognosis” on the SBST demonstrated higher VAS-scores (P< 0.01) and PCS (P< 0.001) pre-treatment and higher VAS-scores post-treatment (P< 0.05). Multivariable linear regression using all pre-treatment parameters showed that 49.1% of the variance in post-treatment VAS-scores was explained by the pre-treatment variables. TSP and PCS were independently associated with post-treatment VAS-scores.
Conclusions: Pre-treatment SBST can identify patients with high pain scores 12-weeks after pain management. TSP and PCS are independently associated to pain after 12-weeks, suggesting that both central pain mechanisms and psychological factors are important for treatment outcomes.

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THE INTERACTION BETWEEN PAIN AND SLEEP IN PEOPLE WITH CHRONIC SPINAL PAIN AND COMORBID INSOMNIA: A SYSTEMATIC REVIEW

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Background and aims: Chronic spinal pain (CSP, i.e. chronic low back and neck pain) is a highly prevalent and debilitating disorder with tremendous personal and socioeconomic consequences. Chronic spinal pain adversely impacts many quality of life elements, including sleep quality and quantity. Comorbid insomnia is a common health problem among people suffering from CSP. In literature, a bidirectional interaction between sleep and pain is suggested. The current study aims to systematically review the existing literature reporting the association between sleep quality and pain in people with CSP and comorbid insomnia.
Methods: A systematic literature search will be conducted via the electronic databases Pubmed, Web of Science and Embase. Keywords for CSP and sleep will be used for this search. First, all articles will be screened for eligibility on title and abstract. Following inclusion criteria must be met: participants are (1) human adults (>18 years) suffering from CSP and comorbid insomnia; (2) articles should report outcomes related to sleep and pain; (3) articles should contain original research. Then, potential relevant articles will be screened on full text. Screening and scoring risk of bias will take place by two independent reviewers. Evidence will be scored using the Grades of Recommendation, Assessment, Development and Evaluation (GRADE) approach. Data extraction from included articles will be executed in order to draw conclusions. If possible, a meta-analysis will be conducted.
Results: Review is ongoing, results will be ready to present at the congress.
Conclusions: Review is ongoing, conclusions will be ready to present at the congress.

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METHODOLOGY TO ASSESS IMPACT AND BURDEN OF CHRONIC LOW BACK PAIN ON PATIENTS' PHYSICAL AND EMOTIONAL HEALTH-GLOBAL SURVEY OF >9,000 PATIENTS ACROSS 16 COUNTRIES

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Background and aims: Chronic low back pain (CLBP) is one of the most common, poorly understood and disabling chronic pain conditions, affecting 5-10% of the global population. CLBP represents a significant impact to both patients and the healthcare system. The aim of this study is to better understand the scale, impact and burden of CLBP on patients' physical health, emotional well-being, employment and financial status.
Methods: A global online survey of >9,000 adults (>18 yrs) with CLBP is being conducted in 16 countries with 250 - 1000 patients recruited per country (Australia, Belgium, Germany, Finland, France, Israel, Italy, Netherlands, Norway, Romania, Russia, Spain, Sweden, Switzerland, Turkey, UK) during 2019. The survey has been developed with the support of a multidisciplinary faculty that involved measurement & outcomes specialists, medical experts, patient organisations and external thought leaders within the CLBP arena. In one of the largest and most in-depth studies of its kind, patients are being recruited via online market research panels, using a robust screener to identify patients with a physician diagnosis of CLBP of ≥ 3 months. Beyond demographics, the survey will evaluate patients' experience of diagnosis and treatment, as well as the impact of CLBP on their physical health, emotional well-being, relationships, employment and financial status.
Results: The global survey is ongoing and preliminary data are expected in June 2019.
Conclusion: The results from the survey will help identify opportunities to improve current approaches to diagnosis and management and identify areas where CLBP patients could be better supported.

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RETROSPECTIVE OBSERVATIONAL STUDY TO EVALUETE THE EFFICACY OF RADIOFREQUENCY IN THE TREATMENT OF CHRONIC PHARMACORESISTAN LOW BACK PAIN

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Background and aims: Radiofrequency technique is a possible therapeutic strategy for chronic pharmacoresistant low back pain. This study compare the efficacy of continuous (CRF) and pulsed (PRF) radiofrequency for this condition.
Methods: 120 patients with chronic pharmacoresistant low back pain were enrolled and treated with radiofrequency from January 2015 to May 2017 at our hospital. From the hospital database, the following demographic information was collected: age, sex, etiology of pain, VAS value before treatment. RF type depended on the etiology. The primary outcome was pain intensity (reduction ≥ 50% or ≥ 3 points of VAS value) measured 1, 3 and 6 months after the intervention. Data analysis considered three variables: etiology, pain type and origin of pain. Results Efficacy of CRF in twenty-five spondyloarthrosis and axial nociceptive pain was 96% at 1, 3 months and 88% at 6 month ($p< 0.01$); in spinal stenosis and disc herniation efficacy was greater for axial nociceptive pain (100%, 80%, 80% and 91.6%, 83,3% 83,3% respectively) then neuropathic pain ($p< 0,01$). Efficacy of PRF in disc herniation was greater for radicular neuropathic pain (85,7% 78,6% 71,4%) as well as in FBSS (66,6% 66,6% 50%), in spinal stenosis (71,4% 57,1% 35,7%) and in spinal stenosis with disc herniation (75% 50% 37,5%) ($p< 0,01$).
Conclusions: CRF and PRF don't always have the same efficacy. To improve the response to treatment it is important to identify etiology, origin and type of pain for each patient.

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EFFECT OF COMBINING PULSED RADIOFREQUENCY TREATMENT TO DORSAL ROOT GANGLION WITH TRANSFORAMINAL EPIDURAL STEROID INJECTION IN CHRONIC LUMBAR RADICULAR PAIN

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Objectives: We aimed to evaluate treatment response with combining TESI and PRF adjacent to the lumbar dorsal root ganglion (DRG) rather than only TESI in chronic lumbar radicular pain.
Methods: A total of 129 patients who have chronic lumbar radicular pain were enrolled to the study: TESI was performed to 67 patients and TESI+DRG PRF was performed to 62 patients. Patients' demographic data, surgical operation and medication records, procedure side and level, preoperative and postoperative 1 week, 1st month and 3rd month Visual Analogue Scale (VAS, 0-10) scores and patients' satisfaction assessment at 3rd month follow-up according to postoperative analgesic effect and functional capacity were recorded.
Result: In both groups, postprocedure 1 week, 1st month and 3rd month VAS scores were significantly lower than the beginning ($p < 0.001$). However, TESI+DRG PRF group's VAS scores were significantly lower than TESI group at all follow-up periods ($p < 0.001$). In TESI+DRG PRF group 50% or more reduction in VAS scores were significantly higher than TESI group at follow-up ($p < 0.001$). When patients were evaluated by postoperative satisfaction level, it is significantly higher in TESI+DRG PRF group than TESI group ($p < 0.01$).
Conclusion: According to our study TESI provides short-moderate pain relief in patients with chronic lumbar radicular pain. Plus TESI, application of PRF adjacent to the effected DRG in the same session should be considered to increase the treatment response.

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A NOVEL COMBINATION EPIDUROSCOPIC LASER NEURAL DECOMPRESSION AND PERCUTANEOUS LASER DISC DECOMPRESSION WITH HO:YAG LASER: A NOVEL TREATMENT METHOD FOR MSU 3AB-CLASSIFIED HERNIATED DISCS

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Background and aim: Epiduroscopic Laser Neural Disc Decompression (ELND) can be an effective method for the treatment of intraspinal pathologies such as herniated nucleus pulposus and pain-forming microscopic adhesions. In this study, we aimed to investigate the results of simultaneousELND and Percutaneous Laser Disc Decompression (PLDD) using with Ho: YAG laser for MSU classification 3 AB herniated discs.
Methods: In this prospective observational study, the ELND and PLDD procedures performed between January 2016 and December 2017 were examined. Preoperative and postoperative 2nd week, 2nd, 6th months Oswestry Disability Index (ODI) and Visual Analog Scale (VAS) scores were obtained from patient file information. 12th month VAS and ODI scores were recorded from patients by face to face follow-ups.
Results: 41 patients were included in this study. Postoperative VAS and ODIscores of the patients were compared with preoperative values; postoperative 2nd week, postoperative 2nd month, postoperative 6th month and postoperative 12th month VAS&ODI scores were statistically significant compared to preoperative values ($p = 0.001$; $p < 0.01$).17.1% (n=7) of the patients had history of postoperative surgery. Although 7 patients (17%) had dural puncture, headache developed only in 1 patient.
Conclusion: We conclude that treatment of ELND and PLDD combination with Ho: YAG Laser is a reliable method with a high success rate and acceptable complication rate in the treatment of patients with MSU classification 3AB herniated disc for one year after treatment. We believe that randomized controlled trials are needed to enable this method to be included in the treatment algorithms.

OROFACIAL PAIN

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CHRONIC STRESS INCREASES THE RISK OF DEVELOPING TEMPOROMANDIBULAR JOINT PAIN IN RATS OF BOTH SEXES

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Background and aims: Temporomandibular dysfunction (TMD) is a common painful condition of the temporomandibular joint (TMJ) and associated structures. Stress is an important risk factor for the development of this painful condition that affects, predominantly, the female sex. The aim of this study was to investigate if the stress increases the risk of developing TMJ nociception in the formalin TMJ model in female and male rats.
Methods: All experiments were approved by the UNICAMP Ethic's Committee (CEUA #4507-1). Males and females Wistar rats (HanUnib/WH) (220-280g; 6-8-weeks-old), were exposed to sound stress during 4 days, in a box containing a sound emitter at 105dB, 11-19kHz frequency, 5 or 10 seconds/minute of emission, during 30 minutes/day. At the 5th day, we tested whether the nociceptive behavior of stressed and non-stressed rats were different at a subliminar (0.5%) or an effective dose (1.5%) of formalin (Sigma-Aldrich-St. Louis, MO, USA) or vehicle (0.9% NaCl) in the TMJ. Data are presented as mean ± SEM, 12 rats/group.
Results: Stressed rats receiving a non-nociceptive dose of TMJ formalin (male, 206.45±31.54; female, 192.99±16.52) showed a nociceptive behavior similar to that of non-stressed rats receiving an effective dose of TMJ formalin (male, 238.17±31.78; female, 225.34±20.71). Non-stressed rats receiving a non-nociceptive dose of formalin (male, 106.45±18.66; female, 78.24±11.42) showed a nociceptive behavior similar to that of vehicle-administered in the TMJ (male, 47.67±7.36; female, 63.71±6.13) (One-Way ANOVA followed by Bonferroni post-hoc-test).
Conclusions: The results show that stress is a risk factor for TMJ nociception development in female and male rats.

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ALTERED PAIN MODULATION TO NOXIOUS HEAT THERMAL STIMULI IN BURNING MOUTH SYNDROME

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We examined temporal summation (TS) and condition pain modulation (CPM) profiles in patients with burning mouth syndrome (BMS) using the novel method of intra-epidermal electrical stimulation (IES). In total, 15 BMS patients and 28 healthy controls participated. A single stimulus with electrical stimulation followed by a train of 10 successive stimuli were applied to the right chin of participants in both the BMS and the control group. CPM was assessed with the TS test applied as the painful stimulus and the application warm (40° C) or hot (47° C) of the nondominant hand served as the conditioning stimulus in both the BMS and control groups. TS was present in both the BMS and control groups, but no significant differences were found in the TS without conditioning stimuli between the BMS and the control groups. Patients with BMS demonstrated less efficient conditioned pain modulation than did healthy controls. These findings indicate that BMS is associated with a deficit inhibitory CPM and implicate the central nervous system in BMS pathophysiology.

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PAIN ASSESSMENT ON THE TONGUE OF RAT BY THE OBSERVATION OF SPONTANEOUS BEHAVIOR AND RESPONSES TO MECHANICAL STIMULATION

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Background and aims: Burning mouth syndrome (BMS) is an intraoral burning sensation which often presents with a normal intraoral mucosa. The majority of BMS patients are post-menopausal women. An upregulation of nerve growth factor (NGF) has also been demonstrated in the subepithelial nerve fibers of tongue biopsies from BMS patients.
This study was designed to examine whether exogenously administered NGF into the tongue of sham and ovariectomized (OVX) rats would induce nocifensive responses.
Methods: NGF (500 ng/10 µl, 1000 ng/10 µl) or phosphate buffered saline (10 µl) were administered into the tongue of sham or OVX adult female rats (N = 54 divided into 6 groups). After administration, spontaneous behaviors, volume of drink consumption and responses to stimulation by von Frey filaments were analyzed. Pre- and post-injection differences between groups were statistically analyzed with Kruskal Wallis test.
Results: OVX rats showed a significant increase in facial grooming behaviors, especially chin rubbing (10 min after injection: $p = 0.0135$) and vacuous chewing (60 min after injection: $p = 0.0194$) following the NGF 1000 ng injection compared with sham rats. Consumption of sweetened milk did not show any significant difference between the groups (pre-injection: $p = 0.181$, post-injection: $p = 0.864$). The tongue withdrawal thresholds to mechanical stimulation did not show difference between the groups after the solutions injection ($p = 0.137$).
Conclusions: NGF injection to the tongues in OVX rats induced nocifensive responses, which suggests that peripheral dysesthesia might result from elevated NGF in tongue tissue.

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MICROCIRCULATION IN SKIN AND MUSCLE DURING VENOUS STASIS, ARTERIAL ISCHEMIA AND ORTHOSTATIC CHALLENGE IN PATIENTS WITH FIBROMYALGIA AND HEALTHY CONTROLS

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Background and aims: Fibromyalgia syndrome (FMS) is a frequent and disabling pain disorder. Patients describe their pain similar to neuropathic pain characteristics. Previous studies point to impaired sympathetic activity and reduced muscle-oxygenation as mechanism at play in this disease. We analyzed the blood flow in muscle and skin of patients and healthy controls (HC) during venous stasis, arterial ischemia and tilt table testing.
Methods: Using a combination of laser Doppler flowmetry and remission spectroscopy we examined 20 FMS patients and 10 HC. During tilt table testing, venous stasis and arterial ischemia blood flow in skin and muscle, heart rate and blood pressure were measured.
Results: In the first phase of orthostatic challenge patients demonstrated a significant increase in blood pressure and heart rate in comparison to HC. Blood flow in skin and muscle did not differ significantly during venous stasis, arterial ischemia and orthostatic challenge between patients and HC. Significant differences could be seen in the blood flow during the recovery phase after venous stasis.

Conclusions: The observed increase in systolic blood pressure and heart rate in patients after orthostatic challenge supports the hypothesis of an increased activity of the sympathetic efferent system in FMS patients. No differences in muscular blood flow between patients and HC could be detected during the actual interventions, but the differences in muscular blood flow in the venous and arterial recovery phases might point to different regulation patterns in patients and HC.

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DISCORDANCE BETWEEN PATIENT´S AND PHYSICIAN´S GLOBAL ASSESSMENT IN RHEUMATOID ARTHRITIS

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Background: The Patient's Global Assessment of Disease Activity (PtGA) and Physician's Global Assessment (PhGA) are important measures in treat to target strategy in rheumatoid arthritis (RA), but often provide discordant results.
Objective: To assess differences and determinants of PtGA and PhGA in RA patients.
Methods: A cross-sectional study, including 60 patients with RA, diagnosed according to the ACR/EULAR criteria treated with biological therapy. Participants completed 36-Item Short Form Health Survey (SF-36), Health Assessment Questionnaire (HAQ) and visual analogue scale (VAS) for global disease severity and pain. The physician completed the VAS for global disease severity and evaluated the parameters of inflammatory activity (sedimentation rate (SR) and C-reactive protein (CRP), Activity Score (DAS28).
Results: Among the 60 patients included, 73.3% were female, with a mean age of 57.1 years old (SD=11.5) and mean disease duration of 18.1 years (SD=8.5). Positive discordance (PtGA>PhGA, more than 25mm in VAS) was found in 51.7% of cases. PtGA and PhGA was significantly different ($p< 0.001$).
PtGA correlated with pain VAS, swollen joints, painful joints, HAQ and with SF-36 physical and mental health summary scales. In linear multiple regression, the main predictors of PtGA were pain VAS and HAQ. PhGA correlated with: pain VAS, swollen joints, painful joints and with SF-36 physical and mental health summary scales. Patients with elevation of CRP had bigger PhGA. In linear multiple regression, the main predictors of PhGA were swollen joints and CRP level.
Conclusions: In this study, we show the variability implied on global assessment of RA activity.

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THERAPEUTIC EFFECT OF LOW-INTENSITY PULSED ULTRASOUND PHONOPHORESIS WITH DICLOFENAC IN THE ACUTE PHASE OF CARRAGEENAN-INDUCED ARTHRITIS IN RATS

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Background and aims: Efficacy of ultrasound phonophoresis with NSAIDs has been reported in previous studies. However, the evidence regarding its efficacy varies. We examined the effects of low-intensity pulsed ultrasound (LIPUS) phonophoresis with diclofenac in the acute phase of carrageenan-induced arthritis in rats.
Methods: All rat were given single injection of the mixture of 3% kaolin and carrageenan into the knee joint, and

divided into 4 groups; arthritis group, LIPUS group, diclofenac group and phonophoresis group. LIPUS (1.5 MHz, 60 mW/cm^2, duty cycle 1:4), transdermal administration of diclofenac (0.4 g) and phonophoresis was applied to lateral side of inflamed knee for 10 minutes in 7 days. In the phonophoresis group, diclofenac gel was rubbed in to the skin, and a standard coupling medium was applied over the medication for LIPUS. Knee joint transverse diameter, pressure pain threshold and paw withdrawal threshold were measured during experimental periods. The number of CD68-positive cells in the synovium was analyzed by immunohistochemistry.
Results: In the phonophoresis group, transverse diameter, pressure pain threshold and paw withdrawal threshold were significantly recovered from 2nd day after injection compared to those of LIPUS and diclofenac groups. The number of CD68-positive cells in the phonophoresis groups was significantly decreased compared to that of the LIPUS and diclofenac groups.
Conclusions: Our results suggested that LIPUS phonophoresis with diclofenac is more effective for reduction of inflammation and hyperalgesia in acute phase of arthritis compared to single treatment of LIPUS or diclofenac and may be beneficial for acute pain management.

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MULTIPLEX MARKERS EVALUATION OF SERUM INFLAMMATORY CYTOKINES IN KNEE OSTEOARTHRITIC PATIENTS

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Background and aims: Osteoarthritis (OA) is characterized by degradation of the cartilage, bone remodeling, and inflammation. Secreted cytokines are critical mediators of the altered metabolism in the pathogenesis of OA and likely involved in nociceptive sensitization. Cytokines may act as biochemical markers of OA severity. The current study aimed to assess serum levels of 92 inflammatory markers in patients with knee OA (KOA) compared with healthy controls.
Methods: Serum samples from 127 KOA patients and 40 healthy volunteers were analyzed for 92 inflammatory markers using the Proximity Extension Array (PEA) technology. Clinical pain intensity was assessed using a visual analog scale. Only markers with values of limit of detection (LOD) for more than 30% were used for statistical analyses. Marker expressions were compared between patients and healthy volunteers. All data was corrected using the False Discovery Rate (FDR) approach.
Results: Seventy-two markers out of 92 showed more than 30% of LOD and were evaluated. Ten markers (CASP-8, EN-RAGE, AXIN1, STAMPB, SIRT2, DNER, SCF, 4E-BP1, TWEAK, uPA) showed a significant lower serum expression in patients with KOA compared with healthy controls, whereas 5 (IL6, CSF-1, FGF-21, MCP-3 and LAP TGF-beta-1) showed a significant higher expression in the serum of KOA patients.
Conclusions: The present study provides novel data on alterations of inflammatory serum cytokine in patients affected by KOA. The proteomic approach of PEA technique allowed the investigation of new markers involved in several biological processes that influence the inflammation state and may be involved in the nociceptive sensitization processes.

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PAIN AND QUALITY OF LIFE IN OSTEOARTHRITIS: RELATIONSHIP WITH DEMOGRAPHIC AND CLINICAL VARIABLES

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Background and aim: Osteoarthritis is a major cause of musculoskeletal pain and physical disability. It might have negative impact on quality of life. The aim of this cross-sectional study was to investigate the relationship of pain and quality of life with various demographic and clinical variables in osteoarthritis.
Methods: 156 patients (mean age 56±10 years, 79.5% female, mean disease duration 7.2±6.4 years) with knee, hip, foot and/or hand osteoarthritis referring to the outpatient clinic of physical medicine and rehabilitation department of a university hospital were assessed. Assessment scales included severity of pain by 0-10 numeric rating scale, Osteoarthritis Quality of Life Scale (OAQoL), Health Assessment Questionnaire (HAQ), Western Ontario and McMaster Universities Index of Osteoarthritis (WOMAC) and Nottingham Health Profile (NHP).
Results: Pain was more severe amongst females ($p< 0.001$). Moderate significant correlations (Spearman r: 0.50-0.70) were found between pain and WOMAC_Function, HAQ, WOMAC_Stiffness, NHP_Physical Mobility and NHP_Energy. Pain was not related with the number of joints affected by osteoarthritis. Linear regression model was performed to determine the factors which together explain the variability in quality of life (OAQoL). Potential factors, found to be statistically significant in univariate linear regression analyses were used in stepwise regression procedure to select the final multivariable model. Final model included Pain, HAQ, NHP_Energy and NHP_Social Isolation with an adjusted R^2 of 0.645.
Conclusions: Pain was related with physical function, stiffness and fatigue. Regression model including pain, physical function, fatigue and social isolation explained most of the variance in quality of life in osteoarthritis.

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CONDITIONED PAIN MODULATION AND OFFSET ANALGESIA AS POSSIBLE PREDICTORS FOR NSAID TREATMENT RESPONSE IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Background and aims: Conditioned pain modulation (CPM) and offset analgesia are different features of endogenous pain inhibition. This study investigated CPM, offset analgesia and pain intensity rating during activity in patients with knee osteoarthritis (KOA) before and after treatment with the combination of non-steroidal anti-inflammatory drug (NSAIDs) plus acetaminophen.
Methods: Forty-two patients with KOA received Ibuprofen 1.2g/daily and acetaminophen 3.0g/daily for three weeks. The CPM effect was assessed as the difference between cuff pain detection threshold (cPDT) with and without a conditioning cuff pain stimulus. Offset analgesia was assessed as the pain intensities evoked by a constant 46°C stimulus for 30-seconds compared to an offset analgesia paradigm of 46°C for 5-seconds, 47°C for 5-seconds, and 46°C for 20-seconds. CPM, offset analgesia and pain intensity rating during activity (VAS, 0=no pain, 10=worst pain imaginable) was assess before and after the treatment.
Results: Pain during activity decreased significantly from (VAS:6.3±0.4) to (VAS:4.2±0.5) after treatment ($P< 0.001$). This treatment effect was correlated to the baseline CPM effect ($R=0.35$, $P=0.043$), but not the baseline offset analgesia ($R=0.08$, $P=0.6$). The CPM and the offset analgesia effects were not significantly changed by the treatment.

Conclusions: This study found that less efficient CPM is associated with lower analgesic effect of NSAIDs plus acetaminophen in patients with KOA whereas the treatment did not modulate CPM nor offset analgesia.
Acknowledgements: Funded by CNAP, Danish National Research Foundation (DNRF121), Innovation Fund Denmark (136-2014-5), The Aalborg University Talent Management Programme (771126), The Shionogi Science Program, and Daiichi Sankyo TaNeDS Europe Grant

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PROFILING OF PAIN AND PHYSICAL FUNCTION IN PATIENTS WITH CHRONIC PAIN FOLLOWING KNEE OSTEOARTHRITIS AND TOTAL KNEE ARTHROPLASTY

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Background:
Knee osteoarthritis (OA) and total knee arthroplasty (TKA) chronic pain patients report different intensities of pain during quantitative sensory testing and deficits in physical function. The objective was to profile and compare these populations regarding pain and physical function.
Methods:
An experimental study including pain and physical function assessments was conducted in patients with OA (N=46) and TKA (N=24). Assessment were pain related outcomes: average daily pain intensity, mechanical pain sensitivity, temporal summation and conditioned pain modulation, and physical function outcomes: 30sec chair rise test, 40m walk test and stair climb test.
Results:
Both groups reported an average daily pain >5 on a numerical rating scale. Facilitated temporal summation were observed in both groups, indicating sensitization. Pain outcomes were similar between groups (p>0.05), while physical function differed. The OA group performed better in the chair rise test (p=0.004), the 40m walk test (p=0.016) and the stair climb test (p=0.002) compared to the TKA group (table 1).

Mean	Osteoarthritis (n: 46)	Total Knee Arthroplasty (n: 24)	Between groups differences (95% CI)
Chair rises on 30sec (repetitions)	11.2 (2.2)	9.5 (2.5)	1.7* (0.6 ; 2.9)
40m walk test (sec)	29.0 (5.3)	32.4 (5.8)	-3.4* (-6.1 ; -0.7)
Stair climbing test (9 stairs) (sec)	10.8 (3.2)	14.6 (4.9)	-3.8* (-6.1 ; -1.6)

*[Table 1: Results from physical function tests. Values are mean (SD). * P-value < 0.05.]*

Conclusions: Similar pain profiles for clinical pain and quantitative assessed pain were observed for OA and TKA patients with chronic pain. Physical function was lower in patients after TKA compared with patients with OA.
Acknowledgments/Disclosures:
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NEUROPATHIC PAIN COMPONENT IN PATIENTS WITH CHRONIC OSTEOARTHRITIS OF THE KNEE

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Aim of investigations: The aim of our study was to examine the extent of Neuropathic pain(NP) in the knees of chronic Osteoarthritis(OA). A patients using painDETECT, and to evaluate the relationship between NP and stage of OA.
Methods: In this prospective observational study, 500 OA knee patients have been enrolled after they meet the inclusion criteria. Pain scores using Visual Analogue Scales (VAS), painDETECT, duration of symptoms, severityof OA using the Kellgren-Lawrence (KL) system were evaluated. Correlations were established using Pearson correlation coefficient (p< 0. 05 considered as statistically significant).
Results: Five hundred patients (312 females, 188 males) with a mean±SD age of 56. 4±9. 1 years were included in the study. The duration of symptoms was 81±42 months. The VAS was 4. 8±2. The prevalence of neuropathic pain was 36%. PainDETECT score significantly correlated with the VAS (r=0. 6, p=0. 0001). There was no significant correlation between painDETECT and KL grade and duration of symptoms.
Conclusions: This prospective clinical study demonstrates NP as the cause of pain in knee OA in more one-third patients using painDETECT score. The prevalence of NP in knee OA is higher than previously reported. This helps us understand the large number of patients non responding to conventional treatment. Hence proper evaluation of the patient is required to find out the neuropathic component his pain of OA knee. It will also help us formulate a management plan based on this type of pain.

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VISUAL CORTICAL EXCITABILITY IN FIBROMYALGIC PATIENTS: A STUDY WITH SOUND INDUCED FLASH ILLUSION

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Background and aims: Excitability of pain-processing areas and response to incoming somatosensory stimuli are abnormally enhanced in Fibromyalgia(FM). To explore if such facilitation represents a more general sensorial activation not strictly related to pain, we evaluated excitability of visual cortex, an area not directly involved in pain processing, through Sound-Induced Flash Illusion(SIFI)(1). SIFI are cross-modal illusions, strictly dependent upon visual excitability, where visual perception is influenced by auditory input. When a single flash is accompanied by multiple beeps, it is perceived as multiple flashes(fission illusion), conversely when 1 flash is accompanied by more beeps, more flashes are seen (fusion illusion). SIFI are reduced when visual cortical excitability increases.
Methods: We performed SIFI in 19(18 F) FM patients and 24 healthy controls(16 F). Throughout the test, 0 -4 flash were presented on a monitor together with 0-4 beeps delivered by loud-speakers, in different combinations. The observer's task was to judge the number of flashes seen.
Results: Preliminary data show a highly significant reduction in fission illusions in FM patients compared to healthy controls(particularly when 1 flash is accompanied by three or four beeps, p< .0005).
Conclusions: Our results suggest an increased visual excitability that could favor the hypothesis of a general sensorial activation, not strictly linked to pain, in FM. This could make more light on pathophysiological mechanisms

of disease likely opening also new ways for treatment. SIFI represent an easy and effective tool to explore cross-modal audio-visual perception and visual cortical excitability in FM patients.
1. Shams et al. Nature.**2000**,408:788

OSTEOARTHRITIS, RHEUMATOID ARTHRITIS

P495

PAIN AND FATIGUE IN EARLY RHEUMATOID ARTHRITIS - A CROSS-SECTIONAL STUDY

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Background and aims: Pain and fatigue are prevalent and impair quality of life in people with Rheumatoid Arthritis (RA). They might be caused by multiple and overlapping mechanisms. We examined the relationship between pain and fatigue in early RA.
Methods: Baseline data were examined from the Early Rheumatoid Arthritis Network inception cohort. Pain and fatigue were measured with normed SF36 Bodily Pain and Vitality subscales respectively. Other variables included SF36 Mental Health (MH), Health Assessment Questionnaire (HAQ), Erythrocyte Sedimentation Rate (ESR), Haemoglobin Concentration (Hb), Swollen Joint Count (SJC), Tender Joint Count (TJC), Patient's Global Assessment of Disease Activity (PGA), Seropositivity and demographics. Multiple linear regression was utilized.
Results: ERAN participants comprised 67% female with a mean age of 57y. Mean pain and fatigue scores were 34 (SD±10) and 42(SD±11) respectively, indicating worse quality of life compared to the UK population average. Worse fatigue was associated with worse pain, in unadjusted model
(β = 0.56 CI, 0.52 - 0.62) and after adjusting for the effects of HAQ, PGA, TJC and MH (β = 0.20 CI, 0.13 - 0.28, Adjusted R^2 = 0.48). This association was not explained by inflammatory variables
e.g. ESR and Seropositivity.
Conclusions: Fatigue is associated with pain, independent of inflammation in patients with early RA. Longitudinal studies are required to explore the temporality of this relationship. Treatments that help manage pain and fatigue, in addition to those reducing inflammation, might improve quality of life in people with RA.

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INTRA-ARTICULAR GOLD MICRO PARTICLES AND HYALURONIC ACID IMPROVE OSTEOARTHRITIC PAIN AND SOCIAL FUNCTION. A PILOT STUDY

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Background and aims: Many patients suffering from osteoarthritis (OA) do not get adequate pain relieve. Evidence suggest an inflammatory component in OA pain. Animal studies prove the effect of gold implantation in arthritic joints and a stimulation of the immune system. The present open pilot study aimed to investigate if gold ions released from intra-articular gold micro particles have a role in different joint OA.

Methods: A cohort of 39 patients, aged 58 (37-78) years, pain ≥ 3 months, and Kellgren-Lawrence OA grade 3-4 were included. Metallic gold 20 mg, 72.000 pieces, 20-40 µ-meter (Berlock-Micro-Implants, HumanGoldInject) were injected into the joints using 1-2 mL hyaluronic acid as the carrier. The primary outcome measure was change in pain at 8 weeks. The secondary outcome measures was change in social outcome assessed by a Danish 8 point version of the Glasgow Outcome Scale at 2 months
Results: This study includes 31 knee, 6 hip, 4 shoulder, 4 ankle, 2 wrist and 10 small joints. Pain or social outcome was improved in 34/39 patients (95% CI 72.6 - 95.7 %). Pain was reduced in 44/57 joints (95 % CI 61 - 89 %). Social outcome was improved for 42/57 joints (95 % CI 57.2 - 86.5 %) (P < 0.001).
Conclusions: The significant improvements in pain and social outcome caused by the intraarticular gold micro particles and hyaluronic acid indicate an inhibition of inflammation.

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EFFECTS OF MUSCLE CONTRACTION EXERCISE ON PAIN RELIEF, SYNOVITIS AND SPINAL SENSITIZATION IN RAT OSTEOARTHRITIS MODEL

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Background and aims: Therapeutic exercise is recommended as a pain management for patients with osteoarthritis (OA). It is unclear, however, what biological mechanisms underlies pain relief by exercise. We examined effects of muscle contraction exercise on pain relief, synovitis and spinal sensitization in rat osteoarthritis model.
Methods: Wistar rats were randomly divided into three groups as follow; OA (a single injection of 2 mg of monoiodoacetic acid for right knee joint), Exercise (OA +Exercise), and Sham (saline injection only) group. In the Exercise group, the right quadriceps muscles contraction exercise subjected to electrical stimulation (frequency: 50 Hz; intensity: 2-3 mA, 20 min/day) were applied from 2 weeks post-injection for 3 weeks. Pressure pain threshold (PPT) of knee joint and paw withdrawal response (PWR) was assessed during experimental periods. We analyzed the number of CD68 positive cells in the synovium with immunohistochemistry and expression level of CGRP in the spinal dorsal horn with fluorescent immunostaining.
Results: In the Exercise group, PPT and PWR were significantly recovered after one week of exercise compared to OA group. No deference was observed the number of CD68 positive cells in the synovium between OA and Exercise group. Significant lower expression of CGRP in spinal dorsal horn were observed in the Exercise group compared to OA group.
Conclusions: These results suggested that pain relief by muscle contraction exercise in rat OA model might be associated with suppression of central sensitization in spinal dorsal horn, but not synovitis. Further research to elucidate the biological mechanism is necessary.

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PRE-TREATMENT EXERCISE-INDUCED HYPOALGESIA IS ASSOCIATED WITH PAIN AFTER STANDARDIZED EXERCISE THERAPY IN PAINFUL KNEE OSTEOARTHRITIS PATIENTS - AN EXPLORATIVE STUDY

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Background and aims: Central sensitization has been associated with pain severity in patients with knee osteoarthritis (KOA). Exercise-induced hypoalgesia (EIH), a measure of descending pain inhibitory control, has been found dysfunctional in a subgroup of KOA patients. The prognostic value of EIH in patients completing a standardized exercise therapy (ET) program has not been investigated. This study aimed to correlate pre-treatment EIH with change in pain scores after a standardized ET program.
Methods: In 24 patients with painful KOA (numeric rating scale [NRS, 0-10] ≥ 3), pressure pain thresholds (PPTs), temporal summation of pain (TSP) and EIH (as change in PPT) at m. quadriceps femoris (QF) and m. deltoideus (DE) after 2-minute 'lateral shoulder raises' were assessed before and after 6-9 weeks of standardized ET. In addition, clinical pain scores (NRS and Knee injury and Osteoarthritis Outcome Score (KOOS)) were assessed before and after ET.
Results: On average, 12.5 ± 0.3 (range 11-18) ET sessions were completed during 8.4 ± 0.5 (range 6-12) weeks. After ET, all clinical pain scores improved ($P < 0.01$), while no changes in PPTs, TSP or EIH were found ($P > 0.05$). Pre-treatment EIH-DE correlated with KOOS-pain, KOOS and relative change in KOOS after ET ($R > 0.400$, $P < 0.05$). No significant correlations between pre-treatment PPTs and TSP, and pain outcome scores were found ($P > 0.05$).
Conclusions: These preliminary results suggests that patients with higher EIH-responses prior to a standardized ET program have larger improvements in pain after treatment.

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LIPID PROFILE IN RHEUMATOID ARTHRITIS PATIENTS AND ITS RELATION TO DISEASE ACTIVITY

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Background: Cardiovascular morbidity and mortality are enhanced in Rheumatoid Arthritis (RA), which may be attributable to dyslipidemia. The dyslipidemia observed in RA appears to be dependent on disease activity. In this study we prospectively assessed the correlation of lipid profile with the disease activity.
Material and methods: Total of 60 patients who fulfilled the "Revised Criteria for the Classification of Rheumatoid Arthritis 1987" were included. The patients who satisfied at least 4 out of 7 criteria were included. The serum was collected from patients for the determination of triglycerides (TG), total cholesterol (TC), high density lipoprotein (HDL), low density lipoprotein (LDL). Disease activity was assessed by using DAS 28 ESR score and correlated to the lipid profile of the patients using co-efficient of correlation.
Results: Out of 60 patients, 42 (70%) patients had very active disease activity at the time of presentation. 16 (26.7%) patients had moderately active and 2 (3.3%) had inactive disease. Patients with very active disease were found to have low levels of LDL, HDL and TC as compared to patients with inactive disease. However the reduction in HDL levels was significantly higher than TC levels. Levels of TG were found to be higher in patients with very active disease.

Conclusions: By causing greater reductions in HDL, RA does increases cardiovascular mortality and morbidity. In patients with RA it is more important to measure both total cholesterol and HDL and to use their ratio for the calculation of absolute cardiovascular disease risk.

P500

ELECTRODIAGNOSTIC TEST IS SIGNIFICANTLY CORRELATED WITH STRENGTH AND PERFORMANCE IN HAND OSTEOARTHRITIS

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Backgrounds and objectives: Patients with hand osteoarthritis (OA) and carpal tunnel syndrome (CTS) usually present reduced strength & function, and deficits in motor control. Therefore, the aims of this study are to compare the difference in motor control and strength between hand OA with CTS and hand OA only and to define the relationship between functional tests and nerve conduction studies.
Methods: 208 patients and 404 hands with hand OA were enrolled from June, 2015 to June 2016. CTS group (206 hands, 160 females) and control group (198 hands, 143 females) were randomly assigned according to classification of nerve conduction study. The strength of hand grip and lateral pinch and 9-hole pegboard test (9HPT) were assessed and motor & sensory nerve conduction studies (NCS) were obtained.
Results: CTS group revealed lower significantly strength of hand grip and lateral pinch and longer time of 9HPT than those of control group. And also, female hands revealed lower significantly strength of hand grip and lateral pinch than those of male hand. But there was no difference in 9HPT between both genders. Motor amplitude of median nerve showed moderate correlations with strength of hand grip and lateral pinch and 9HPT and sensory amplitude of median & ulnar nerves showed moderate correlation with 9HPT.
Conclusions: NCS was significantly related with function test and CTS induced significant deficits in decreased strength and performance of affected hand. However, further studies might be warranted to confirm its effect on the progression or prognosis of CTS.

PAIN SYNDROMES WALK 12

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AQUAPORIN1 CONTRIBUTES TO THE PERCEPTION OF ACUTE MECHANICAL PAIN VIA THE REGULATION OF AN UNKNOWN MECHANOTRANSDUCER

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Background/aims: The mechanotransducer Piezo2 produces a rapidly-adapting mechanically-activated (MA) current responsible for innocuous mechanical sensation, but the molecule(s) responsible for the current produced during noxious mechanosensing remains enigmatic. Using electrophysiological and behavioural techniques, we describe a novel role for the water channel Aquaporin1 (Aqp1), while ruling out Piezo2, in mediating acute noxious mechanosensation.

Methods: HEK293T cells were transfected with Aqp1 and Piezo2 cDNA. Mechano-clamp electrophysiology was used to record the MA currents produced by these cells, and also to characterize the dorsal root ganglion neurons (DRG) of Aqp1 KO mice. Aqp1 KO and Nav1.8Cre;Piezo2fl/fl conditional KO mice were exposed to mechanically-evoked pain behaviour assays.
Results: Aqp1 alone does not produce an MA current in HEK293T cells but does slow the kinetics of the current produced by Piezo2. Slowly-adapting MA currents are reduced in the small-diameter DRG neurons of Aqp1 KO mice, and a concomitant reduction in noxious mechanical sensitivity is also observed. In Nav1.8Cre;Piezo2fl/fl KO mice, no change in mechanical sensitivity is seen.
Conclusions: Aqp1 is not a *bona fide* mechanotransducer as it does not produce an MA current in a heterologous system; however, it is capable of modifying currents *in vitro* and regulating noxious mechanosensation *in vivo*. As Aqp1 slows the kinetics of the current produced by Piezo2 in HEK293T cells, we explored a role for Piezo2 in acute mechanical pain, finding that Nav1.8 neuron- specific Piezo2 KO animals had normal mechanical sensitivity. Thus, Piezo2 does not contribute to acute noxious mechanosensation, and the mechanotransducer responsible remains elusive.

P502

BIOMARKERS OF CHRONIC PAIN: LEVELS OF PROINFLAMMATORY BIOMARKERS IN THE CEREBRAL SPINAL FLUID AND QUANTITATIVE SENSORY TESTS IN PATIENTS WITH FIBROMYALGIA AND HEALTHY VOLUNTEERS

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Summary: Fibromyalgia is a chronic pain condition characterized by widespread pain and hypersensitivity. The cause is uncertain, but several studies have indicated that a central neuro-inflammatory process may be part of the pathophysiology, as several pro-inflammatory chemokines have been identified in the cerebral fluid of patients with fibromyalgia.
We still need, however, to test the levels of pro- and anti-inflammatory interleukines and chemokines in larger groups, taking other markers of hypersensitivity into account.
Aim of investigation: To examine the levels of the following biomarkers: BDNF, IL10, IL18, IL1B, IL4, IL6, IL8, MCP1, TNFa, HMGB1 in the cerebral spinal fluid of patients with fibromyalgia and healthy volunteers, and compare the results with quantitative sensory tests (QST) as markers of hypersensitivity. Moreover, in possible relationships between biomarkers, QST and clinical pain characteristics will be investigated in patients with fibromyalgia.
Methods: Samples of cerebral spinal fluid and blood was collected on all participants and immediately centrifuged at 4°C and frozen on dry ice. Samples of cerebral spinal fluid were collected in aliquots immersed in ice-water. QST was performed on another day, and included testing of conditioned pain modulation, temporal summation, pain pressure threshold and tolerance, heat pain threshold and pinprick hyperalgesia.
Results: 69 patients with fibromyalgia and 47 healthy volunteers have been included in the study.
The result of the multiplex analysis of blood and cerebral spinal fluid are not yet finished, but will be presented at the congress along with the QST-results.

P503

EVALUATION OF PAIN ASSESSMENT, REASSESSMENT AND PHARMACOLOGICAL TREATMENT IN HOSPITALIZED CHILDREN THROUGH AN ELECTRONIC HEALTH RECORD LINKING CARE ACTIVITIES WITH MEDICATION ORDERING AND ADMINISTRATION

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Background and aims: Quantifying the complete process of pain assessment and treatment would contribute to developing strategies to provide safer care, but has proven difficult to achieve. We illustrate the usability of a comprehensive electronic health record to quantify among hospitalized children pain assessment, reassessment, and pharmacological treatment of pain, and to describe variation across healthcare providers and explore organizational determinants associated with time to reassessment and pharmacological treatment.
Methods: Retrospective observational study of 11 949 child stays on three nursing wards in a tertiary care center in 2016 and 2017. Depending on the child's age, pain was assessed using the comfort behavior scale, faces pain scale-revised or a numeric rating scale. We linked administrative data, a state-of-the-art electronic health record care module detailing planned and unplanned care, computerized physician order entries and electronic medication administration records with barcode medication administration, and nurse personnel records.
Results: Pain occurred in 33.7% of stays. Among 3 315 399 care activities, pain assessment was the most frequent planned (6.0%) and third most frequent unplanned (8.8%) activity. Median time to reassessment was 3.4h, which ranged from 0.9h to 7.9h across the 125 pediatric nurses. Reassessment within 1-2h in case of oral pain medication and within 15-30min in case of parenteral medication occurred in 11.9% and 2.4% of cases, respectively. Evening and night shifts and first day postoperatively showed shorter time to reassessment.
Conclusions: A comprehensive electronic health record provides revelatory and actionable insights. Increased attention to timely pain reassessment and pharmacological treatment is warranted.

P504

PAIN IN CHILDREN AND ADOLESCENTS WITH CEREBRAL PALSY

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Background and aims: Cerebral palsy (CP) is caused by non-progressive brain damage and is one of the most common early-onset lifelong disabilities. Motor impairments are always present and cognition, perception, sensation, and behavior disturbances are common. Pain in CP is frequent, yet understudied. We assessed the frequency of pain in children with CP by age, sex, gross motor function classification-level (GMFCS), and body site in four countries.
Methods: Cross-sectional population-based registry study (Icelandic sample was clinic-based). Children with CP, ages 2-11 years, residing in Sweden (n = 1,859), Denmark (n = 984), Iceland (n = 45) or Norway (n = 785) who participated in the follow-up program CPUP/CPOP were included. Data were self/proxy reported. Descriptive statistics on presence of pain by age, sex, GMFCS-level, and pain site were calculated.
Results: Percentages of pain were Sweden 35%, Denmark 29%, Iceland 44%, and Norway 34%. Pain increased significantly with age. In Norway, for instance, pain increased from 23% at 3 years to 46% at 11 years (p=0.03), with similar results found in Sweden. No significant differences on pain by sex were found. In Sweden and Denmark, pain was more frequently recorded at GMFCS-level V (i.e., most severely affected gross motor function) and least frequently recorded at GMFCS-level III. Pain was most frequently recorded in the lower extremities in Sweden and

Norway.
Conclusions: Pain is a major problem in adults with CP. The results from the current study show that pain starts in early childhood in this population, and increases significantly with age.

P505

BIOPSYCHOSOCIAL MODEL FOR A MULTIDISCIPLINARY PERIOPERATIVE CARE PATHWAY IN PATIENTS UNDERGOING POSTERIOR SPINAL FUSION SURGERY FOR ADOLESCENT IDIOPATHIC SCOLIOSIS

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Background and aims: Adolescent idiopathic scoliosis (AIS) is the most common form of scoliosis, mostly affecting children. Although AIS is a benign disorder with no severe long-term consequences, literature suggests that besides pain, self-image is lower among cohorts with untreated AIS. Posterior spinal fusion (PSF) for AIS correction has a challenging pain management and patients are at risk for persistent postoperative pain. The purpose of this study is the implementation of an enhanced recovery pathway (ERP) including all aspects of integrated biopsychosocial care.
Methods: We developed a stepwise approach that started with the critical appraisal of the current perioperative standardized multimodal analgesic protocol for PSF in AIS at our institution. We reviewed the literature considering all aspects of perioperative patient care and evaluated several scores for their potential to quantify biopsychosocial elements that reflect patient wellbeing. Primary outcome parameter was postoperative pain reduction. Secondary outcomes are opioid-related side-effects and mobilization onset. A novel strategy including preemptive gabapentine, a single intraoperative dose of methadone IV (0.2mg/kg), NSAID and acetaminophen perioperatively in addition to rescue sublingual buprenorphine, was implemented.
Results: An ERP was implemented including psychological screening using Web-based questionnaires and early treatment if necessary, extensive patient related outcome measure registration, a preemptive multimodal analgesic protocol and long-term follow up using eHealth based telemonitoring devices and online daily questionnaire. Final results are expected 2020.
Conclusion: ERP could result in reduced postoperative pain and opioid-related side-effects, faster mobilization, earlier hospital discharge and may improve patient satisfaction.

PAIN IN THE NECK AND CERVICORADICULAR PAIN

P506

CHANGES IN PAIN SENSITIVITY AND CONDITIONED PAIN MODULATION DURING RECOVERY FROM ACUTE WHIPLASH ASSOCIATED DISORDERS - PRELIMINARY RESULTS

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Background and aims: Altered pain sensitivity and conditioned pain modulation (CPM) is a common finding in whiplash-associated disorders (WAD). However, how and if the pain-sensory profile changes during rehabilitation is unclear. This study investigated pressure pain threshold (PPT) and CPM in acute WAD-patients before and after a

2-week standardized rehabilitation program.
Methods: Seventeen acute WAD-patients (Grade-II; 9 women) and 17 matched healthy controls were recruited. Disability in the WAD-group was assessed using the Neck Disability Index (NDI). Pain intensity was assessed using an 11-item Numeric Rating Scale. Handheld algometry was used to assess PPT bilaterally over the upper trapezius (local site) and the gastrocnemius (distal site) muscles before and after a painful conditioning stimulus (pressure cuff around the non-dominant arm). Measurements were conducted at baseline, after 2-weeks of standardized rehabilitation and at 6-months.
Results: The WAD-group reported a mean NDI-score of 41% at baseline, 16% at 2-weeks and 4% at 6-months follow-up. The WAD-group reported higher pain intensities compared to controls at all timepoints (P< 0.05). At baseline the WAD-group displayed reduced local PPT compared to all other timepoints (P< 0.05), while the distal PPT was only reduced compared to 6-months (P< 0.05). At baseline the WAD-group displayed reduced local PPT on the most symptomatic side compared to controls (P< 0.05). For the WAD-group CPM was reduced compared to controls at all time-points (P< 0.05) while no within-group changes were observed during the study.
Conclusions: Pressure pain sensitivity, but not CPM, normalizes following a standardized rehabilitation protocol in acute WAD-patients.

P507

THE EFFECT OF ADDING DEXAMETHASONE TO BUPIVACAINE ON THE DURATION OF POSTOPERATIVE ANALGESIA AFTER ULTRASOUND-GUIDED QUADRATUS LUMBORUM BLOCKS ANALGESIA IN CHILDREN AFTER ABDOMINAL OPERATION

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Background: Different additives have been reported to prolong the duration of regional analgesia in pediatrics patients. Dexamethasone has been found to effectively increase the duration of an Quadratus Lumborum Blocks block in adults, with no resulting side effects.
Methods: This was a prospective randomized-controlled study that included 26 children, aged 3-17 years, ASA physical status 2-3, undergoing abdominal surgery. Patients were randomized to receive 1 ml/kg bupivacaine 0.25% (group B) or a mixture of dexamethasone 0.2 mg/kg added to 1 ml/kg bupivacaine 0.25% (group BD). In the postoperative period, pain was assessed using a modified Numeric Pain Scale (NPS) score until 24 h after surgery and rescue analgesia (oral paracetamol 15 mg/kg) was administered when needed.
Results: Group BD showed a significantly longer time to first analgetic requirement than group B. The number of oral paracetamol doses required in the first 24 h was significantly less in group BD. Group BD showed lower NPS scores than group B. Modified Bromage scale scores, sedation scores, as well as intraoperative and postoperative hemodynamic variables were comparable in the two groups. Group BDshowed significantly fewer incidences of PONV compared with group B.
Conclusion: Adding dexamethasone to bupivacaine prolongs the duration of postoperative analgesia and decreases the incidence of PONV after Quadratus Lumborum Blocks in pediatric patients after abdominal surgery. NPS score 4 or more was recorded. The primary outcome measure was the time to first analgesic requirement.

P508

DIFFERENCES IN SENSORIMOTOR CONTROL AND UPPER CERVICAL MOBILITY BETWEEN PATIENTS WITH NECK PAIN WITH AND WITHOUT ALTERED JOINT POSITION SENSE: A CROSS-SECTIONAL STUDY

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Background and aims: Previous work has shown that patients with neck pain (NP) exhibit a set of sensorimotor disturbances [e.g., altered joint position error (JPE)]; which are more pronounced in those with an upper cervical spine dysfunction. The aim of this study was to investigate if NP patients who exhibit an altered JPE (≥4.5º) also present other sensorimotor disturbances and reduced upper cervical ROM when compared to those with unaltered JPE and pain-free individuals.
Methods: 41 NP patients (traumatic or non-traumatic onset) and 19 pain-free controls were recruited. JPE, cervical movement sense (CMS) and postural stability (measured with pressure platform Disnascan/IBV P600) were evaluated as measures of sensorimotor function. The flexion-rotation test (FRT) was used as a measure of C1-C2 mobility. NP patients were divided into two groups either altered JPE (n=24) or unaltered JPE (n=17).
Results: When compared to pain-free individuals, NP patients with altered JPE exhibited an equal number (18.17±5.42 vs 14.42±5.22; p>0.05) but greater magnitude of error (23.42±9.51 vs 16.32±5.90; p< 0.05) during the CMS test as well as reduced FRT (35.58°±14.39 vs 46.80°±5.70 for the right side and 33.91°±11.8 vs 46.95°±5.84 for the left side; p< 0.01). By contrast, NP patients with unaltered JPE and pain-free controls were comparable for these measures. No between-group differences were found in postural stability.
Conclusion(s): NP patients with altered JPE also exhibit an impaired cervical movement sense and reduced upper cervical spine mobility. These findings may be helpful to optimise the treatment of patients with NP through personalized therapeutic interventions.

P509

COMPARISON OF SCAPULAR POSITION, DEEP NECK FLEXOR MUSCLE ENDURANCE AND UPPER LIMB STABILITY IN YOUNG FEMALE STUDENTS WITH AND WITHOUT NECK PAIN

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Background and aims: There are few studies in the literature examining the relationship between neck pain and scapula position. The aim of this study was to compare the scapular position, deep neck muscle endurance and upper limb stability parameters in young female students with and without neck pain.
Methods: This study was performed among volunteer female students who with and without neck pain in Pamukkale University School of Physical Therapy and Rehabilitation. The participants were 42 (mean age: 21.53 ± 2.36) and divided into two groups (With neck pain, n=21; without neck pain, n=21). The vertical-horizontal scapula position (the distance between the scapula-vertebra and the Protractor Method), muscle endurance (deep neck flexor endurance test) and upper extremity stability (The Closed Kinetıc Chain Upper Extremity Stability Test) were evaluated in all subjects.
Results: The mean pain intensity was 4.8±1.2 cm in subjects with neck pain No significant difference was found in the vertical-horizontal position, neck muscle endurance and upper extremity stabilization parameters between two groups (p> 0.05) (Table.1).
Conclusions: The results of this study showed that chronic neck pain did not cause scapular postural disorder and also a decrease in flexor muscle endurance and in upper extremity stability in young female. The reason for these results may be that the physical activity levels of the two groups are similar as the study was performed in young population. Further studies on the subject are needed.

P510

CHANGE IN SEVERITY OF PAIN AFTER EPIDUROLYSIS TREATMENT

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Epidural lysis of adhesions represents an important part of the interventional repertoire for the treatment of low back and cervicoradicular pain that is refractory to more conventional measures.The aim of this randomized prospective study was to assess effects of caudal and cervical epidurolysis on change in severity of pain and analgesic consumption in patients with chronic radicular painOur study included 20 patients in age from 30 to 65 years who underwent cervical epidurolysis and 41 patients in age from 30 to 85 years who underwent caudal epidurolysis (Racz procedure). Statistical data were analysed using Kolmogorov-Smirnov, Wilcoxon signed-ranks test and Spearman's ρ. The level of significance in all procedures was set at $p< 0.05$. Before the treatment (80.5%) patients had NSAID in their therapy, and (56.1%) had opioids in their therapy. After the epidurolysis treatment, (56.7%) had NSAID in their therapy, while (26.7%) had opioids in their therapy. Severity of pain at rest statistically significantly decreased after the epidurolysis treatment ($z = -4.39$; $p < 0.001$), as well as severity of pain on movement ($z = -4.86$; $p < 0.001$).
(48.1%) of patients was on sick leave before and after the treatment and (14.8%) patients was on sick leave only before the treatment.
Our study suggests that epidural adhesiolysis is effective for pain reduction and functional improvement in patients with chronic radicular pain .

PERIPHERAL NEUROPATHIC PAIN

P511

ANALGESIC EFFECT OF THE TRAZODONE-GABAPENTIN COMBINATION IN THE CHRONIC CONSTRICTION INJURY RAT MODEL

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Current drug treatments for neuropathic pain include antiinflammatory drugs, antidepressants and opioids, even if effectiveness of opioids in the treatment of neuropathic pain remains controversial. Overall, no pharmacotherapy has so far emerged as an effective treatment for neuropathic pain.
Aim of this study was to verify the synergism of the combination of inactive doses of trazodone, a multifunctional drug used for the treatment of major depressive disorders, and gabapentin, a GABA analogue currently used to relieve neuropathic pain, in the chronic constriction injury model (CCI), a widely used animal model of neuropathic pain.
CCI was induced in SD rats by loosely constrictive ligatures around the sciatic nerve trunk at mid-thigh level. Mechanical hyperalgesia and spontaneous pain (weight bearing, burrowing performance, nest construction) were measured following trazodone (0.3mg/kg) and gabapentin (3mg/kg) in single or combined administration. All procedures conformed to the guidelines of the European Community's Council for Animal Experiments.

When animals received two low and ineffective doses of trazodone and gabapentin in combination, a marked and significant antihyperalgesic effect was observed. CCI-induced neuropathic pain also reduced weight bearing of the injured limb, burrowing activity and nest performance. The combination normalized weight bearing deficit and restored the burrowing performance as well as the ability of nestlet shredding.
Our data suggest that trazodone-gabapentin low doses combination not only is effective in inducing a synergistic analgesic activity, which can be of interest for optimal multimodal clinical analgesia, but it also exerts a positive effect on the emotional and cognitive components of pain.

P512

THE INVOLVEMENT OF $P2X_4$ AND $P2X_7$ PURINERGIC RECEPTORS OF DORSAL ROOT GANGLIA ON PACLITAXEL-INDUCED NEUROPATHIC PAIN

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It has been demonstrated that P2X receptors family is involved in nociceptors sensitization. Two of them, $P2X_4$ and $P2X_7$ receptors ($P2X_4R$-$P2X_7R$), play a major role in different models of hyperalgesia. Recently, we demonstrated that $P2X_4$ in the dorsal root ganglion (DRG) is essential to the development of streptozotocin-induced (diabetic) neuropathic hyperalgesia. The aim of this study was to investigate whether $P2X_4R$ or $P2X_7R$ in DRG are involved in the development and maintenance of paclitaxel-induced early and late mechanical hyperalgesia. Neuropathic hyperalgesia was induced with 1 (early) or 4 (late) administrations of paclitaxel (1 mg / kg, intraperitoneal), and the selective antagonist of $P2X_4R$ (PSB 12062, 1 mmol / 5 µL) or $P2X_7R$
(A- 740003, 0.1 mmol / 5µL) was injected in DRG (L5) 3h after the administration of the initial dose of paclitaxel, or on 13th day after induction. Mechanical hyperalgesia was measured using the electronic von Frey and DRG were harvested to verify the expression of $P2X_4R$ and $P2X_7R$ by immunogold technique. The results demonstrated that both $P2X_4R$ and $P2X_7R$ of DRG are involved in paclitaxel-induced early and late neuropathic hyperalgesia. The immunogold labeling revealed that $P2X_4R$ and $P2X_7R$ are detected in mitochondria, cytosol, and plasma membrane of both DRG satellite cells and neurons. These results suggest that the activation of $P2X_4R$ and $P2X_7R$ in DRG might be a key event during development and maintenance of paclitaxel-induced mechanical hyperalgesia and are promising targets for the paclitaxel-induced neuropathic pain control.

P513

DORSAL ROOT GANGLION RADIOFREQUENCY THROUGH INTRACANAL APPROACH FOR TREATMENT OF REFRACTORY THORACIC POSTHERPETIC NEURALGIA

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Background and aims: Postherpetic neuralgia (PHN) is characterized by the appearance of chronic neuropathic pain over an area where there have previously been lesions after a reactivation of the herpes zoster virus. Pulsed radiofrequency ablation (RFP) of the dorsal root ganglion (DRG) is a novel therapeutic alternative for the treatment of cases when usual treatment have failed.
Methods: We perform a retrospective observational study in 9 patients, evaluating the effect of the RFP of thoracic DRG in PHN refractory to oral, topical or interventionist treatment (including TENS, epidural, paravertebral, intercostal block, intercostal RFP).

Results: We performed epidural approach 2 or 3 spaces below the GRD affected. Sensory verification was performed by stimulation at 50 Hz, until the patient´s verbal response at a level below 0.5 V and motor stimulation at 2 Hz, detecting the presence of fasciculation of intercostal muscles. Then RFP of the affected GRD is applied for 4 minutes at 45 volts and 107ºF. The mean EVA prior to treatment was 7.2. One month after the treatment it was 5.42 and 5.8 after three months. 77.7% improved according to the impression scale of global improvement of the patient (PGI-I). All patients decreased at least 1 point on the DN4 scale. No complications were described.
Conclusions: The RFP of thoracic DRGs can be an alternative for management of thoracic postherpetic neuralgia refractory to topical, oral treatment and nerve blocks, also reducing the risk of complications using epidural access in comparison with transforaminal approach.

P514

HEPATIC INJURY AGGRAVATES OXALIPLATIN-INDUCED PERIPHERAL NEUROPATHY IN MICE: POSSIBLE INVOLVEMENT OF HMGB1

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Background and aims: We have reported that peripheral high mobility group box 1 (HMGB1), a DAMP/alarmin protein, accelerates pain signals and participates in chemotherapy-induced peripheral neuropathy (CIPN). On the other hand, HMGB1 is released in response to hepatic injury and aggravates hepatic disorders including fibrosis. Given reported clinical cases indicating that oxaliplatin-based chemotherapy can induce liver fibrosis, we investigated whether hepatic injury affects the development or severity of CIPN following oxaliplatin treatment in mice.
Methods: Mice received i.p. administration of oxaliplatin, and mechanical allodynia was evaluated by von Frey test. Hepatic injury was caused by single or repeated i.p. administration of CCl_4 (1%, 5 ml/kg).
Results: Oxaliplatin at 5 mg/kg, but not 1 mg/kg, caused mechanical allodynia, which was prevented by an anti-HMGB1-neutralizing antibody or soluble thrombomodulin (sTM) capable of inactivating HMGB1. A single dose of CCl_4 caused dramatic increase in serum AST and ALT levels, and concomitant increase in serum HMGB1 levels, whereas such serum biomarker profile disappeared after repeated administration of CCl_4. Nonetheless, repeated administration of CCl_4 caused mechanical allodynia in the mice treated with oxaliplatin at 1 mg/kg, a subeffective dose, which was prevented by the anti-HMGB1 antibody or sTM. Interestingly, the repeated administration of CCl_4 in combination with oxaliplatin at 1 mg/kg, but not each of them, significantly increased serum levels of AST, ALT and HMGB1.
Conclusions: Hepatic injury is considered to aggravate the oxaliplatin-induced CIPN in an HMGB1-dependent manner, and oxaliplatin might promote or prolong the hepatic injury.

P515

EFFECTS OF TREATMENT WITH HYDROGEN SULFIDE-RELEASING MOLECULES ON THE NOCICEPTIVE AND DEPRESSIVE-LIKE RESPONSES ACCOMPANYING PERSISTENT NEUROPATHIC PAIN IN MICE

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Background and aims: Therapies to treat persistent neuropathic pain and the emotional disorders associated are limited with modest efficacy. In this study, we examined if treatment with two slow releasing hydrogen sulfide (H2S) donors, allyl isothiocyanate (A-ITC) and phenyl isothiocyanate (P-ITC), alleviates chronic neuropathic pain and the

depressive-like behaviors associated. Their antioxidants properties were also evaluated.
Methods: In C57BL/6 male mice with neuropathic pain and depressive-like behaviors induced by the chronic constriction of sciatic nerve (CCI) we evaluated the mechanical anti-allodynic, thermal anti-hyperalgesic, thermal anti-allodynic and the antidepressant effects of A-ITC and P-ITC intraperitoneally administered. We also assessed the effect of these treatments on the expression of heme oxygenase 1 (HO-1) and NAD(P)H quinone oxidoreductase 1 (NQO1) in the spinal cord.
Results: Data demonstrated that while acute administration of A-ITC and P-ITC is sufficient to block thermal hypersensitivity, chronic administration are needed to inhibit the mechanical and thermal allodynia induced by CCI. Both H2S donors reduced the depressive-like behaviors accompanying persistent neuropathic pain and increased the spinal cord expression of HO-1 and NQO1.
Conclusions: Our results revealed the differential regulation of the allodynia and hyperalgesia induced by A-ITC and P-ITC and demonstrated the antidepressant and antioxidant properties of these compounds in neuropathic pain. Thus, this study proposes A-ITC and P-ITC as alternatives for the treatment of persistent neuropathic pain and comorbidities associated.
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VISCERAL PAIN

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VISCERAL PAIN ASSOCIATES WITH CINGULATE GLUTAMATE LEVEL IN CHRONIC PANCREATITIS PATIENTS

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Background and aims: Emerging evidence show that patients with chronic pancreatitis (CP) and visceral pain have structural and functional alterations in the central nervous system. The aim was to investigate cerebral metabolic signatures in CP and the associations to various risk factors/clinical characteristics and patient outcome including pain.
Methods: Magnetic resonance spectroscopy was used to measure brain metabolites in the anterior cingulate cortex (ACC), insula, prefrontal cortex and the parietal region in patients with CP and healthy controls. Subgroup analyses based on disease characteristics (alcoholic etiology of CP, diabetes and opioid treatment) were performed. Finally, relations to visceral pain symptom and quality of life scores were explored.
Results: Thirty-one patients with CP (mean age 58.5±9.2 years) and 23 healthy controls (54.6±7.8 years) were included. Compared to healthy controls, patients had increased glutamate/creatine (glu/cre) levels in the ACC (1.24±0.17 vs. 1.13±0.21, p=0.045) and reduced parietal N-acetylaspartate/creatine (NAA/cre) levels (1.45±0.18 vs. 1.54±0.12, p=0.027). Patients with alcoholic etiology of CP had significant lower levels of parietal NAA/cre comparing to patients without alcoholic etiology and healthy controls (p< 0.006). Patients with high level of ACC glu/cre levels reported more severe visceral pain than their counterparts with low level of ACC glu/cre (pain score 4.1±2.7 vs.1.9±2.3; p=0.039).
Conclusions: Cerebral spectroscopy revealed novel and complementary information on central pain mechanisms and alcohol mediated toxic effects in patients with CP. Our data suggest that cingulate glutamate levels associate with the patients' clinical pain symptoms, while parietal NAA levels more likely associate with an alcoholic etiology of CP.

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EFFECTS OF GENDER IN TWO MODELS OF VISCERAL PAIN INDUCED BY COLORECTAL DISTENSION (CRD) IN THE RAT

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Irritable bowel syndrome is a chronic, remitting and relapsing inflammatory disorder. Although women are reported to have a more frequent prevalence of pain related to visceral origin, few studies have investigated sex-differences in rat models of colorectal distension (CRD), a widely accepted method for assessing visceral sensitivity. The aim of this study is to evaluate, in both genders, the efficacy of analgesic substances as well as the impact of sensitization in two rat CRD models.
A probe was inserted, under anesthesia, into the rectum/distal colon of male and female Wistar rats.
-Acetic acid (AA) model: 2h30 before distension, rats received a rectal infusion of AA. The probe was filled with a selected volume of water and the number of abdominal cramps was counted for 10 minutes in rats pretreated with U-50488H (p.o.).
-2,4,6-trinitrobenzene-sulfonic acid (TNBS) model: 14 days before distension, rats received rectal infusion of TNBS. The probe was filled with increasing volumes of water and the number of abdominal cramps was counted for 40 minutes in rats pretreated with morphine (i.p.).
Our data suggest that in the TNBS model, females may be more affected by sensitization than males (increase in the number of cramps of +73% in males and +153% in females, as compared with non-sensitized animals). However, analgesic substances (U-50488H or morphine) display similar and significant effects against CRD-induced abdominal cramps in both sexes.
The sex-dependent effects of sensitization suggest that it is useful to include both genders in pharmacological studies using rat CRD models.

WIDESPREAD PAIN

P518

DO FIBROMYALGIA SYNDROME (FMS) PATIENTS NEED A DIAGNOSIS-SPECIFIC PAIN MANAGEMENT PROGRAMME (PMP)?

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Background and aims: Most pain services deliver generic PMPs, regardless of pain diagnosis, although some advocate diagnosis-specific self-management programmes (1). We wanted to find out if there were any differences in baseline characteristics or response to treatment between FMS and non-FMS patients attending our generic PMP.
Methods: We collected demographic and patient-reported outcome measurement (PROM) data for the period 2011-2016. All patients were divided into two groups: FMS group (n=182) and non-FMS group for all other diagnoses (n=427). All patients completed a battery of PROMs (TSK, CPAQ, NRS, HADS and ODI) prior (Q1) and on completion (Q2) of the PMP. Chi-square and T-test tests were applied for results.
Results: The FMS patient group was significantly more female than the non-FMS group, Non-FMS patients scored significantly higher ($p < 0.05$) on fear of movement and disability than FMS patients at baseline (Q1**)**. Both groups showed highly significant ($p < 0.001$) improvements in all outcome measures apart from pain intensity. Mean change scores did not differ significantly between the two groups.
Conclusion: FMS patients attending our PMP were more female and demonstrated less fear of movement and disability compared to non-FMS patients. At the end of the PMP, both FMS and non-FMS patients showed significant

and identical improvements in outcome measures. These findings do not suggest the need for a diagnosis-specific PMP for FMS patients.

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P519

DECREASED FORCED EXPIRATION AND THORACIC MOBILITY IN PEOPLE WITH FIBROMYALGIA

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Background and aims: Respiratory function has not been given much consideration in people with fibromyalgia. Few studies have been published concerning fibromyalgia and respiratory function and conflicting data still exists. The aim of this study was to compare differences in forced expiration, chest expansion and spinal mobility between a group with fibromyalgia and healthy controls.
Methods: Forty-one women with diagnosed fibromyalgia based on American College of Rheumatology 1990 criteria and forty-one controls without pain matched for age and gender participated in this cross-sectional study. For evaluation of forced expiration, a Wright peak expiratory flow meter was used. A tape measure was used to measure the mobility of the thorax at maximum inhalation and exhalation. Spinal range of motion was measured from C7 and 15 cm below from upright position to full flexion. Manual palpation was conducted between C7-T5.
Results: The fibromyalgia group demonstrated significantly lower forced expiration ($p < 0.018$), less thoracic expansion ($p < 0.001$), reduced spinal mobility ($p < 0.029$), higher expiratory-inspiratory ratio value ($p < 0.001$) and increased palpation pain over C7-T5 ($p < 0.001$) compared to healthy controls. There were more smokers in the fibromyalgia group (n = 9) compared to the controls (n = 5) though this difference was not statistically significant ($p < 0.24$) and excluding the smokers from calculations yielded similar result. No significant correlations for manual palpation, chest expansion, peak expiratory flow and spinal mobility were found in the fibromyalgia group.
Conclusions: Women with fibromyalgia demonstrated significantly lower forced expiration and thoracic mobility compared to healthy controls.

P520

REHABILITATION WITH CULTURAL ACTIVITIES FOR PATIENTS WITH CHONIC PAIN NEEDING A LANGUAGE INTERPRETER, CO-OPERATION PROJECT BETWEEN A REHABILITATION CLINIC AND THE COUNTY CULTURE ADMINISTRATION

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Background and aims: Cultural activities may positively affect patients with chronic pain regarding symptoms, mood and quality of life. Music and dancing have shown positive effects on pain intensity, depression and quality of life. Non-native persons do more often suffer from long-term pain and pain-related comorbidities. Persons not speaking the domestic language are seldom included in multi-modal rehabilitation, the evidence-bases treatment for long-term pain.
A co-operation project between the Stockholm Department of Rehabilitation and the City council´s Culture administration explored if a rehabilitation with cultural activities could affect the participants' experiences of symptoms and quality of life.
Methods: Thirty-three patients with chronic pain participated in a rehabilitation program with cultural activities during 8 weeks. The program consisted of visits at cultural events and own cultural activities such as visiting concerts, making crafts and dancing. Pedagogues specialized in different cultural activities supervised the program.

Data was collected with reliable and valid instruments recommended to describe health status of patients with chronic pain and to follow-up outcomes of pain rehabilitation.
The participants filled in the questionnaires before their first meeting, before discharge and at one-year follow up.
The instruments.
Results: Preliminary results showed improvement in quality of life according to EQ5D index (p=0.002), depression according to HADS (p=0.000) and pain last week according to Numeric rating scale (p=0.042) after the rehabilitation program.
Conclusions: Rehabilitation with cultural activities might improve quality of life, depression and pain in patients with chronic pain not speaking the domestic language.

ANATOMY AND PHYSIOLOGY SOMATOSENSORY SYSTEM

P521

EXPERIENCES OF STAY AT PATIENT HOTEL DURING PARTICIPATION IN A MULTIMODAL PAIN REHABILITATION PROGRAMME IN NORTHERN SWEDEN - A QUALITATIVE STUDY

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Background and aims: In northern Sweden, with its geographically dispersed and sparsely populated areas, patients may need to travel long distances to participate in rehabilitation and receive specialised healthcare. For this reason, a number of patients stay at a patient hotel during their participation in multimodal rehabilitation (MMR). Participation in an MMR programme in northern Sweden can involve being away from home for several weeks. The aim of this study was to explore how patients with chronic pain experience participation in MMR while staying at a patient hotel.
Method: Twelve participants with chronic pain were interviewed about their experiences of participation in MMR in northern Sweden. Data were analysed qualitatively with a grounded theory method with an emergent design.
Results: The core category “Find my value” permeated the entire material and it represents the process of self-reflection that the participants underwent during the MMR programme. Four categories emerged: “Space for myself”, “Mirror myself”, “I´m important” and “Dealing with returning to everyday life”.
Conclusions: The results showed that the participants appreciated and valued the time they had had to find themselves, the opportunity to reflect with others in a similar situation, and the realisation that they were important in their own and in other people’s lives. This new knowledge led to increased motivation to act differently at home. Thus, professionals need to be aware of the patients’ difficulties to implement the knowledge acquired during MMR in their everyday lives after returning home.

P522

OXIDATION GATES THE HIGH-THRESHOLD HEAT-SENSITIVE ION CHANNEL TRPV2

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Temperature-sensitive Transient Receptor Potential (TRP) ion channels not only detect changes in ambient temperature, but also regulate body temperature and temperature-dependent cellular activity. TRPV2 is required for phagocytic activity of macrophages at body temperature, but what activates TRPV2 *in vivo* is not known. Rodent orthologues of TRPV2 are activated by heat exceeding 50°C and human TRPV2 is heat-insensitive, thus heat alone does not seem to be the primary endogenous TRPV2-agonist. Here we describe a novel redox regulation rendering TRPV2 active at physiological temperatures. While H_2O_2 and cysteine-selective oxidants fail to gate TRPV2, the oxidants chloramine-T, UVA-light and intracellularly produced superoxide anions irreversibly activate and sensitize rodent and human TRPV2. Oxidation-induced gating is intact in excised inside-out membrane patches, indicating that oxidation of TRPV2 and not intracellular mechanisms accounts for the observed effects. Replacement of methionine (M) residues, including M528 and M607 diminishes oxidation-induced gating of rat TRPV2. Both mouse and human macrophages generate TRPV2-like heat-induced inward currents upon oxidation and exhibit TRPV2-dependent phagocytosis. Accordingly, the reducing agent dithiothreitol inhibits oxidation-induced activation of recombinant TRPV2 as well as phagocytic activity of macrophages. In summary, our data reveal a methionine-dependent redox-sensitivity of TRPV2 associated with a shift of the thermal threshold for activation reaching physiological body temperatures. This redox-sensitivity may be an important endogenous regulator of TRPV2.

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ALPHA BAND POWER FOCAL CHANGES DURING THE SHORT-TERM MEMORISATION OF PAIN: A HIGH-DENSITY EEG STUDY WITH SOURCE LOCALISATION

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The electro-encephalographic (EEG) brain activity was recorded in 13 healthy subjects via 128 scalp electrodes during a task assessing short-term memorisation of electrical nociceptive stimuli intensities. The EEG activity occurring during the memorising period was contrasted with that of a cognitive task of same difficulty, yet requiring no memorisation. Control tasks, audio or somatosensory, were conducted to determine the specific effects of nociceptive memorisation. Task performances were assessed and EEG signals were analysed as spectral composition and brain sources via topographical localisation reconstruction. Two consecutive periods of same duration were defined in the memorisation phase enabling analysis of the brain activity evolution during the encoding process.
Whatever the sensory modality, alpha power increased focally during the memorisation phase compared to the cognitive task. Enhancement was stronger for somesthesic stimulations, and significantly so for the nociceptive modality which appeared as the hardest task. Alpha enhancement was distributed over the occipito-temporal scalp, and source reconstruction (LORETA) indicated sources in the bilateral occipital cuneus and gyri during the first period of memorisation, then in the right superior and middle temporal gyri during the second period.
Alpha oscillations are considered to reflect inhibitory processes. Respectively, focal alpha enhancement may signal inhibition of task-irrelevant neuronal structures in visual occipital areas, along with process that directs the stream of information to structures representing encoding-relevant material. Since alpha power was correlated to task load and the type of attentional resources needed for its execution, our results suggest that this process may be critical for a correct information-storage.

P524

TEMPERATURE EFFECTS ON ACTIVITY OF PRIMARY NOCICEPTOR NEURONS UNDER INFLAMMATORY CONDITIONS

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Background and aims: The pathogenesis of neuropathic pain (NeP) after spinal cord injury (SCI) remains poorly understood. CNS secondary damages by post-SCI neuroinflammation might contribute. Therapeutic hypothermia has been shown to reduce the inflammation and diminish associated damage to neurons. The safety and effectiveness of hypothermia require careful interdisciplinary studies. Here, we aimed at defining effects of temperature on spontaneous firing occurred in the nociceptive primary afferent neurons (NPANs) under inflammatory conditions because such firing could cause development of central sensitization and NeP.
Methods: We explored activity of biologically relevant computer models of NPANs under normal and inflammatory conditions at temperatures of 36-37°C and decreased to 35-30°C or 24°C corresponding to systemic or focal therapeutic hypothermia. Inflammation was simulated by hyperpolarization shifts of voltage-dependent activation of Nav1.9 channels expressed in NPANs.
Results: Under normal conditions, NPAN responded to electrical stimuli or activation of mechanosensitive channels by action potentials mimicking nociceptive pain. Under inflammation, NPAN without stimulation generated spontaneous firing, the rate of which increased with lowering temperature. This effect was related to changes in balance of depolarizing and hyperpolarizing currents having different temperature-dependences of their kinetics.
Conclusions: NPAN-specific sets of ion channels and their kinetics determine effects of inflammation and reduced temperature on cell firing that in certain respects differs from those observed in central neurons. Therefore, mechanisms of combined effects of those factors on activity of NPANs require careful studies. This could form a firmer basis for development of innovative mechanism-based procedures for prevention and treatment of NeP.

P525

BILATERAL SENSORY DEFICITS AND WIDESPREAD HYPERALGESIA FOLLOWING DELAYED ONSET MUSCLE SORENESS OF THE QUADRICEPS

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Unaccustomed eccentric exercise leads to delayed onset muscle soreness (DOMS). While DOMS has been demonstrated to generate altered postural control potentially resulting in further injury, very little is known about the somatosensory changes at the knee in presence of DOMS of the quadriceps. DOMS elicited in this muscle was hypothesized to result in bilateral induced mechanical hyperalgesia, measured via pressure pain threshold (PPT) and hypoesthesia, evidenced by deficits in both vibration perception threshold (VPT) and proprioception which was measured via threshold to detection of passive motion (TDPM). Thirty participants (15 males and 15 females) took part in the study. Eccentric exercise consisted of 10 sets of 10 maximum eccentric quadriceps contractions of the dominant knee. Assessments consisted of pain intensity, PPT, VPT and, TDPM at 3 different assessment time points:
(1) pre-eccentric exercise;
(2) immediately and
(3) 48 hours post-eccentric exercise.
Pain intensity increased and PPT decreased at 48 hours. VPT increased ipsilaterally both immediately and 48 hours after exercise. TDPM increased on the ipsilateral side immediately and bilaterally at 48 hours. Females

demonstrated greater impairment in TDPM than males at 48 hours. Widespread hyperalgesia, ipsilaterally impaired VPT and bilaterally impaired proprioception were demonstrated in the presence of DOMS. Inflammation from unaccustomed eccentric exercise may induce neuroplastic changes in nociceptive pathways resulting in expanded distribution of pain and hypoesthesia.

P526

PRESYNAPTIC FEEDBACK SYSTEM OF OXYTOCIN-ERGIC NEURONS IN THE HYPOTHALAMUS OF ADJUVANT ARTHRITIC RATS

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Background and aims: Oxytocin (OXT) is a neurohypophysial hormone that is synthesized in the paraventricular (PVN) and supraoptic nuclei (SON) of the hypothalamus. Recently, it has been suggested that OXT plays a role in sensory modulation. It was shown that OXT was up-regulated by acute and chronic nociception. However, the up-regulated mechanism is little known.
Methods: In the present study, we examined excitatory and inhibitory postsynaptic currents (EPSCs and IPSCs) in OXT-ergic neurons in the PVN after chronic inflammation from an adjuvant arthritis (AA) model rat using the whole cell patch clamp. We used transgenic rats that expressed OXT and the monomeric red fluorescent protein 1 (mRFP1) fusion gene to visualize the OXT-ergic neurons. To induce AA, OXT-mRFP1 transgenic rats were intracutaneously injected heat-killed *Mycobacterium butyricum* (1 mg/rat) in paraffin liquid at the base of their tails. In addition, the feedback system of synthesized OXT was also examined by OXT antagonist L-368,899.
Results: sEPSCs and sIPSCs in OXT-ergic neurons in the PVN were significantly increased in AA rats. Further, L-368,899 dose-dependently increased the sEPSCs in the PVN neurons of AA rats, while the sIPSCs were decreased.
Conclusions: It is suggested that OXT is up-regulated by increasing glutamate release to OXT-ergic neurons in the AA rats and up-regulated OXT neurons have a feedback system. Further study should be examined about retrograde neurotransmitters in the feedback system of up-regulated OXT neurons.

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ASSOCIATIONS BETWEEN SELECTED GENETIC VARIANTS AND EXPERIMENTAL PAIN SENSITIVITY AND PAIN MODULATION

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Background and aims: There are large individual differences in experimental pain sensitivity and pain modulation, and genetic variation is hypothesized to be an important factor explaining some of these differences. Therefore, the aim of this study was to investigate associations between selected genetic variants and different experimental tests for assessing pain sensitivity and pain modulation.
Method: In this cross sectional study 377 subjects (251 acute low back pain patients and 126 healthy controls) was genotyped and underwent experimental pain assessments. The experimental pain assessment consisted of tests for pain sensitivity (heat pain threshold, heat pain tolerance threshold and pressure pain thresholds) and pain modulation (temporal summation and conditioned pain modulation). Single nucleotide polymorphisms of COMT (rs46480), OPRM1 (rs1799971) and HLA (rs2395185, rs9275312, rs3916765) were included in a linear regression model.

Results: No significant associations was found between COMT, OPRM1 or HLA and the different tests for pain sensitivity or pain modulation.
Conclusion: In our study, the selected variants failed to explain individual differences in pain sensitivity and pain modulation as none of the selected genetic variants were associated with the different experimental tests.

P528

NOCICEPTOR ACTIVATION DURING CUTANEOUS LASER STIMULATION DEPENDS MORE ON SKIN TYPE AND LASER WAVELENGTH THAN INNERVATION - INVESTIGATED USING AN EXPERIMENTAL AND MATHEMATICAL MODELLING APPROACH

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Background and aims: Differences in skin composition may affect how cutaneous laser stimulation activate the nociceptors. Especially low-penetrating CO_2 lasers may cause less nociceptor activation in thicker skin. Such a difference might be mitigated by using a higher penetrating laser. The aim of this study was to investigate these differences using a combined experimental and modelling approach.
Methods: Ten healthy subjects were exposed to brief CO_2 (10.6µm, low skin penetrance) and YAP (1.34µm, high skin penetrance) laser stimulation of the hand dorsum and palm, using three different intensities. Stimuli were repeated 5 times in random order for each laser type, skin type and intensity. Both reaction times (RT) and intensity of perception (NRS 0: perception 3: pain threshold, 10: Maximum pain) were recorded. A mathematical model was implemented to predict how skin composition and laser type would affect nociceptor activation.
Results: There was a significant interaction between skin and laser type for the NRS. For CO_2 stimuli, RTs were significantly longer in glabrous vs. hairy skin (ANOVA, $p< 0.001$) and NRS were significantly reduced ($p< 0.001$). RTs were significant lower for higher intensities (ANOVA, $p< 0.001$). The model agreed with the experimental data and the difference in reaction times and NRS appeared to be related to skin composition (thickness) and how deep the different laser deposit the thermal energy.
Conclusions: These results indicate that skin composition has a great effect on how laser stimuli activate epidermal free nerve endings.
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EVALUATION OF THE ANALGESIC ACTION OF THE COMBINATION CYCLOBENZAPRINE HYDROCHLORIDE, LIDOCAINE AND PIROXICAM IN MICE USING THE HOT PLATE TEST

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Background and aim: In this study, part of a larger one, we studied the antinociceptive action of the fixed combination of cyclobenzaprine hydrochloride, lidocaine and piroxicam as a topical preparation, in mice.
Methods: The study was conducted on groups of 10 Swiss male mice weighing 20.00-30.00g, treated with

applications of 0.1 mL gel on the hind-paws at 0 and 60 minutes with: gel base, lidocaine 2%, piroxicam 0.5%, cyclobenzaprine 0.5% and their combination. 60 minutes after the application the animals were tested at 52.5 ± 0.2°C (cut off = 30s) at 0, 15, 30, 60, 90 minutes. The MPE % (maximum possible effect of antinociception) of the single substances and their combination has been calculated compared with the control group; the T-test was used for the statistical analysis.
All experiments have been made in accordance with the EU bioethical rules and regulations (EU Directive 63/2010).
Results: Antinociceptive effects were demonstrated for all treated groups at various times of testing. For the fixed combination, the antinociceptive effect was demonstrated for the T0-T90 interval (T0: 80.6%, $p < 0.0001$, T15: 39.5% $p = 0.023$, T30: 43.9%, $p = 0.0068$, T60 : 50.1% $p = 0.019$; T90: 43.1%, $p = 0.0145$).
Conclusions: The statistical significance of the data shows a persistent antinociceptive effect (for at least 90 minutes) of the combination in the hot-plate test, compared to the study groups.
Acknowledgments: The paper presents partial results from a larger research grant funded by Fiterman Pharma Iasi, Romania (grant 6451 / 19.05.2016)

P530

ACTIVATION OF GLIAL CELLS AND UPREGULATION OF CX3CL1/CX3CR1 IN THE ANTERIOR CINGULATE CORTEX OF CHRONIC NEUROPATHIC PAIN MODEL INDUCED BY THE SPINAL CORD INJURY

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Background and aims: The anterior cingulate cortex (ACC) is associated not only with perception but also the affective component of pain. Aims of present experiments were to analyse activation of glial cells and cellular distribution of CX3CL1/CX3CR1 in ACC of mice after spinal cord injury (SCI).
Methods: Female CD1 mice were subjected to mild SCI or sham operation. Thermal hyperalgesia, mechanical allodynia and Basso mouse scale (BMS) were weekly evaluated up to 12 weeks post-injury (wpi). The reward-seeking behaviour (RBS) test for the evaluation of anhedonic behaviour was assessed at the end of experimental period (12 wpi). Activated microglia (IBA1+) and astrocytes (GFAP+) as well as cellular distribution of CX3CL1/CX3CR1 were analyzed using immunofluorescence staining of ACC sections at 12 wpi.
Results: Mechanical allodynia and thermal hyperalgesia were evidenced up to 9 and 12 wpi, respectively, compared to the sham group. No major impairment of locomotor function in any experimental group was detected by BMS test. However, SCI animals displayed a tendency for an anhedonic affective behavior compared to the sham animals. Activation of glial cells was significantly higher in the dorsal than ventral ACC of both sham- and SCI-operated animals. However, SCI induced significant increase of glial activation and number of CX3CL1/CX3CR1+ neurons in both compartments of ACC compared to sham group.
Conclusions: SCI-induced neuropathic pain is associated with anhedonic behavior, glial activation and CX3CL1/CX3CR1 upregulation in ACC.
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P531

SPINAL TRPM3 IS INVOLVED IN MEDIATING THE HYPERSENSITIVITY EFFECT INDUCED BY SPHINGOLIPIDS IN THE RAT

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Background and aims: Earlier results have shown that endogenous sphingolipids in the spinal dorsal horn may contribute to pain hypersensitivity induced by peripheral nerve injury. Also, it has been shown in patch clamp recordings performed in cell cultures that sphingolipids can activate transient receptor potential melastatin-3 (TRPM3) that is a Ca^{2+}-permeable nonselective cation channel. Here we studied whether spinal TRPM3 is involved in mediating the pain hypersensitivity effect of sphingolipids.
Methods: Experiments were performed in healthy adult male Hannover-Wistar rats with a chronic intrathecal catheter for spinal drug administrations. Pain behavior was assessed with calibrated monofilaments (mechanical nociception) and with Hargreaves' test (heat nociception). N,N-dimethylsphingosine (DMS) was administered intrathecally (i.t.) to induce pain hypersensitivity. Ononetin, a TRPM3 channel antagonist, was used in attempts to block the effect of spinally administered DMS. Blocking of TRPM3 by ononetin was verified in a patch clamp study.
Results: DMS alone produced within 15 min a dose-related (0.05-0.5 µg) mechanical hypersensitivity that lasted at least 24 h. Spinally administered DMS did not influence heat nociception. Preemptive treatment with ononetin (TRPM3 antagonist; 100 µg i.t.) delayed and attenuated development of hypersensitivity. Pain hypersensitivity was attenuated by ononetin also when it was administered after DMS had induced its maximum effect. Ononetin alone had no effect on pain behavior. Ononetin blocked dose-dependently intracellular calcium responses evoked by DMS in hTRPM3 expressing HEK cells.
Conclusions: The results suggest that spinal TRPM3 is involved in mediating pain hypersensitivity induced by sphingolipids.

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ENDOGENOUS DESCENDING INHIBITION IN EFFECTS OF INTRAMUSCULAR HEATING-NEEDLE STIMULATION IN FREUND´S ADJUVANT-INDUCED MUSCLE NOCICEPTION IN RATS

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Background and aims: Here we investigated effect of heating-needle stimulation on complete Freund's adjuvant (CFA) induced muscle nociception in rats.
Methods: Tonic muscle pain was ipsilaterally induced by a bolus intramuscular (i.m.) injection of CFA at different volumes of 50-200 µl into the gastrocnemius muscle. Bilateral nociceptive paw withdrawal reflexes elicited by mechanical and heat stimuli were observed. In addition, effects of innocuous (43ºC) and noxious (46ºC) heating-needle stimulation on CFA-induced nociception were investigated. One day after the 43ºC heating-needle stimulation, 5-HT7 receptor antagonist SB-269970 was injected into the contralateral thalamic VM nucleus to reveal potential 5-HT mechanisms.
Results: Following different doses of unilateral CFA injection, long-lasting (5-14d), bilateral secondary mechanical hyperalgesia and heat hypoalgesia associated with long-term limb swelling were found ($P < 0.05$). A period of 30-45min 43ºC heating-needle stimulation significantly enhanced the i.m. injection of CFA induced bilateral heat hypoalgesia and alleviated hind limb swelling ($P < 0.05$), whereas 46ºC heating-needle stimulation significantly increased both mechanical hyperalgesia and heat hypoalgesia ($P < 0.05$). Microinjection of 5-HT7 receptor antagonist SB-269970 into the contralateral thalamic VM nucleus depressed the 43ºC heating-needle stimulation induced enhancement of descending inhibition.
Conclusions: During the CFA-induced muscle nociception, innocuous (43ºC), but not noxious (46ºC), heating-needle stimulation can enhance descending inhibition and eliminate limb swelling. It is further suggested that 5-HT7 receptor in thalamic VM nucleus plays role in enhancement of descending inhibition induced by innocuous (43ºC) heating-needle stimulation.

BIOLOGY

P533

BLOCKADE OF NEURONAL MINCLE-SYK SIGNALING IN SPINAL CORD ATTENUATES MECHANICAL ALLODYNIA IN PERIPHERAL NERVE INJURY-INDUCED PAIN OF RAT

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Background and aims: Macrophage-inducible C-type lectin (Mincle) receptor, a type of pattern-recognition receptor of immune system is involved in traumatic, vascular or ischemic injury in the brain. In a previous study, Mincle was found in neurons in the spinal cord and its activation with a synthetic ligand induced mechanical allodynia in rat. This study examined the change of SAP130 (endogenous ligand for Mincle) and Mincle-Syk (spleen tyrosine kinase) signaling in the spinal cord, and explored the role of Syk at spinal level in a rodent spinal nerve ligation model.
Methods: All experiments were performed in accordance with the International Association for the Study of Pain guidelines for the Use of Animals in Research. Male Sprague-Dawley rat with lumbar spinal nerve ligation (SNL) and intrathecal catheter were used. This study examined the presence of Mincle and the expression of SAP130 and Syk in the spinal cord using immunofluorescence and Western blotting. Also, the effect of piceatannol (Syk inhibitor) in the pain behavior was investigated using hot box and von Frey test.
Results: Mincle and Syk were expressed exclusively in neurons in the lumbar spinal cord, and the expression increased significantly in SNL animals. The level of SAP130 was also higher in SNL than sham animals. Inhibition of Syk using intrathecal piceatannol significantly attenuated the intensity of mechanical allodynia, but not thermal hyperalgesia.
Conclusions: This study suggests that Mincle-Syk signaling in neuron in the spinal cord is activated in spinal nerve ligation model contributing to development of mechanical allodynia.

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A PROTEOMIC INVESTIGATION OF SYNOVIAL FLUID IN PATIENTS WITH KNEE OSTEOARTHRITIS TREATED WITH INTRA-ARTICULAR METALLIC GOLD MICRO PARTICLES

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Background and aims: Intraarticular gold may decrease osteoarthritis (OA) inflammation. The aim of this study was to investigate if treatment with intra-articular solid gold micro particles induces any significant proteomic changes in the synovial fluid (SF) in knee OA.
Methods: SF samples was investigated, before and after treatment in 17 patients. To determine protein concentration, a bicinchoninic acid (BCA) assay was used. Gel electrophoresis by SDS-PAGE was used to visualize the synovial proteome and relative qualitative changes between the treated and untreated samples. Mass spectrometry sample preparation was performed with filter aided sample preparation (FASP). The global proteome was investigated through LC-MS/MS in Orbitrap Q Exactive.
Results: A distinctive protein band was visible in the treated patient columns at approximately 60 kDa in all of the patients. The MS analysis revealed 23 of 164 proteins was significantly changed after treatment. The expression of five proteins were down-regulated and 18 were upregulated. In the band between 50 and 70 kDA we found a significant elevation of clusterin ($p = 0.0022$), vitamin D binding protein (DPB) ($p = 0.026$) and cartilage acidic

protein1 (CAP1) (p = 0.045).
Conclusion: The elevated clusterin may be a sign of increased protection of cartilage and cells, which correlates with a regulation of the NF-kB pathway. DBP correlate with increased vitamin D level, but the overall effect is uncertain. CAP1 has been found to marker of mesenchymal stem cells undergoing chondrogenic differentiation. This indicate gold particles induce chondrogenic differentiation of resident mesenchymal stem cells.

DEFINITION AND CLASSIFICATION

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A CASE-CONTROL STUDY OF INFLAMMATION IN FIBROMYALGIA: LOOKING FOR COFACTORS BEYOND FIBROMYALGIA DIAGNOSIS

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Fibromyalgia (FM) is a chronic syndrome of unknown aetiology characterized by widespread musculoskeletal pain plus a constellation of physical and mental symptoms. The main aim of this study was to analyse the serum concentrations of IL-6, IL-10, CXCL8 and hs-CRP in patients with FM compared to match healthy controls. Ratios CXCL8 and hs-CRP with IL-10 were calculated. Additionally we explored whether these differences were due to the FM diagnosis or to potentially confounding factors.
Methods: A total of 65 female patients with FM and 35 healthy were recruited. Between-group differences were assessed applying the Student t-test for continuous variables and the χ^2-test for categorical data. Hierarchical-stepwise linear regression analyses were run to explore which variables explained more variance in immune biomarker levels.
Results: All the clinical variables presented significant differences between the two groups, always indicating higher severity for the FM patients. IL-6, IL-10 and CXCL8 levels were found lower in FM patients than in HC. In contrast, hs-CRP and hs-CRP/IL-10 were higher in FM patients than in HC. From all the analysed immune biomarkers, only IL-6 levels were in part mediated by FM diagnosis.
Discussion: Our study showed a differentiated pattern of immune biomarkers in FM patients that mostly faded away after taking into consideration factors such as BMI, age and number of comorbidities.

DIGITISATION IN PAIN MANAGEMENT

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MOBILE APPLICATIONS FOR THE MANAGEMENT OF PEDIATRIC PAIN: WHAT QUALITY CRITERIA?

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Background and aims: In recent years, a number of mobile applications have been developed to facilitate the management of pediatric pain. However, no regulations have been available to help in the growth of these mHealth-based solutions. The main aim of this study was to identify a set of quality criteria for mobile applications related to the management of pediatric pain.
Methods: To identify the most important criteria for the evaluation and/or development of mobile applications for pediatric pain, we used three resources:
(1) published studies on this type of mobile applications,
(2) recommendations provided by professional organizations and
(3) standards used by regulatory organizations specialized in this field.
The set of basic quality criteria was established, on the basis of the relevance of identified criteria -understood as the greater or lower presence of the criterion in the resources analyzed.
Results: We identified a total of 503 criteria related to the quality of the applications. These criteria were then grouped and subsumed under 8 categories, which included 36 specific criteria. According to the relevance of each criteria, 7 are defined as essential, 18 as recommendable and 11 as desirable. The more essential criteria an mobile application has, the greater its quality.
Conclusions: This set of criteria can be used by health professionals, developers, patients and other stakeholders, both to guide the development of mobile applications for the management of pediatric pain and to measure its quality.

BASICS IN PAIN WALK 3

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CHEMOGENETIC APPROACH IN TREATMENT OF TRIGEMINAL PAIN

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Background and aims: Nerve injury results in ectopic activation of nociceptors leading to central sensitization characterized by allodynia and hyperalgesia. Reduction of the activity of primary afferent neurons was shown to be sufficient in alleviating peripherally generated pain making a trigeminal ganglion (TG) a strategic locus where afferent input can be successfully manipulated. We hypothesized that clozapine-N-oxide (CNO) mediated activation of hM4Di-DREADDs suppresses neuronal activity in the TG and attenuates hypersensitivity.

Aim: To use chemogenetic approach to alleviate orofacial pain by targeting the cell bodies of primary trigeminal afferent nociceptors.
Methods: Sprague-Dawley rats (n=90) were used. Trigeminal neuropathic pain was induced via chronic constriction injury to the infraorbital nerve (ION-CCI). An AAV5 was used to transduce TGs with either Gi-coupled hM4D DREADD (Designer Receptor Exclusively Activated by Designer Drug) or EGFP (control). Hypersensitivity within ION dermatome was measured using von Frey monofilaments and blunted acupuncture needle. At 28 days following the microinjection, animals were treated with either CNO or vehicle. Behavioral assessments were done to measure the effects of CNO mediated Gi-DREADD activation on somatosensory thresholds.
Results: Injection of AAV5-hSyn-hM4D(Gi)-mCherry into the TG resulted in expression of hM4Di-DREADD. The CNO mediated activation of hM4Di-DREADD resulted in a significant decrease in hypersensitivity induced by ION-CCI. Vehicle treatment did not affect animals' hypersensitivity.
Conclusions: The CNO mediated activation of hM4Di-DREADDs reduces hypersensitivity by suppressing neuronal activity in the TG. DREADDs offer an attractive therapeutic approach for treatment of trigeminal pain.
Acknowledgments: The study was conducted with the support from Brain Health Institute.

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NON-HISTAMINERGIC ITCH IS ACCOMPANIED BY THERMAL AND MECHANICAL HYPERALGESIA: THE ROLE OF TRPA1 CHANNEL

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Background and aims: Sensory neurons expressing Mas-related G-protein-coupled receptors (Mrgprs) mediate histamine-independent itch. These receptors have been shown to bind select pruritogens in the periphery and mediate non-histaminergic itch. For example, mouse MrgprA3 responds to chloroquine (an anti-malarial drug), and are responsible for relaying chloroquine-induced scratching in mice. Mouse MrgprC11respond to a different subset of pruritogens including bovine adrenal medulla peptide (BAM8-22) and the peptide Ser-Leu-Ile-Gly-Arg-Leu (SLIGRL).
Methods: By two behavioral tests we measured nociceptive thermal paw withdrawal latencies and mechanical thresholds bilaterally in mice at various time points following intraplantar injection of three different doses of chloroquine, BAM8-22 or SLIGRL, respectively producing hyperalgesia.
Results. We report that MrgprA3 and MrgprC11 mediated itch by their agonists, chloroquine, and BAM8-22 and SLIGRL respectively, is accompanied by thermal and mechanical hyperalgesia via the TRPA1 channel. When pretreated with the TRPA1 antagonist HC-030031, we found a significant reduction of thermal and mechanical hyperalgesia.
Conclusions: Thus, we showed that non-histaminergic pruritogens (chloroquine, BAM8-22, SLIGRL) elicit thermal and mechanical hyperalgesia through the activation of TRPA1 channel that was attenuated by its antagonist.
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MODULATING CORTICAL RESPONSE TO PAIN BY RESPIRATORY SINUS ARRHYTHMIA BIOFEEDBACK

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Respiratory sinus arrhythmia (RSA) characterises the variation in heart rate that occurs during each breathing cycle. RSA is known to have important regulatory functions and can be modulated using biofeedback procedures. It has been proposed that this helps stabilise autonomic tonus, which in turn might improve different disorders characterized by autonomic dysfunction. The aim of this study was to explore the effect of RSA biofeedback on cortical pain processing in healthy subjects.
'Control' (N=10) and 'RSA' (N=10) groups received acute painful stimuli (Nd:YAP laser) on the hand at the nociceptive threshold. Pain reports were recorded with cortical potentials (64 electrodes, 2 series of 15 stimuli) before and after two full weeks of RSA training (5 min, 3 times a day, six breaths per minute) for the 'RSA' group and of a control respiratory task for the 'control' group. Latencies and amplitudes of laser evoked potentials (LEPs) were studied.
The amplitudes of LEPs are significantly smaller after the two weeks training in the 'RSA' group, relative to those obtained before training. No significant effect was observed on the amplitudes of the LEPs in the 'control' group. Latencies of the LEPs were not changed before and after the training in the two groups.
RSA biodfeedback is a non-invasive, cost-effective and self-administered technique which appears to modulate acute cortical pain processing. Our results are encouraging enough to warrant further the studies in healthy subjects (eg assessing descending pain modulation) as well as in patients with pain linked to autonomic dysfunction and stress.

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SLEEP QUALITY AND OPIOID CRAVING AMONG PATIENTS WITH CHRONIC PAIN AND PRESCRIBED OPIOID THERAPY: EXPLORATION OF POTENTIAL MEDIATORS

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Background: Opioid craving (i.e., subjective desire to consume opioids) has emerged as a strong determinant of prescription opioid misuse in patients with chronic pain. However, little is known on the determinants of opioid craving. Craving has been associated with elevated pain intensity and negative affect, but these factors cannot fully account for reports of opioid craving in patients with pain. There is reason to believe that sleep quality might contribute to opioid craving, but this has yet to be examined.
Aims: The first objective was to examine the association between sleep quality and opioid craving in patients with chronic pain. We also examined whether pain intensity, negative affect, or dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis mediated the association between sleep quality and craving.
Methods: In this longitudinal study, 45 chronic pain patients prescribed opioid therapy completed diary measures of pain intensity, negative affect, sleep, and opioid craving for 14 consecutive days. Saliva samples were also collected to assess cortisol activity, an index of HPA axis activity.
Results: Poorer sleep quality was associated with heightened opioid craving and with heightened pain intensity, negative affect, and HPA axis activity (all p's < .05). A multilevel mediation analysis revealed that pain intensity and negative affect mediated the association between sleep quality and opioid craving (both p's < .05).
Conclusions: Our findings provide new insights into the determinants of opioid craving and suggest that poor sleep quality might lead to opioid craving indirectly through elevations in pain intensity and negative affect.

P541

MODULATION OF PAIN PROCESSING DURING MOVEMENT PREPARATION AND EXECUTION

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Background and aims: There is abundant evidence that pain affects the way we move, but less is known about how pain is influenced by movement. The current study aimed to investigate the hypothesis that moving, as well as preparing to move, a body part might attenuate pain in that body part. We also examined if this effect would be smaller when the pain was appraised as more threatening.
Method: Pain-free participants (n=74) performed 60 trials of a task, in which they were cued to prepare a movement with the right or left hand (or not to move). During each trial, a pair of painful electrocutaneous stimuli were administered simultaneously to the left and right hand, either during movement preparation or execution. After each trial, participants were asked to rate the intensity of the stimuli they received to both their hands. In half of the participants the threat value was increased by manipulating verbal instructions.
Results: Self-report ratings of painful stimuli were significantly lower for the moving hand as compared to the non-moving hand ($p < .001$), when pain was administered during movement execution. No effect of movement preparation was found. Finally, there was no significant effect of threat.
Conclusions: Moving a hand while having pain, diminished the subjective experience of pain. We hypothesize sensory suppression, a well-documented phenomenon in the tactile processing literature, to be the underlying mechanism involved in this effect. Systematic research is needed to further examine the magnitude and moderating factors of sensory suppression of pain.

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RESPONSES TO UNCERTAINTY IN THE FACE OF PAIN: ON THE RELATIONSHIPS BETWEEN PAIN CATASTROPHIZING, INTOLERANCE OF UNCERTAINTY AND DECISION MAKING

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Background and aims: Uncertainty is central to pain problems. Previous research highlights the role of uncertainty in the experience of pain, yet little is known about responses to uncertainty while anticipating pain. In two experiments we induced and manipulated uncertainty during a decision-making task linked to future pain. Aim was to explore associations between responses to uncertainty, intolerance of uncertainty, and pain-related variables, such as catastrophizing, pain-related fear, and pain expectation.
Methods: Healthy volunteers were told that depending on their task performance, they would have to immerse their hand in ice-cold water. Their task was to decide from which of two jars a series of beads was drawn. Each jar contained 100 beads of two colors in a particular ratio. In Experiment 1, participants (N=60) completed the task twice with maximum uncertainty (50:50 ratio in both jars). In Experiment 2, participants (N=60) completed the task once with maximum uncertainty and once with low uncertainty (ratios 85:15 and 15:85). Pain anticipation ratings, Intolerance of Uncertainty Scale, and Pain Catastrophizing Scale were included.
Results: Higher catastrophizing, pain-related fear, and pain expectation were associated with higher intolerance of uncertainty scores and greater distress during decision making. None of these measures correlated with decision-making behavior. Increasing uncertainty had an adverse effect on decision making and distress.
Conclusions: Self-reported intolerance of uncertainty and catastrophizing were associated with emotional rather than behavioral responses to uncertainty related to a feared pain outcome. Our findings are consistent with and extend previous reports on anxiety.

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LONGITUDINAL ASSOCIATION BETWEEN HABITUAL PHYSICAL ACTIVITY AND PAIN TOLERANCE IN A POPULATION-BASED COHORT - THE TROMSØ STUDY 2007-2015

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Background and aims: Longitudinal associations between physical activity and experimental pain tolerance are poorly understood. We aimed to assess longitudinal changes in pain tolerance threshold according to level of habitual leisure-time physical activity (LTPA) in a population-based sample.
Methods: We used data from the sixth (Tromsø 6, 2007-08) and seventh (Tromsø 7, 2015-16) waves of the prospective population-based Tromsø Study, conducted in Northern Norway. Information on level of LTPA (sedentary, light, moderate, or vigorous) was obtained by questionnaire. Experimental pain tolerance was measured by the cold-pressor test (CPT) using circulating water at 3°C (maximum test-time=106 seconds). A preliminary model used linear regression to assess the relationship between LTPA at baseline (Tromsø 6) as independent variable, and change in CPT tolerance between Tromsø 6 and Tromsø 7 as dependent variable. We adjusted for baseline sex, age, body-mass index, education level, chronic pain, smoking, and alcohol consumption.
Results: Of 8,906 participants attending both waves, 5,957 had information on LTPA, CPT tolerance, and the included covariates. Mean participant age was 54 years in Tromsø 6 and 63 years in Tromsø 7; 49% were females. From baseline to follow-up, CPT tolerance decreased in 60% of participants, increased in 4%, and was almost unchanged in 36%. Regression analysis showed that subjects belonging to the moderate or vigorous LTPA group had 3.7 seconds higher CPT tolerance change compared to the sedentary group (95% CI=0.9-6.6, p=0.01).
Conclusions: This study shows that moderate-to-vigorous LTPA is associated with increased pain tolerance over eight years follow-up.

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IS SLEEP PREDICTING CHRONIC PAIN IN A COHORT OF YOUNG ADULTS?

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Background and aims: Chronic pain is a public health issue, with high prevalence and severe implications on individual's daily life. Costs for chronic pain put a heavy strain on societies and the health systems.
The aim of this study was to investigate whether aspects of sleep predict chronic pain, among young adults.
Methods: In this Swedish cohort-study a questionnaire was, in 2007, sent to a random sample of young adults, aged 20-24 years, with follow-ups after one and five years. The questions concerned demographics, lifestyle, work factors, health, sleep and pain.
The study sample is a subset of persons, pain-free in upper body at baseline: 2866 responders.
The outcome was chronic pain (> 3 months) in upper body (lower middle and upper back/neck, shoulders, arms, hands and fingers). Sleep variables were waking-up refreshed, short sleep and sleep problems (e.g., difficulty falling asleep, repeated awakening, early awakening). Logistic regression was used to analyze the association between sleep and chronic pain, adjusted for confounders with Inverse Probability Treatment Weights, based on propensity scores.

Results: For men, waking-up refreshed was associated with lower proportions of chronic pain after one year (OR: 0.45 [0.208-0.953]). For women, waking-up refreshed was associated with lower proportions of chronic pain after 5 years (OR: 0.57 [0.346-0.934]), and short sleep and lack of sleep were associated with higher proportions of chronic pain after 5 years (OR: 2.0 [1.04-3.85] and OR: 1.8 [1.06-3.03]).
Conclusion: Early indications of sleep problems could be important to avoid vulnerability to develop chronic pain.

SOCIETAL IMPACT

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PREDICTING ACUTE PAIN TRAJECTORIES AFTER JOINT ARTHROPLASTY: THE ROLE OF PRE-SURGICAL AND POST-SURGICAL BIOPSYCHOSOCIAL FACTORS

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Background and aims: Many patients undergoing joint arthroplasty experience an unfavorable course of acute pain. The aims of this study are to identify the predictive role of modifiable pre-surgical and post-surgical biopsychosocial factors on pain trajectories during the first week after surgery.
Methods: A longitudinal study was implemented. Prior to surgery, patients with osteoarthritis listed for joint arthroplasty at the hospital Humanitas Pio X completed a pre-surgical assessment investigating central sensitization, catastrophizing, emotional distress, state anxiety and depression, self-efficacy and executive functions. During the first 7 post-surgical days, patients filled a diary including questions about pain intensity and daily catastrophizing. A multilevel growth curve analysis was employed to identify predictors of the intercepts and slopes of acute pain trajectories. Multiple imputation was employed to account for missing data.
Results: 145 patients were included. After controlling for sex, surgical procedure and pre-surgical pain intensity, central sensitization was revealed as a strong predictor of the intercept of pain trajectories, scores on the Trail Making Test Part B were associated with the slope of pain trajectories, and daily post-surgical catastrophizing was a significant covariate of pain intensity.
Conclusions: Assessment of central sensitization, executive functions, emotional distress and state catastrophizing could enable to identify patients at risk for worse outcomes and to plan targeted treatments that could be implemented during the patient´s inward stay.

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ATTRIBUTABLE COSTS OF PAIN IN SPAIN

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Background and aims: Pain has a high prevalence in the population and is associated with lower quality of life, functional status and increased use of health services as well as with a significant social impact. The aim of the study was to estimated costs attributable to pain in Spain
Methods: Data from National Health Survey 2017 were used. Pain was defined as an indication of either 'Limitation in usual activities during the last two weeks due to pain' or 'Pain in the last 4 weeks' or 'Daily activities affected by pain'. Direct costs (consultations -general practitioner and specialist-, emergencies, hospitalizations, physiotherapy,

psychologist and medication consumption) and indirect costs (days in bed, days of restriction) were assessed. These costs were determined through existing public data. Multivariate models were performed to obtain the attributable effect of pain in each variable.
Results: We analyzed data from 23089 people. 51.3% were women. Mean age was 48.6 years. Prevalence of pain was 19.9%. Multivariate analysis demonstrated that pain significantly increases the utilization of all the health services.
Attributable costs of pain was 30,217 million euros, of which 82.4% were indirect costs, 2.3% of Spanish GDP.
Conclusions: Pain IS associated with a significant increase of costs, especially indirect costs. Targeted interventions at reducing the impact of pain, which are responsibility of health systems and represent an increase in direct costs, may have beneficial social and labor impacts that could lead to a reduction in indirect costs and therefore on the overall socio-economic burden of pain.

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THE BURDEN OF CHRONIC PAIN PATIENTS

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Background and aims: For patients suffering from chronic pain, their somato-psycho-socio-cultural context lacks thorough understanding. Our aim was to study their life events, life style, social support, and the entire illness burden among these patients.
Methods: In a retrospective clinical study, we analyzed a “holistic care questionnaire” filled in by 313 chronic pain patients from two Finnish central hospitals prior to their pain clinic treatment from 2008 to 2016.
Results: The majority, 235 (75%) of those tested were women. Overall mean age was 50 years, 117 (37%) were living alone, 132 (43%) were retired, 59 (19%) unemployed, and 45 (14%) on sick leave. The majority, 157 (54%) were blue-collar workers. They had on average 4 pain diagnosis and 3 other diseases. Third smoked, half drank alcohol. Only 5% were high consumers of alcohol, 1% used illegal drugs. Of the participants 71% reported poor sleep, 62% mental problems, 43% were socially isolated, 60% had lost their work ability and 73% most of their functional capacity due to pain. They were on average moderately depressed, 54% had suffered traumatic life events: on average 2.4 traumatic life events. They had on average fewer than 4 friends. A fifth got no exercise. Rough third considered their diet unhealthy.
Conclusions: Chronic pain is inseparable from multifaceted suffering. We should focus on alleviating it.

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SOCIETAL IMPACT OF PAIN (SIP) - EXPERIENCES FROM A SIP NATIONAL PLATFORM (NP) IN PORTUGAL

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Background and aims: In Portugal the annual cost of chronic pain amounts to €4.5 billion. It comes with the unmeasurable suffering of those affected. To address this, under the umbrella of the European SIP platform, SIP Portugal was established to improve pain care policies.
Methods: Representatives from Portuguese organisations having an interest in pain care: healthcare professionals, pain advocacy groups, patients‘ organizations and pharma, came together in 2018 and set up SIP NP. It raises

awareness of the impact that pain has on society and its health and economic systems. It aims to decrease the prevalence of pain, as demonstrated by national studies, and improve the quality of life of those affected by it.
Results: Employment and education/awareness have been identified as the priority areas in Portugal. Joint statement on employment was developed. In 2019 a meeting with employers as well as a large symposium will take place to address these areas.
Conclusions: Only when working together we can face the huge societal challenge caused by the burden of pain. SIP Portugal is a significant milestone in tackling the societal impact of pain and advocating for better management of pain to Portuguese policy makers.

CLINICAL DIAGNOSTICS FOR THE ASSESSMENT OF PAIN

P549

EXPANDED PRESSURE-INDUCED REFERRED PAIN AFTER A RECOVERED DISTAL RADIUS FRACTURE

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Background and aims: Intense pain and sensitization of central mechanisms are likely after a fracture. The chronic pain beyond recovery has been related to the transition into a chronic condition. This study assessed pain processing before and during experimental pain in recovered pain-free individuals who suffered a wrist fracture.
Methods: This cross-sectional study included 22 asymptomatic individuals with a recovered fracture (13 females) and 22 matched healthy controls and was conducted on consecutive days (Day0, Day1) with identical measures. Pressure pain thresholds (PPTs) were assessed bilaterally at the extensor carpi radialis longus (ECRL), infraspinatus, and gastrocnemius muscles. The area of pressure-induced referred painwas recorded after stimulating the ECRL muscle (120% of the PPT, x 60 seconds) of the fracture (dominant in controls) and contralateral sides. At the end of Day0, delayed onset muscle soreness (DOMS) was induced by eccentric exercise of the wrist extensors.
Results: In both groupsPPTs at the ECRL muscle on the fracture/dominant side were reduced on Day1 compared to Day0 ($P< 0.001$). Pressure-induced referred pain spread towards the wrist. The area of pressure-induced referred pain was larger on the fracture sidecompared to the contralateral side on both days ($P< 0.005$), and on the fracture/dominant side on Day-1, compared with Day-0 ($P< 0.05$) in both groups.
Conclusions: These results imply that having a recovered fracture may sensitise central pain mechanisms of asymptomatic individuals, as measured by increased referred pain areas, which are further increased when the pain system is challenged by simple pain conditions such as exercise-induced pain.

P550

A CUMULATIVE IMPACT OF PSYCHOLOGICAL AND SENSITIZATION RISK FACTORS ON PAIN-RELATED OUTCOMES

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Background and aims: The pain catastrophizing (PC) and pressure pain threshold (PPT) are using in research and clinical practice for assessing pain-related psychological and sensitization risk factors. The relationships between PC and PPT and their combined impact on risk assessment are not yet clear. The study is aimed to evaluate the cumulative impact of psychological and sensitization risk factors on pain-related outcomes (activity avoidance, pain severity and disability) considering covariates.
Methods: We included 109 participants (70.60% women; mean ± SD age 53.6 ± 12.3 years) with chronic musculoskeletal pain for data analysis who completed all measures of this study.
Participants completed a single testing session that included measures of risk factors (PC and PPT) and pain-related outcomes (self-reported avoidance, functional avoidance, disability and pain severity). Subgroups were constructed by dichotomizing (median split) of PC and PPT scores, resulting in 4 groups: 1. high catastrophizing and low sensitivity (N=27), 2. high catastrophizing and high sensitivity (N=31), 3. low catastrophizing and low sensitivity (N=26), and 4. low catastrophizing and high sensitivity (N=25).
Results: One-way ANOVA revealed significant group differences ($p < .05$, $\eta^2 = .08$ to $.14$) on all outcomes of this study (except functional avoidance) and post-hoc analysis indicated the significance differences are between group 2 and 3 ($p < .05$).
Conclusions: The study suggests both higher level of pain catastrophizing and pressure sensitivity has a cumulative impact in risk screening for pain-related outcomes, considering gender in functional avoidance (task-related related outcome). This finding has important clinical and theoretical implications.

EPIDEMIOLOGY

P551

CHARACTERISATION OF CONSTIPATION ASSOCIATED WITH PRESCRIBED OPIOID EXPOSURE IN THE UNITED KINGDOM

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Background and aims: Opioids have an important role in the management of severe pain, but they cause gastrointestinal adverse effects, including constipation. We aimed to determine the proportion of patients using strong opioids (excluding tramadol) who experienced constipation, and describe constipation management in these patients.
Methods: Individual episodes were selected from the Clinical Practice Research Datalink (CPRD); a large routine primary care database from the United Kingdom. Only patients whose record could be linked to Hospital Episodes Statistics were included. Continuous episodes of strong opioid exposure (³90 days) were selected from between January 1998 and December 2017. The date of first opioid prescription defined the patient's index date. Constipation was determined from primary care laxative use, and/or enema prescription, or relevant inpatient hospitalisation. Constipation was categorised as stable if multiple laxatives were prescribed with no augmentation, switching of dosage or increase during the opioid episode. Constipation was characterised as unstable if prescriptions were intensified, an enema was prescribed or a patient was admitted to hospital with a diagnosis of constipation.
Results: Following application of inclusion and exclusion criteria, 8,235 strong opioid episodes were identified. 4,474 (54.3%) had no indication of constipation during the episode. Of the remainder 1,331, had one single laxative prescription, 762 (9.3%) had stable patterns of laxative prescription and 1,668 (20.3%) were considered unstable.
Conclusion: Of patients using strong opioids, around 45% experienced GP-treated constipation, and for 20%, management of this constipation was unstable.

P552

PREVALENCE OF CHRONIC PAIN IN ISRAEL - AN INTERNET-BASED SURVEY

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Background and aims: Chronic pain (CP) prevalence in European studies has been inconsistent, ranging from 12% in Spain to 30% in Norway. In order to probe the prevalence of CP in Israel, we conducted an internet-based survey in a representative cohort of Israeli adults assembled by a large professional survey company (Midgam).
Methods: 8,300 Israeli adults comprising a representative cohort of the Israeli population were asked whether they were suffering from pain lasting over 6 months. Participants answering positively were then asked a series of follow-up questions regarding their chronic pain. Statistical weights were used to correct for the distribution of the Israeli population based on sociodemographic characteristics to account for survey nonresponse.
Results: 1647 participants initially responded (19.8% response rate). Of these, 515 (31.3%) had CP. CP patients were significantly older (mean age 46.55 ± 15.8 vs. 40 ± 15.6), had a higher prevalence of women, and more often were partly employed or unemployed. No between-group differences were found regarding marital status, number of children, education level and ethnicity. Interestingly, ultra-orthodox Jews reported lower levels of CP compared to other groups.
The most prevalent single pain site was the lower back, but forty two percent reported CP in multiple locations.
Discussion: This is the first internet survey conducted in Israel to estimate the incidence of CP, and the high CP prevalence documented is in agreement with previous reports from Europe and the USA. These data reaffirm the similarly major health burden CP presents across different countries and cultures.

ORGANISATION OF CLINICAL PAIN CARE

P553

CHALLENGES IN SETTING UP A PAIN DATABASE IN SINGAPORE

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Background and aims: Chronic pain conditions exert a significant burden on our healthcare system. The quality of life of an ageing population and increasingly taxed workforce are also adversely affected.
Singapore does not yet have a centralized database of chronic pain patients auditing their conditions, treatment modalities and outcomes.
We describe our experience in initiating the setup process for such a database and discuss problems specific to our local population.
Methods and results: We conducted a 2-month pilot study to assemble a database of pain patients in a tertiary hospital-based outpatient Pain Management Centre. 169 eligible patients were approached, of which 93 (55%) consented for inclusion.
Discussion: The need for informed consent was mandated by institutional personal data protection policy. This caused a less effective capture of our treatment population.
Members of an Asian culture are more private about their medical conditions. Singaporeans are now particularly cautious about revealing personal information after recent data leaks. As database participation was not a pre-requisite for receiving treatment, patients also lacked this incentive to disclose additional information.
We anticipate that various domains of assessment including history of physical abuse, drug abuse and sexual history will be more challenging to elicit due to social stigma associated with such activities.

Conclusion: Establishing this database is of tremendous potential benefit to our population. It would allow us to identify factors amenable to early intervention, and quantify comparisons with more extensively studied Western populations. It would also allow for study of the burden and cost of disease.

ORGANISATION OF RESEARCH IN PAIN

P554

CREATING A REGISTRY OF PAIN REGISTRIES

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Background: A patient registry is an organised system that uses observational study methods to collect uniform data to evaluate outcomes for a population defined by a particular disease, condition or exposure, and that serves one or more predetermined scientific, clinical or policy purposes.Pain registries should facilitate collaboration between clinicians, researchers and policy makers to improve clinical practice, outcomes and safety of patients in pain. A recent survey found 23 registries addressing pain in Germany. We aimed to investigate the situation worldwide.
Methods: Registries were identified through search engines and personal knowledge using ‚pain', ‚registry', as key words. Potentially relevant references were then screened by reviewing registry websites or contacting registry directors. Eligible references were characterised by the measures used for evaluating pain, number of patients contained, publications, number of institutions involved and whether registries were active.
Results: The search from Jan 2013 to April 2018 revealed 2462 potential records of which 145 were further assessed for eligibility in the US (n=26), Europe (n=35), Scandinavia (n=61), United Kingdom (n=8) and Australasia (n=12). Preliminary analysis revealed that the majority of registries were disease focussed, few addressed pain per se; there was a wide variation in PROMs; many have published, some are no longer funded.
Conclusions: There is no easy way to identify registries addressing pain, yet, this is a growing field. When complete, information from this survey will contribute to determining the need for new registries, improving consistency between registries and adding pain evaluation to existing registries.

P555

INHIBITION OF SOLUBLE EPOXIDE HYDROLASE PREVENTS LIPOPOLYSACCHARIDE-INDUCED INFLAMMATORY HYPERALGESIA IN MICE: CONTRIBUTION OF NLRC4 INFLAMMASOME, NLRC3, NOX, INOS, AND NNOS

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Background and aims: NLRC4 inflammasome and antiinflammatory NLRC3 has been implicated in the pathogenesis of several diseases associated with systemic inflammation such as septic shock. It has also been suggested that sEH inhibitors may have a therapeutic potential in NLRC4/NLRC3-related inflammatory diseases. The aim of this study was to determine whether inhibition of sEH prevents inflammatory pain at the supraspinal level caused by bacterial LPS in mice as well as changes in expression of NLRC3, caspase-1/11, NOX, iNOS, and nNOS that may regulate NLRC4/ASC/procaspase-1 inflammasome formation and activity by using a selective sEH inhibitor, TPPU.

Methods: Male mice received saline, LPS (10 mg/kg), and/or TPPU (0.3, 0.5, or 1 mg/kg). Reaction time to thermal stimuli within 30 s was evaluated after 6 h. The mice were euthanized and brains and spinal cords were collected for measurement of NLRC4, ASC, caspase-1/11, IL-1β, NLRC3, NOX subunits (gp91^{phox} [NOX2] and p47^{phox} [NOXO2]), nitrotyrosine, iNOS, and nNOS protein expression by immunoblotting.
Results: LPS-induced hyperalgesia was associated with a decrease in NLRC3, iNOS, and nNOS protein expression as well as an increase in expression of NLRC4, ASC, caspase-1/11, IL-1β, NOX subunits (gp91^{phox} [NOX2] and p47^{phox} [NOXO2]), nitrotyrosine, and β-actin protein expression. The LPS-induced changes were prevented by TPPU at 0.5 mg/kg dose.
Conclusions: The results suggest that inhibition of NLRC4/ASC/pro-caspase-1 inflammasome formation and activity by sEH inhibition prevents inflammatory hyperalgesia induced by LPS in mice as well as changes in NOX2, NOXO2, iNOS, and nNOS expression/activity.
This work was financially supported by Mersin University (2018-3-TP2-3082).

PSYCHOLOGY

P556

THE RELATIONSHIP OF FLOURISHING AND TENACIOUS PURSUIT GOALS TO FUNCTIONING AND HEALTH-CARE USE IN CHRONIC MUSCULOSKELETAL PAIN PATIENTS

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Background and aims: Flourishing is a key concept of positive psychology as it refers to a combination of emotional, psychological, and social wellbeing. Studies have found that people with higher levels of flourishing showed better physical health and lower health care costs. However, there are few studies that have studied the role of flourishing in the adaptation of individuals who suffer chronic pain. Moreover, from the motivational reformulation of the fear-avoidance model of chronic pain, tenacious goal pursuit is considered as a positive way of adaptation. The aim of the current study was to test a hypothetical model of the contribution of flourishing and tenacious goal pursuit to adjustment to chronic pain in individuals with chronic musculoskeletal pain
Methods: 98 individuals suffering chronic musculoskeletal pain participated in this cross-sectional study. Participants completed a protocol that assessed flourishing, tenacious goal pursuit and adjustment to chronic pain (daily functioning and functional impairment) and healthcare use (daily medication intake and monthly medical visits). The linear relationships between the variables were analyzed via structural equation modeling.
Results: The results showed that flourishing was positively and significantly associated with tenacious goal pursuit, which, in turn, was positively and significantly related to daily functioning and negatively to functional impairment, daily medication intake and monthly medical visits.
Conclusions: These results showed the important role of flourishing and tenacious goal pursuit in the adaptation to chronic musculoskeletal pain, as well as the need to design intervention protocols to promote flourishing and tenacious goal pursuit in these patients.

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ASSOCIATION BETWEEN RELIGIOUS AND SPIRITUAL BELIEFS & COPING RESPONSES AND PAIN-RELATED BELIEFS IN INDIVIDUALS WITH CHRONIC PAIN

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Background and aims: Chronic pain is a multidimensional experience associated with psychosocial (e.g. pain-related beliefs and pain coping responses), spiritual and religious factors. Spirituality and religiosity are universal aspects of human experience that are thought to influence pain experience via its effect on pain, physical/psychological function, resilience, pain-related beliefs and pain coping responses. However, research aiming at assessing the association between religious and spiritual beliefs, and with pain-related beliefs and pain-coping responses in individuals with chronic pain is limited. This study seeks to address this gap.
Methods: Eighteen community-dwelling adults with chronic low back pain or chronic pain due to osteoarthrosis participated in four focus groups. Participants were asked open-ended questions about pain-coping responses, pain-related beliefs and the perceived association between spiritual and religious beliefs with pain-coping responses and pain-related beliefs. Data were submitted to content and thematic analysis.
Results: Results of qualitative analysis suggested three major themes related to the association between spirituality/religiosity and coping responses and pain-related beliefs: (1) Spirituality and religiosity as source of reframing of pain experience; (2) Organizational religiosity as inducing a sense belonging to a community, and community involvement as a source of social support and sense of purpose; (3) Using own pain experience as a way to help others in the religious community.
Conclusions: The findings suggest that participants perceive pain-related beliefs and pain-coping responses as associated with spiritual and religious beliefs. Spirituality and religiosity may have an indirect effect on pain experience via its effects on coping responses and pain-related beliefs.
Keywords: Chronic pain; Spirituality; Religiosity; Coping responses; Pain-related beliefs.

P558

CAN VERBAL SUGGESTION ABOLISH THE EFFECT OF CLASSICAL CONDITIONING ON PLACEBO ANALGESIA AND NOCEBO HYPERALGESIA?

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Background and aims: Classical conditioning and verbal suggestion can induce both placebo analgesia and nocebo hyperalgesia. The experiment aimed to investigate whether verbally provided suggestions inconsistent with conditioning can abolish the effects of conditioning.
Methods: Participants were assigned to one of the four experimental groups:
1) placebo conditioning,
2) nocebo conditioning,
3) placebo conditioning followed by suggestion of hyperalgesia,
4) nocebo conditioning followed by suggestion of analgesia; or one of the three control groups.
During the first phase of the experiment participants from experimental groups underwent a conditioning procedure. They received a series of pain stimuli preceded by one of two color stimuli. One of these colors preceded pain stimuli of moderate intensity and the other - pain stimuli of lower (in the placebo groups) or higher (in the nocebo groups) intensity. In the experimental groups 3 and 4, the conditioning procedure was followed by information about the association between colors and painful stimuli that was inconsistent with the conditioning applied. During the second

phase of the experiment, participants in the experimental groups received a series of pain stimuli of moderate intensity preceded by color stimuli. Participants rated pain intensity and expectancy of pain intensity.
Results: Results of the study will be presented on the poster.
Conclusions: In the clinical context patients frequently receive information concerning pain which could be contrary to what they experience. The results of this study add to the knowledge about the possible effects produced by suggestion incongruent with individual pain experiences.

P559

THE EFFECT OF PAIN ON FOUR ASPECTS OF WORKING MEMORY

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Background and aims: Pain captures attention, interrupts ongoing tasks, and urges escape and avoidance of harm. Investigations into the effect of pain on working memory have yielded contradictory results, which may be the result of variations in tasks employed to assess working memory (WM). WM is conceptualised as a multicomponent cognitive architectural system that includes distinguishable components such as the processing and storage of visuo-spatial and phonological information. The current study investigated the effects of pain on four WM tasks differing on each of the following dimensions: 1) Input type: phonological/visuo-spatial and 2) Procedure type: processing/storage.
Methods: Sixty participants completed the WM tasks (Corsi block and digit span tests, forward and backward versions) in random order with and without pain induced via cold pressor.
Results: Data collection is expected to finish in May 2019. Our pre-registered analysis is a 2 (pain vs. no pain) x 2 (visuo-spatial vs. phonological) x 2 (processing vs. storage) Within-Subjects ANOVA.
Conclusions: Studies investigating the effect of pain on WM have used measures that preclude inferences to be drawn pertaining to effects specific to processing and storage of visuo-spatial and phonological processes. This may have obscured more nuanced effects of pain on WM function. Results will shed light on the potentially varying effects that pain may have on various WM aspects. This will have implications for theories of pain cognition, which higher-level cognitive tasks we should expect to be impacted by pain, and may inform novel treatment approaches.

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DIFFERENT PAIN - DIFFERENT BRAIN? A COMPARISON OF COGNITIVE IMPAIRMENTS IN PATIENTS WITH PERIPHERAL NEUROPATHIC PAIN AND FIBROMYALGIA

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Background and aims: Several systematic reviews report and describe the nature of cognitive impairments in chronic pain through neuropsychological testing. However, existing reviews do not allow head-to-head comparisons between pain conditions. We thus aimed to compare cognitive impairments between two distinct pain conditions with potential differences, namely peripheral neuropathic pain (PNP) or fibromyalgia (FM), controlling for medication and sleep deficiency.
Methods: Suspected PNP or FM was seen by a specialist, either a neurologist (PNP) or specialist in physical medicine and rehabilitation (FM), who performed a structured diagnostic assessment. We included 73 patients who answered a survey, IQ tests and computerized neuropsychological testing. Then 10 outcomes sensitive to picking up differences in neuropsychological functioning were pre-selected. Substantial differences between the participants

in the two diagnostic groups were detected through t-tests or chi square statistics, additional analyses was then performed using linear regression models.
Results: Linear regression models showed that when controlling for age, gender, years lived with pain, anticonvulsants and insomnia severity, the diagnosis of PNP remained significantly associated with the number of errors made on the hardest stage of visual encoding and retrival (PAL 8 shapes, p=0.04).
Conclusion: Patients with PNP indicated a worse performance on hard tasks within the cognitive component of updating. Updating is essential for us to identify and correct any change to planned behavior, and is a function that we use countless times over the course of a day. Performance on this task was also correlated with everyday functioning measured through a modified Oswestry Disability Index.

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THE ROLE OF CLASSICAL CONDITIONING IN ELICITING SOMATOSENSORY EXPERIENCES: PRELIMINARY EVIDENCE AGAINST THE CONDITIONED "EXPERIENCE OF TOUCH"

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Background and aims: Several theoretical and clinical models suggest that somatosensory experiences can be classically conditioned: Stimuli that occur in close spatio-temporal proximity to somatosensory experience can elicit that experience by themselves. Empirical evidence, however, is scarce and inconclusive. This study investigated the classical conditioning of somatosensory experiences.
Methods: In a classical conditioning procedure, healthy participants (n=50) learned that one particular color of a pen approaching their hand (CS+) was predictive of an occasionally delivered painful electrocutaneous stimulus (UCS), whereas another color of an approaching pen (CS-) was not. Participants also received near-threshold vibrotactile stimuli at the hand that the pen approached (congruent trials) or the other hand (incongruent trial). The main outcome measure was the reporting of a vibrotactile stimulus when none was presented ("false alarm" or "illusory touch").
Results: There was successful conditioning: Self-reported attention, fear and expectancy were higher for CS+ than for CS- (p< .0001). Counter to our hypothesis, CS+ (M=3.17) elicited less false alarms than CS- (M=4.04, p< .05). Interestingly, false alarms were higher for the congruent (M=4.09) than incongruent trials (M=1.81, p< .01).
Conclusion: We did not find support for the idea that somatosensory experiences could be classically conditioned. Further research is warranted. Possibly, our outcome of experiencing touch was too dissimilar from the painful UCS. It might also be that conditioned fear distracted from the task to detect the near-threshold stimuli.

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DOES INVALIDATION FACILITATE NOCEBO-LIKE EFFECTS ON PAIN?

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Background and aims: Communicating little understanding or disbelief (invalidation) can have a detrimental impact on pain and adherence to pain tests. Typically this finding has been framed within an emotion-regulation perspective. Expectations have hitherto received little attention in explaining the adverse effects of invalidation in a pain context. Negative communication may facilitate nocebo-like responses (increased pain due to negative pain expectations). This study aimed to determine the impact of invalidation on experimental nocebo-like effects.

Methods: Young healthy volunteers held a heavy bucket with straight arm to tolerance, once while wearing a posture brace (baseline) and then three times without. Upon baseline assessment, possible negative consequences of repetitive high-load lifting exercises without posture correction were disclosed (negative expectation induction). Upon each lift, participants rated pain experience during the lift, as well as expected pain intensity and tolerance on the next trial. The experimenter provided immediate feedback on each tolerance expectation. Depending on group assignment, feedback was either a nonunderstanding comment (invalidation group, *n*=13) or neutral comment (control group, *n*=14).
Results: Participants showed an increase in experienced and expected pain intensity across lifting trials and a decrease in pain threshold, tolerance, and expected tolerance. There were no significant group differences.
Conclusions: Invalidated and control participants did not differ in development of negative pain expectations and related increase in pain. Potential explanations are discussed, including nocebo responsiveness and properties of effective communication.

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IS PAIN MEDICATION PRESCRIBED ACCORDING TO PATIENTS´ INTENSITY OF PAIN OR TO THEIR RESPECTIVE PSYCHOLOGICAL DIFFERENCES?

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Background and aims: Little is known about how physicians take into account patients‘ psychological variables when they prescribe an amount/dosage of pain medication. The current study aims to analyze how (1) patients ‚attitudes about pain medication (*addiction, need, tolerance and withdrawal* measured with the Pain Medication Attitudes Questionnaire-PMAQ) and (2) patients‘ risk of long-term opioid medication abuse (measured with the Screener and Opioid Assessment for Patients with Pain-SOAPP-R) affect the amount of pain medication prescribed, in addition to the effect of pain intensity. Depression was also included as a criterion variable (measured with the Hospital Anxiety and Depression Scale-HADS).
Methods: A total of 74 patients with heterogeneous non-oncological chronic pain participated. Two linear regression analyses were performed to test the contributions of the four attitudes about pain medication and the SOAPP-R total score to the prediction of (1) the amount/dosage of pain medication prescribed and (2) of patients‘ depression.
Results: After controlling for age and pain intensity, only *withdrawal* concerns and SOAPP-R total score contributed significantly and positively to the prediction of the amount/dosage of pain medication prescribed. On the other side, *tolerance* assumptions and SOAPP-R total scores had a significant direct effect on depression.
Conclusions: Over and beyond the intensity of pain, patients with *withdrawal* concerns and more risk to opioid abuse tend to receive higher dosage than those without such characteristics. Therefore, these variables play a significant role in physicians‘ decision on the amount of pain medication prescribed for the pharmacological treatment of patients with non-oncological chronic pain.

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HOW RELIABLE IS PAIN‘S EFFECT ON ARITHMETIC? A REPLICATION AND TEST-RETEST ANALYSIS

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Background and aims: Systematic reviews and meta-analyses suggest that pain slows reaction times and increases errors. These effects are seen with naturally-occurring and experimentally-induced pain, across various cognitive tasks. However, the disruptive effect of pain is somewhat inconsistent, suggesting that it is unreliable, or moderated by other factors. Here, we examined pain‘s effect on arithmetic, which is essential for many daily activities (e.g. calculating household budgets or adjusting recipes).
In study 1, we examined pain‘s effect on simple and complex addition.
In study 2, (a partial replication and extension) we examined pain‘s test-retest reliability on simple arithmetic.
Methods: Both studies were pre-registered.
In Study 1, 54 participants completed simple and complex addition questions, with and without cold-pressor-induced pain.
In Study 2, a new sample of 50 participants completed simple addition questions with and without cold-pressor-induced pain; the session was repeated a week later. State factors (e.g. hunger, tiredness, mood) were measured by questionnaires.
Results:
In Study 1, participants made more errors in pain than when pain-free.
In Study 2, there was no effect of pain on arithmetic errors, the pain-minus-control error rates at time 1 did not correlate with the pain-minus-control error rates at time 2, and state factors did not moderate pain‘s effects.
Conclusions: These studies look at pain‘s effect on an important real-world skill. Our data suggest that pain inconsistently disrupts arithmetic performance and has poor test-rest reliability, highlighting the importance of replications. The studies‘ differing results suggest that cognitive performance, when in pain, may vary between individuals.

LATE BREAKING DIAGNOSIS AND THERAPY GUIDED POSTER WALK

P565

PLACEBO ANALGESIA IN VIRTUAL AND AUGMENTED REALITY

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The sense of presence and precise sensory control of virtual reality signify a potentially effective new tool for the management of pain. Several lines of research have examined how sensory manipulation of virtual embodiment affects pain. Recently, a novel study demonstrated that application of a sham analgesic cream to an embodied rubber hand can successfully induce placebo analgesia.
The current study bridges the domains of placebo analgesia and virtual embodiment to examine whether a virtual placebo can successfully induce analgesia, and whether the magnitude of analgesia experienced from a virtual placebo differs from that of a placebo administered in physical reality. Participants (n=40) were assigned to either a Placebo or Control group and completed all experimental procedures in virtual (VR), augmented (AR), and physical reality (PR). Placebo participants (n=20) were informed that the efficacy of a physical, heat protective glove in physical reality would be compared to the analgesic efficacy of its purely virtual counterparts in VR and AR, whereas Control participants (n=20) were only told that the glove served to conduct the experiment under different visual conditions. Participants received noxious thermal stimulations to the right lower forearm while pain threshold, sensory pain, and subjective pain were measured. Results evince that participants in the Placebo condition, after the intervention, exhibited significantly higher pain thresholds ($F(1,114) = 65.03$, $p < .001$), lower sensory pain ratings ($F(1,114) = 14.39$, $p < .001$), as well as lower subjective pain ratings ($F(1,114) = 9.57$, $p < .01$) than Control participants, independent of the reality used.

P566

PREDICTIVE VALIDITY OF CONDITIONED PAIN MODULATION (CPM) AS A BIOMARKER OF CHRONIC PAIN: A SYSTEMATIC QUALITATIVE REVIEW

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Background and aims. Given the modest evidence of efficacy of available treatments for chronic pain, the pinpointing of predictors of treatment response and the implementation of individualized treatments based on the patients' characteristics are crucial to improve pain therapy. Conditioned pain modulation (CPM) has attracted increasing interest as a biomarker of pain: it is simple to obtain and consistently discriminate chronic pain patients from healthy controls. As there is not enough information concerning the predictive validity of this biomarker, the objective of this systematic qualitative review was to analyze the evidence on the power of pre-intervention CPM to predict treatment outcomes.
Methods. We included 15 papers that followed one of two approaches: to assess responsiveness to a given treatment in patients with pain or to predict pain development after surgery in pain-free subjects.
Results. The predictive power of CPM strongly depended on the type of intervention: CPM did not predict pharmacological treatments outcome but was predictive for other interventions (as spinal cord stimulation or exercise-induced hypoalgesia). Also, most of the papers using the post-operative chronic pain model found that CPM assessed at a pain-free stage, alone or in combination with temporal summation, significantly predicted pain development after surgery. CPM methodology seems to have a crucial role in the results.
Conclusions. CPM is a promising predictive biomarker but more longitudinal prospective studies, using a standardized assessment methodology, are needed to obtain more solid evidence.

P567

EHEALTH BASED TREATMENT WITH A MULTIDISCIPLINARY MEDICAL APP VERSUS STANDARD OF CARE IN LOW BACK PAIN: FIRST DATA OF THE RISE-UP PROJECT IN GERMANY

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Background: Unspecific low back pain causes burden in patients and tremendous costs for the health care systems worldwide. Although guidelines recommend multidisciplinary treatment focusing patients' empowerment unnecessary surgery or pharmaceutical strategies still prevails. Mobile health applications have been shown promising tool to provide guideline-oriented treatment opportunities to a broad range of patients. The present poster aims to present an interim analysis of the Rise-uP project (Germany) which includes a multidisciplinary mobile back pain app (Kaia App), providing physical exercise, mindfulness and education via smartphone, as main intervention in a GP centered treatment algorithm for lower back pain patients.
Methods: Pain ratings as well as measures of functional ability, psychopathology (anxiety, depression, stress) and wellbeing (mental/physical) at the beginning of the treatment and in a 3- and 6- months follow-up were compared between 108 patients who got access to a back pain app (Rise-uP group) and 37 control patients who were provided regular treatment.
Results: We found a substantially stronger pain reduction in the Rise-uP group compared to the control group after 3 months (Rise-uP: *M*=-2.43 (*SD*=2.38) vs. CG: *M*=-1.20 (SD=2.67) and after 6 months (Rise-uP:*M*=-2.57 (*SD*=2.43) vs. CG: *M*=-1.24 (*SD*=3.1) measured on a 11-points numeric rating scale. Rise-uP patients also reported stronger

improvement in functional and wellbeing parameters at both measure points (3 and 6 months follow-up)
Discussion: Our data provide further indication that mobile health application may be a promising tool to increase quality of treatment of unspecific back pain especially in a setting with a professional involved.

P568

VOLUNTARY FORELIMBS EXERCISE REDUCES IMMOBILIZATION-INDUCED MECHANICAL HYPERALGESIA IN THE RAT HIND PAW

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Background and aims: Voluntary exercise is sufficient to protect against neuropathic pain. However, it is unclear whether voluntary exercise reduce immobilized-induced hyperalgesia. We examined the effect of voluntary forelimbs exercise on immobilized-induced hyperalgesia in rat hind paw.
Methods: Wistar rats were randomly divided into (1) immobilization, (2) immobilization and voluntary exercise (exercise), and (3) control groups. In the immobilization and exercise groups, bilateral ankle joints of each rat were immobilized in full plantar flexion with a plaster cast for 8 weeks. In the exercise group, voluntary exercise using non-immobilized forelimbs in the running wheel was administered during the immobilization period while hindlimbs were kept immobilized (60 min/day, 5 days/week). Mechanical hyperalgesia in the hind paw was measured using digital von Frey device every week. To investigate the abnormality of primary sensory neuron and central sensitization, the number of calcitonin gene-related peptide (CGRP)-positive cells in the dorsal root ganglion (DRG) and the expression level of CGRP in the spinal dorsal horn were analyzed by immunohistochemical staining.
Results: Immobilization-induced mechanical hyperalgesia were inhibited in the exercise group compared to the immobilization group from 3 week after immobilization. In the exercise group, the number of CGRP-positive cells in the DRG and the expression level of CGRP were significantly decreased compared to those in the immobilization group.
Conclusions: Our results suggest that voluntary forelimbs exercise reduce immobilization-induced mechanical hyperalgesia through suppression the abnormality of primary sensory neuron and central sensitization in the spinal cord.

P569

EFFECTS OF VIRTUAL REALITY THERAPY ON UPPER EXTREMITY PAIN AND FUNCTIONALITY AFTER BREAST CANCER SURGERY

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Background and aims: Breast cancer surgery causes widespread and severe pain in the upper extremity. Pain leads to physical and psychological deficits that result in avoidance of movements and restriction in functional activities. Microsoft Xbox 360 Kinect is a virtual reality method, improves upper extremity functionality and has the potential for coping with pain after breast cancer surgery. Our aim was to investigate the effectiveness of virtual reality therapy on pain, functionality, and fear of movement in patients who had undergone breast cancer surgery.
Methods: Twenty-five patients who underwent unilateral breast cancer surgery and axillary dissection have adjuvant

treatment were evaluated. Fifteen women aged between 30-60 years who completed the second postoperative week were included. Pain severity was determined using Visual Analog Scale, functionality was detected using Disabilities of the Arm Shoulder and Hand (DASH) scale, fear of movement was evaluated using Tampa Kinesiophobia Scale at the onset and end of the treatment. The therapy was applied for 2 sessions per week for 6 weeks.
Results: There were no adverse events reported during the program. Paired-t-test showed that pain level was significantly decreased ($p < 0.01$) and the DASH score was significantly improved ($p < 0.01$). Tampa Kinesiophobia Scale scores were also significantly decreased ($p < 0.01$).
Conclusions: This study demonstrates that Microsoft Xbox 360 Kinect technology can be used as a method for coping with pain in the early postoperative period. The results suggest that virtual reality therapy can provide a positive improvement in functionality and fear of movement.

P570

HOW CONTINUOUS PAIN IS TRANSFORMED INTO A SINGLE RATING

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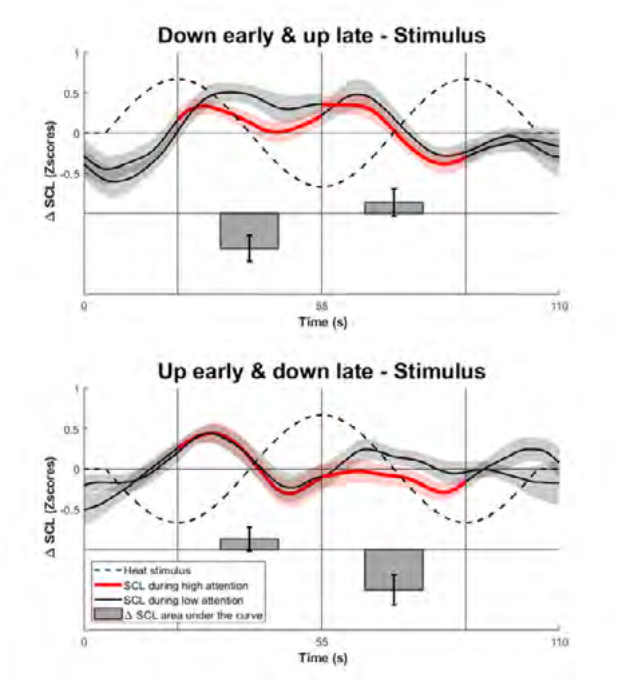
Background and aims: Retrospective pain ratings are not determined by the average stimulus intensity. It has been shown that the worst and most recent pain dominate retrospective reports. However, this “peak-end rule” does not take into account the dynamics of the stimulus, and the effect of cognitive factors, such as attention.
To investigate these aspects, we asked volunteers to rate dynamic painful stimuli and modulated attention to these stimuli with a working memory task. In addition we recorded continuous autonomic activity (skin conductance level, SCL).
Methods: Twenty-five (9f; age 21-34) healthy subjects received 16 long (110s) heat stimuli slowly varying between individual pain threshold and moderate pain. During upward or downward slopes, subjects performed a low cognitive load (1-Back) or a high cognitive load (2-Back) working memory task. Each stimulus was rated on a retrospective visual analogue scale (VAS). SCL was recorded throughout.
Results: Reduced attention (2-back task) during pain increases led to decreased overall pain ratings [p=0.0002; Fig1]. In addition, online SCL was reduced during undistracted (1-back task) pain decreases [p=0.0022; Fig2].
Conclusions: Higher cognitive load during pain increases and lower load during pain decreases significantly reduced *retrospective* pain reports, even though the same amount of physical energy was applied. This effect was also evident in SCL *during* painful stimulation. This indicates that attention to dynamic aspects of noxious stimulation is an important determinant of pain experience.

[Effect of attention task on retrospective pain ratings]



[Effect of attention task on SCL]

P571

HERBAL MEDICINE IN PEDIATRIC ONCOLOGY

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Complementary and alternative medicine (CAM) is increasing in the pediatric population with cancer. This diagnosis leaves families devastated and they feel a tremendous responsibility to ensure the best therapies for their children. Integrative medicine approach is often chosen to child‘s care and the use of herbal products are raising and may interfere with chemotherapy and radiation therapy. The aim of this article is to synthesize the most recent evidence on the available and prevalence of herbal products use, side effects and herbal-drug interactions in the pediatric oncology population. A narrative review of the literature was conducted and the search was defined by the terms “herbal”, “prevalence”, “herbal-drug interaction” and “pediatric oncology”. No data are available in Portugal for herbal products use by children. Kava-kava, vitamin E, quercetin, ginseng, garlic, β-carotene and echinacea interact with anti-cancer drugs. They have a narrow therapeutic window which increases the risk of clinically relevant herb-drug interactions with unexpected toxicities and possible undertreatment seen in cancer children. More scientific evidence on the subject are imperative to prevent therapeutic failure and toxicity.

P572

INTRAOPERATIVE PARESTHESIA-MAPPING IS NOT REQUIRED FOR LEAD PLACEMENTS INVOLVING BURSTDR STIMULATION: RESULTS OF THE PROSPECTIVE, MULTICENTER, RANDOMIZED, DOUBLE-BLINDED CRISP STUDY

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Background: This prospective, multicenter, double-blinded, randomized, crossover study, compared the therapeutic efficacy of BurstDR SCS delivered using a lead implanted with the conventional paresthesia mapping approach to a lead implanted with an anatomic placement approach.
Methods: Patients with chronic back pain were implanted with two leads, one using paresthesia-mapping approach (PM) and the second using anatomical placement (AP). Stimulation contacts were chosen using the standard mapping procedure for the paresthesia lead or such that the activated bipole was overlapping the T9-T10 junction for the anatomical lead. During the trial period patients tested each lead for two weeks in random order. Successful patients received permanent implants using their preferred AM or PM approach and were followed for 1 year with follow-up visits at 3, 6 and 12 months.
Results: Forty-two out of fifty-two patients achieved at least 50% pain relief and proceeded to permanent implant. Twenty patients were profound responders (≥80% pain relief) on at least one lead. For the forty-two patients, the baseline average back pain was 78.9±12 mm on the VAS scale. Twenty-one patients preferred the PM approach while twenty patients preferred the PM approach. Pain scores of both approaches, as well as quality of life and disability measures were significantly different from baseline at all follow-ups they were not different between themselves. Ninety-one percent of patients were satisfied with BurstDR therapy at 3 months.
Conclusions: The results suggest that similar clinical outcomes can be obtained without performing paresthesia mapping and implanting the leads using only anatomical imaging references.

P573

IS IT A PAINFUL ERROR? THE EFFECT OF UNPREDICTABLE AND PREDICTABLE PAIN ON THE ERROR-RELATED NEGATIVITY

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Unpredictability may potentiate the processing of threats. Recent findings have showed that an unpredictable context increases the amplitude of the error-related negativity (ERN), a cognitive potential that appears after the commission of an error. Interestingly, this effect has only been studied using unpredictable, task-irrelevant stimuli. In many situations, however, it is the consequence of the error itself that is unpredictable. The current study systematically investigated the effect of receiving (un)predictable somatosensory painful or not painful stimuli, following the commission of an error on the amplitude of the ERN. Using high-density EEG, we recorded the ERN in 40 healthy participants performing an arrowhead version of the Eriksen Flanker Task under three conditions: Errors were either followed by (1) non-painful stimulation; (2) painful stimulation; or (3) either one of the two in an unpredictable manner. We observed that the conditions did not differ in terms of number of errors and reaction times. Moreover, whereas the ERN amplitude was not modulated by predictability, we observed that the P2 of the somatosensory evoked potentials (SEPs) was increased for painful as compared to non-painful stimuli and for unpredictable as compared to predictable ones. We conclude that knowing that an error will be painful and not knowing its consequences exert the same effects on neural indexes of error-processing (ERN). Somatosensory processing (P2) is increased both by the certainty of receiving a painful stimulus and by its unpredictability. These results offer a novel framework for studying the relationship between pain and error-processing.

P574

INVESTIGATING THE INTERPLAY BETWEEN ERROR-PROCESSING AND CENTRAL SENSITIZATION

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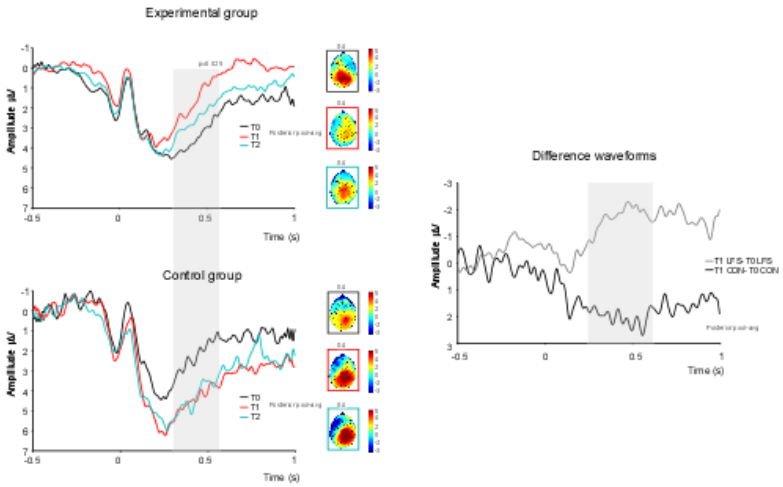
Sensitivity to threats plays a pivotal role in the survival of species. Both pain and errors are thought to reflect threats and promote defensive responses. A higher sensitivity to errors has been related to a higher sensitivity to threats, which in turn may promote the development of chronic bodily sensations, such as chronic pain. In this study we have used a human surrogate model of persistent pain (Low Frequency Stimulation of the skin, LFS), and investigated a possible bidirectional relationship between the sensitivity to errors and mechanical hypersensivity developed after LFS. Neural EEG indexes of error processing, i.e. the error related negativity (ERN) and positivity (Pe) were recorded in 40 participants assigned randomly to a control or an experimental group. Both groups performed a Flanker Task at 3 time points (T0, T1, T2), but only the experimental group underwent, between T0 and T1, T2 LFS. We observed that after sensitization, confirmed by the increased perception of mechanical stimuli applied on the sensitized arm (mechanical hypersensitivity), the Pe was reduced in the experimental group. The baseline amplitude of the Pe at T0 partially predicted the amount of hypersensitivity developed at T1. Our results provide a first evidence of a bidirectional influence between errors and pain persistency, where neural indexes of sensitivity to errors may predict the development of hypersensitivity and intense pain modulates neural measures of error-processing.



[Figure 1. LFS modulates the amplitude of neural indexes of error processing]

INSTRUMENTS FOR THE ASSESSMENT OF PAIN

P575

EXPERIMENTAL INDUCTION OF PARESTHESIA BY NOXIOUS STIMULI: PRELIMINARY DATA

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Background and aims: Paresthesia and dysesthetic sensations are often reported by patients with neuropathic pain. In this study we introduced an experimental technique to induce pain and paresthesia in healthy individuals. The primary aim of this study was to quantify the intensity of experimental paresthesia and propose this technique for subsequent research projects.
Methods: Twenty-three healthy volunteers were randomly allocated into one of two groups. They were exposed to three trials of ischemic stimuli delivered by an electronic sphygmomanometer attached to their non-dominant arm. Group 1 received high (200 mmHG), while group 2 low pressure (150 mmHG) in every trial. One week after the first assessment participants were examined again for the purpose of a reliability analysis. The intensity of the symptoms was measured continuously by a computerized Visual Analogue Scale (VAS, 0-100).
Results: There were no significant differences in the intensity of paresthesia induced on the first and second examination day (P>0.05). The mean intensity of paresthesia was 15.39±10.53 and 34.13±25.70 (VAS) for high and low pressure, respectively. Reliability of the averaged and maximum intensity of symptoms was moderate with the ICC values of 0.61 and 0.70, respectively.
Conclusions: Preliminary data from this study indicates that it is plausible to induce robust paresthesia in an experimental setting. The reliability of this symptom induction is moderate. Its reasonable that slightly less intensive stimulation (lower ischemia) might induce stronger paresthesia, however this observation has to be verified in a larger sample.

P576

MEASURING THERMAL SENSITIVITY AT THE RECEPTORS‘ DEPTH: VALIDATION OF A HEAT TRANSFER MODEL OF THE SKIN WITH HIGH TEMPORAL RESOLUTION STIMULI

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Background and aims: The development of highly accurate heat transfer models of the skin has allowed precise determination of the relationship between the temperature of thermal receptors and the temperature of the skin surface. Nevertheless, thermal detection thresholds continue to be expressed relative to temperature or the power of the stimulation probe.
Methods: Two experiments were performed to verify the reliability of skin transfer models in humans. In the first, participants were asked to judge the thermal intensity of stimuli with combinations of intensity and duration that yielded, according to the model, identical temperatures at 100 µm below the surface of the skin. In the second, participants´ thermal detection thresholds for stimuli of different durations were measured to verify whether these thresholds correspond, according to the model, to equivalent temperatures at 100 µm below the surface of the skin, regardless of the duration of the stimuli.
Results: The model predicted results that agreed with subjects‘ perceptions. Participants judged stimuli of different combinations of intensities/durations as having equivalent thermal intensity. Second, detection thresholds for stimuli of different durations differed for temperatures of the stimulating probe but were equivalent at 100 µm below the surface of the skin (i.e. at the depth of the thermal receptors.

Conclusions: These findings indicate that heat transfer models, previously validated only in animals, provide good estimates of temperatures at the thermal receptors. Use of these models may facilitate comparisons among studies and the establishment of standards, involving all stimulation parameters, in thermal sensitivity and thermal pain.

P577

ABBEY PAIN SCALE FOR ASSESSMENT OF HIP FRACTURE - RELATED PAIN IN PATIENTS WITH DIFFICULT COMMUNICATION

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Background: Pain caused by trauma and surgery is described as very strong. In elderly patients with impaired communication, pain is difficult to evaluate. Successful pain management is predicated on a comprehensive pain assessment
The aim of this study is to determine the metric characteristics (reliability and validity) of the Abbey Scale for the assessment of pain and correlation between pain and analgesic efficacy.
Methods: The sample was made by 31 patients older than 65 years of age hospitalized after the hip fracture at the University Hospital Centre „Sestre milosrdnice", Zagreb, Croatia. Pain assessment used the Abbey pain scale (Jennifer Abbey, Australian University of Queensland; Abbey et al., 2004). The results were compared with the patient´s self-reports according to the VAS scale. Mental status of patients was evaluated with MMSE scale.
Results: The reliability of the Abbey scale was confirmed by the Chrombach α coefficient of internal consistency of 0.561. In order to determine the validity of the Abbey scale, the results are correlated with self-assessment of patients. The intensity before analgesia was 13 ± 3 and after 9 ± 2. T-test showed statistically significant pain reduction ($P < 0,000$).
Conclusions: Abbey scale is a good tool for assessing pain in older age patients with complicated communication. It has good metric characteristics. It is suitable to show the intensity of pain before and after analgesia. The use of Abbey is associated with satisfactory analgesia.
Keywords: Fracture, pain assessment , Abbey scale

P578

THE IMPROVED LASER-EVOKED POTENTIALS HABITUATION PARADIGM

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Background and aims: Laser-evoked potentials (LEPs), used for the assessment of human nociceptive fibres (A-Delta-, C-afferents), are a well-established method to appraise central pain procession. Repetitively applied painful LEPs lead to habituation, measurable by a decrement of the N2/P2 amplitude in healthy subjects. Neuropathic pain patients e.g. with painful radiculopathy present reduced or abolished LEP-habituation, which makes the LEP-habituation paradigm an interesting tool to detect central sensitization. Nevertheless, the currently used paradigm lasts too long for a clinical application. The aim of this investigation is to determine whether a shorter interstimulus-intervall (ISI) leads to a significant habituation.
Methods: In this study, 20 healthy subjects will be tested by applying 100 painful laser stimuli at the back of the right hand using an ISI of 5-7s in comparison to 8-12s in previous studies. Subjects have to rate the perceived laser stimuli on a numerical rating scale (0= no pain, 10= worst pain imaginable) after hearing a ping tone.
Results: Preliminary results of the first 10 subjects, show significant LEP-habituation during the time-course of repetitively applied laser stimuli. The comparison of the two ISIs (i.e. 8-12s and 5-7s) showed no significant

difference regarding the habituation of LEPs and pain, i.e. there was a comparable N2/P2 amplitude and pain rating decrement.
Conclusion: These results indicate an equivalence of the shorter ISI, which only lasts 10 minutes (compared to 25), with the previously applied LEP habituation paradigm. In future studies it might possible to save time by resorting to this improved LEP habituation paradigm.

P579

DIFFERENCE IN PAIN SCORE BETWEEN HEALTH PROFESSIONAL AND PATIENT ASSESSED PAIN

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Background and aims: Assessing pain by use of a Visual Analogue Scale (VAS) have been used widely in clinical and research settings in which a quick index of pain intensity is required and to which a numerical value can be assigned. Studies suggests that health professionals have a tendency to underestimate pain when performing clinical assessment of pain compared to the patient. The aim of this analysis was to investigate the difference in health professional and patient assessed pain score.
Methods: This data was obtained as a secondary analyze of data from a drug-study focusing of the effect of chlorzoxazone on acute postsurgical pain. *Painat rest*was assessed on a VAS scale by a health professional (nurse) at inclusion and by the patients themselves in connection with different questionnaires prior to total knee or hip replacement surgery. Paired samples T-Test was used to calculate any difference between the 2 pain assessments.
Results: 341 patients were assessed, and the patients rated the pain as significantly higher (VAS: 3.44 (2.24)) compared with the nurses (1.67 (2.24), p< 0.001). A moderate correlation was found between the patient and nurse ratings (r=0.432, *p*< 0.001).
Conclusions: The current study found that there was a discrepancy between health professional and patient assessed pain measured by VASs at patients scheduled for knee or hip replacement surgery with clear underestimating of the pain by the health professionals.

P580

MEASUREMENT PROPERTIES OF THE ARABIC LEEDS ASSESSMENT OF NEUROPATHIC SYMPTOMS AND SIGNS (A-LANSS) PAIN SCALE: A SECONDARY ANALYSIS

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Background: We have previously tested the concurrent validity, test-retest reliability and internal consistency of the A-LANSS pain scale (Garoushi et al. 2017). The aim of this study was to investigate the measurement properties of A-LANSS.
Methods: Individuals with diabetes and attending the Benghazi Diabetic Centre, Libya completed the A-LANSS (n=109). Responses were analysed to determine how many dimensions the A-LANSS measured (exploratory factor analysis); convergent validity (correlation between A-LANSS score and a related variable, i.e. numerical pain scale); discriminant validity (correlation between A-LANSS score and an unrelated variable, i.e. age); and sensitivity, % of people with clinically diagnosed PDN who scored ≥12 (i.e. probable neuropathic pain) in the A-LANSS, and

specificity, % of individuals without the PDN who scored < 12. The ability of A-LANSS to distinguish between individuals with and without probable neuropathic pain was then examined against clinical diagnosis.
Results: The A-LANSS was composed of one factor (unidimensional) in accordance with the original LANSS. Convergent validity was high (r = 0.89, p = 0.0001), discriminant validity was acceptable (r = 0.235, p = 0.014), sensitivity was 88.6% and specificity was 81.1%. The positive predictive value was 68.9% and the negative predictive value 93.8%. Thirty-one of 35 (89%) individuals clinically diagnosed with PDN scored ≥12 on A-LANSS compared with 14 of 79 (19%) individuals clinically diagnosed as not having PDN (z = 47.5, p = 0.0001).
Conclusion: The measurement properties of the A-LANSS were satisfactory and suggest utility as a screening tool for PDN in Arabic speaking populations

P581

THE EFFECTS OF TRAINING AIMED TO INCREASE PAIN-REPORTING ACCURACY ON THE PLACEBO RESPONSE

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Background: In previous studies, results of both the Focused Analgesia Selection Test (FAST) procedure, a method to assess pain-reporting accuracy, and the Evoked Pain Training (EPT) procedure, aimed to improve pain-reporting accuracy, correlated with the placebo response. The objectives of the current project were to determine if EPT
(1) increases pain reporting accuracy and
(2) affect the placebo response in experimental pain study.
Methods: This is a two-stage, experimental-pain study in healthy subjects. After baseline assessment (visit #1), subjects randomly assigned to three in-clinic visits of EPT or control. Thereafter, all subjects enter an experimental cross-over study design comprised of two in-clinic visits (visits # 5 and 6) in which the effects of one-of two pills (either Ibuprofen 400mg or identical sugar pill) are tested on battery of experimental pain tests. The calculated changes between pre-treatment and post-treatment assessments serve as model for drug/placebo effects. Treatment difference (between drug and placebo) is calculated by subtracting the „change in placebo“ from the „change in drug“.
Results: Until now, 37 subjects completed the entire study. Out of 15 subjects who completed EPT, 86% exhibited improvement in pain reporting accuracy (p< 0.001). Pain reporting accuracy significantly correlated with the placebo response, as assessed by the heat-pain-threshold model (r= -0.312, P=0.047, spearman´s correlation). Other pain models showed similar, but not yet significant trends.
Conclusion: Our preliminary results supports EPT effects on pain-reporting accuracy and the placebo response. Data collection is ongoing, with a target of 100 subject, which will be achieved at spring 2019.

P582

ON THE VALIDITY OF COMMONLY USED PAIN INTENSITY SCALES: WHAT DO THEY ASSESS IN ADDITION TO THE INTENSITY OF PAIN?

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Background and aims: Reliable and valid measures of pain are necessary to evaluate the effects of treatments on pain and understand the role that pain has on function. The objective of this study was to evaluate the extent to which non-pain intensity factors influence the ratings of pain intensity on two commonly used measures: the Faces

Pain Scale-Revised (FPS-R) and the Verbal Rating Scale (VRS).
Methods: Study participants were a convenience sample of 220 adults with chronic pain (age: Mean = 45.15 years; SD = 9.3; range = 18-68; 93% female), who participated in an online survey. They were administered measures of pain intensity (i.e., FPS-R, VRS, and a Numerical Rating Scale), pain unpleasantness, pain catastrophizing, depressive symptoms, and pain interference. Zero-order correlation analyses were used to examine the associations among the pain intensity scores, while regression analyses were used to test the influence of the non-pain intensity factors on the pain intensity scores.
Results: Pain intensity scores from all pain intensity scales were significantly associated with one another, but the correlation coefficients were moderate. Regression analyses showed that, in addition to pain intensity, the FPS-R also reflected pain interference whereas the VRS reflected pain unpleasantness.
Conclusions: The fact that the ratings of these two scales reflect more than just pain intensity should be considered when selecting the questionnaire to be used. The results of this study also provide important new information to help interpret results after treatment.

DIAGNOSIS AND MEASUREMENT IN PAIN WALK 3

P583

DISTINCT CLUSTERS OF PAIN DISTRIBUTION PATTERNS IN FOOTBALL PLAYERS WITH HIP-RELATED PAIN

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Background and aims: Hip-related pain can be longstanding in football players. Understanding the clinical presentation of this condition would improve time to diagnosis, reduce unnecessary utilization of health services and lead to better treatment. A primary aim of this study was to explore the spatial extent and distribution of hip-related pain in football players.
Methods: As part of a large prospective study[1], 142 (6 female) active (3-4 competitive sessions/week) football players (soccer or Australian football) aged between 18-48 years with hip-related pain and a mean international hip outcome tool score of 62.5±17.4 detailed area(s) of pain on the anterior view of a high resolution digital body chart. Patterns of variation were identified by applying principal component analysis and K-means clustering and each cluster subsequently assessed for age, pain area, laterality, and symmetry.
Results: Five principal components, explaining 43.5% of the variation resulted in five clusters depicting pain primarily in the inguinal region extending proximally towards the groin (N=47, 68% bilateral) or anterior hip (N=31, 71% bilateral), localized antero-lateral hip pain (N=16, 81% bilateral), diffuse lateral hip pain extending into the groin (N=32, 47% bilateral) and a widespread pattern of diffuse pain including the lateral hip and proximal adductor region (N=16, 81.3% bilateral). Total pain area (ANOVA, $F= 6.512$, $P < 0.001$) but not age, laterality, or symmetry differentiate these clusters.
Conclusions: Distinct distributions of pain exist for football players with hip-related pain and the significance on function and radiographic findings are yet to be determined.
[1] J Physiother. 2018 Jan;64(1):55.

P584

QUALITY OF CHRONIC NON-CANCER PAIN MEASUREMENT INSTRUMENTS. SYSTEMATIC REVIEW

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Background and aim: Coping can be defined as the cognitive efforts and behavioral practices that people develop in situations which they consider to be stressful. In people with Chronic Non-Cancer Pain (CNCP), coping is influenced by the biological, psychological, and socio-cultural resources available to them. The aim of this study is to evaluate the psychometric properties of European measuring instruments related to coping with CNCP in non-hospitalized adults.
Methods: The review was conducted following the guidelines of the PRISMA Statement and the methodological framework of the Joanna Briggs Institute. The CINAHL, PubMed, Scopus, and Web of Science databases were searched by two reviewers independently. The analysis of psychometric properties was performed using the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) checklist, and the risk of bias was analyzed using the Quality Assessment of Diagnostic Accuracy Study-2 (QUADAS-2) tool.
Results: Thirty-six studies validated twenty-four different instruments. The Portuguese version of the Pain Beliefs and Perceptions Inventory (PBPI), which assess catastrophizing, and the Spanish version of the Roland-Morris Questionnaire (RMQ), which assess disability, are the instruments with the best methodological quality and bias control.
Conclusions: There are important gaps in the measurement of different aspects of pain coping, such as stress, social and family support, or self-care. Future studies could consider the creation of an instrument to comprehensively assess the resources that influence coping with chronic non-cancer pain.

P585

DEVELOPMENT AND VALIDATION OF CHILD-ADAPTED SCALES TO ASSESS FEAR AND AVOIDANCE IN CHILDREN WITH FUNCTIONAL ABDOMINAL PAIN DISORDERS

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Background and aims: Scales to assess fear and avoidance of gastrointestinal symptoms exist for adults with irritable bowel syndrome, but for children with different kinds of functional abdominal pain disorders (FAPDs) such scales are lacking. The aim was to develop and validate child-adapted short versions (VSI-C and BRQ-C) of the adult scales the Visceral Sensitivity Index (VSI) and the Irritable Bowel Syndrome-Behavioral Resposes Questionnaire (IBS-BRQ).
Methods: Items were selected using data from pediatric treatment studies (n=152). The items were correlated with the full scale and qualitatively appraised to ensure all aspects of the original scales were covered. A randomized controlled trial with 90 children (8-12 years) was used to validate the scales. Test-retest reliability and Cronbach's alphas were assessed. Pearson's product moment correlations were calculated for the child-adapted scales and the original scales with measures of gastrointestinal symptoms, quality of life, pain intensity, and anxiety. Time to assess the scales was calculated.
Results: The internal consistency for BRQ-C was α= 0.84 and for VSI-C α= 0.80. Test-retest reliability was 0.83 for VSI-C and 0.72 for BRQ-C. Correlations between child-adapted scales and original scales with the other measures administered were significant and moderate to large and similar between child-adapted and original scales. The mean administration time was reduced by 42% for VSI-C compared with VSI and by 47% for BRQ-C compared with IBS-BRQ.
Conclusions: The child-adapted versions of the scales for symptom-specific fear and avoidance were found to be reliable, valid and time-saving for children with FAPDs.

P586

SUB-GROUPING HEALTHY SUBJECTS´ SENSITIVITY TO PAIN AND ITS RELATIONSHIP TO PERSONALITY TRAITS

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Background: From the bio-psychosocial perspective, a major area of interest which still remains unclear in the context of sensitivity to pain, is the role of personality traits in pain responses.
Aim: The present study aimed to examine personality characteristics in low versus high sensitivity to pain healthy individuals.
Methods: Low and high sensitivity to pain (LSP n= 73 and HSP n=80, respectively) healthy individuals were identified according to their tolerability to cold stimulation (CPT, 1˚C). Seven dimensions of personality traits were evaluated: neuroticism, extraversion, openness, agreeableness and conscientiousness (Big Five Personality Questionnaire, NEO-FFI), catastrophizing (PCS) and optimism (LOT-R).
Results: In comparison to LSP, the HSP had significantly higher scores of extraversion (42.6±5.4 vs. 39.7±6.3, respectively; p=0.003) and catastrophizing (30.1±11.0 vs. 22.9±10.3, respectively; p< 0.001). In addition, catastrophizing significantly mediated the relationship between neuroticism and pain sensitivity (indirect effect= -1.07, 95% CI= -1.7, -0.4).
Conclusions: These findings add one more layer of evidence regarding the relationships between personality characteristics and pain sensitivity. Specifically, the results are in line with some basic personality characteristics of high-score of extraversion, neuroticism and catastrophized individuals, who tend to be fearful, attention seeking, have a tendency to experience unpleasant emotions easily (e.g., pain) and perceived threatening together with eliciting catastrophizing thoughts. Such responses and behaviors are consistent with the high level of sensitivity to pain displayed by these individuals.

P587

ASSESSING PAIN-RELATED SELF-EFFICACY AFTER SURGERY AS A PATIENT-RELATED OUTCOME MEASURE - A SYSTEMATIC LITERATURE REVIEW

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Background and aims: According to a consensus expert group, self-efficacy is an important patient reported outcome measure (PROM) to evaluate acute postoperative pain management by default. Aim was to systematically search for an appropriate PROM to assess self-efficacy in the acute situation after surgery among the currently existing options.
Methods: A systematic literature review was performed for the domain “self-efficacy” in validation, scale developmental or similar studies via MEDLINE, PsychInfo and Embase (search terms: self efficacy, self management, resilience, locus of control; languages: english/german; species: humans; age: adults). Two independent searchers screened title and abstracts, reviewed full texts and extracted information from the studies.
Results: The systematic search identified 2010 potentially relevant studies. Finally, 921 studies were included after title abstract screening. Among these, 239 trials focused on general or disease specific self-efficacy and were included. There were more than 70 different specific settings or conditions (e.g. mental illness, exercise, cancer etc.). 21 categories were relevant. However, no specific scale for acute postoperative pain or similar conditions was identified.

Conclusions: There are various possibilities to assess self-efficacy in general or within specific settings/conditions. Recommended scales base on the general model of Bandura (definition of general self-efficacy). No PROM was identified to assess pain-related self-efficacy suitable for the acute situation after surgery. General self-efficacy does not seem to be sensitive enough to show effects of postoperative pain treatment as reported by previous publications.
Disclaimer: This work has received support from the EU/EFPIA/Innovative Medicines Initiative [2] Joint Undertaking (IMI-PAIN-CARE) grant n° 777500

P588

PHYSIOLOGICAL STRESS RESPONSES TO FEAR LEARNING IN YOUTH WITH CHRONIC PAIN: SALIVARY CORTISOL ASSESSMENT

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Background and aims: Stress and pain interact, and both are closely tied to fear learning: cortisol facilitates fear learning, while aberrant fear learning is hypothesized to be a contributing factor to the development and maintenance of chronic pain. Stress responses during fear learning have, however, not been investigated before, especially not in youth with chronic pain. We therefore aimed to assess stress responses over the course of a fear conditioning paradigm in youth with chronic pain compared to pain-free peers.
Methods: Ninety-seven adolescents were enrolled in this study, assessing salivary cortisol at several time points around fear acquisition and extinction in an MRI environment (Figure1). Data of 89 adolescents could be analyzed (58 patients with chronic pain, 31 controls, mean age 16.1y±2.9y, 76 females). Salivary cortisol across time points will be compared across groups.

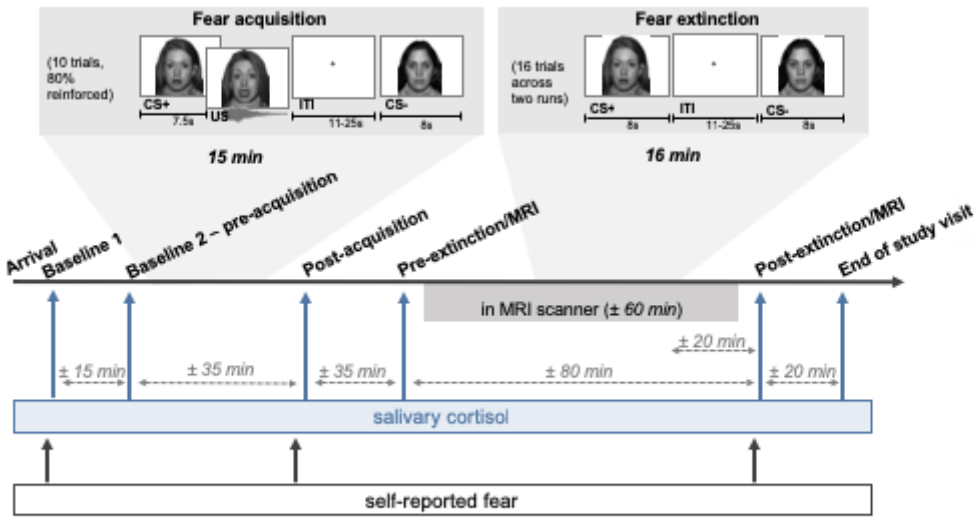

Figure 1: Overview of study procedure

[Figure1]

Results: Preliminary data inspection indicates changes in cortisol over time, especially from pre- to post-extinction (Figure2). Fear acquisition did not appear to elicit an increase in cortisol. Comparing the Area Under the Curve (AUCg) across groups showed a greater cortisol response in patients compared to controls (patients: mean 319±36; controls: mean 438±60).

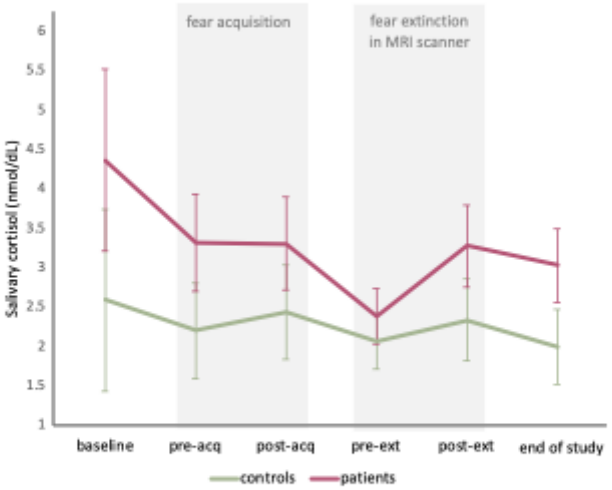

Figure 2: Salivary cortisol across the time points, per group.

[Figure2]

Conclusions: We show first preliminary data of physiological stress responses to fear learning. Adolescents with chronic pain appear to show greater stress responses, but further analyses are needed to corroborate and further explore these findings. Findings will impact treatment approaches targeting fear extinction.

P589

THE EFFECT OF PSYCHOLOGICAL STRESS ON PAIN SENSITIVITY IN HEALTHY PEOPLE

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Background and aims: Pain perception can be influenced by several factors, including stress. Stress can have various reactions on pain perception and this depends on various internal and external factors. The aim of the current study was to determine the effect of acute stress on pain threshold, endogenous pain inhibition and temporal summation of pain in healthy people and to determine which factors are responsible for this stress-effect on pain sensitivity.
Methods: 101 Healthy pain-free participants underwent a modified Trier Social Stress Test. Pre and post-stress pressure pain thresholds (PPT), temporal summation (TS) and conditioned pain modulation (CPM) efficacy were

determined in the mm. trapezius and quadriceps. Furthermore, 7 questionnaires were completed: a general questionnaire, LDI, LTE, IPAQ-sf, PCS, PVAQ and Fear of Pain Questionnaire.
Results: We found a significant stress-effect on pain sensitivity, with an increase of PPT and a decrease in CPM efficacy measured in the mm. trapezius and quadriceps ($p < .001$) and an increase in the degree of TS at the m. trapezius ($p = .026$). Factors associated with the stress-effect were age, gender, LTE, previous surgery, sports during last week, and IPAQ-sf (β between -.263 and .403).
Conclusions: The clinical interpretation of PPT is difficult due to a lack of clinically relevant differences. The increase in TS post-stress at m. trapezius was not clinically relevant. However, the decrease in CPM efficacy post-stress, seems clinically relevant. But still, there was a positive CPM effect post-stress. Type of pain assessment and location determine which factors influence the stress-effects.

P590

NEURAL NETWORK CHANGES IN FIBROMYALGIA - INSULA INVESTIGATED

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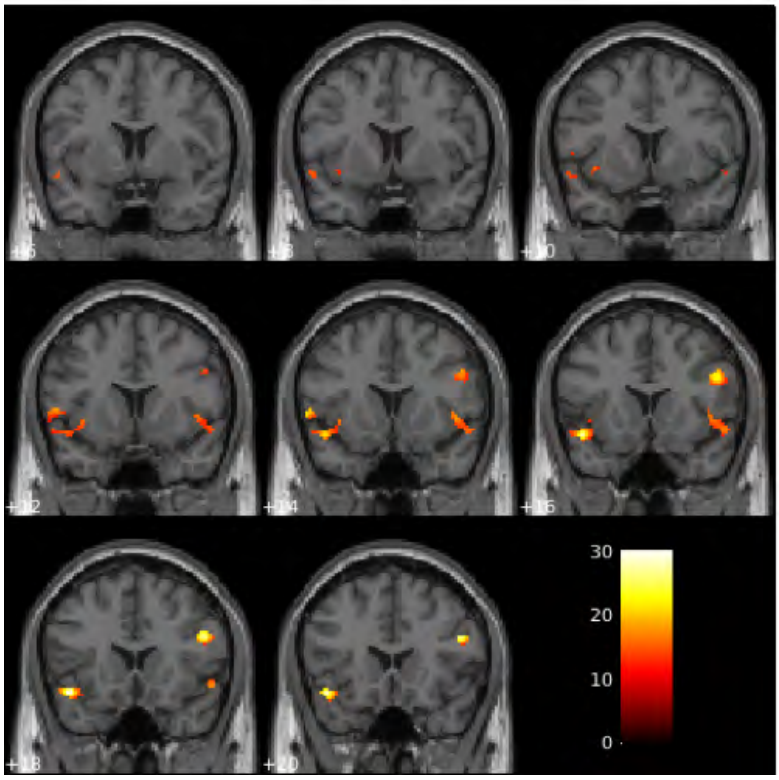
Background: Fibromyalgia (FM) patients have chronic widespread pain without apparent cause. FM is associated with changes in functional neural connectivity; with insula, default mode network (DMN), and executive control network (ECN). However, replications of previous findings have been sparse, therefore the knowledge on functional connectivity changes specific for FM, as well as influences of pain and psychological factors is inconclusive.[1]
Our study investigates whether functional connectivity changes of DMN, ECN, and insula occur and whether these are modulated by psychological or pain measures.
Methods: 31 FM and 28 healthy controls, age-matched, all female. 10 min. resting-state fMRI. Extraction of intrinsically active neural networks (DMN and ECN) through independent component analysis. Investigation of connectivity of pre-defined DMN-seeds with the brain. Investigation of psychological and pain measures with HAD-depression scale and pain disability index (PDI). Significance $p < 0.05$ corrected for multiple measurements.
Results: FM show increased connectivity of ECN with bilateral insula compared to healthy controls (Figure). FM also score higher on HAD-depression and PDI. Connectivity changes between DMN-seed and insula or prefrontal cortex were decreased with higher PDI. Higher HAD-depression in FM was associated with increased connectivity between DMN-seed and sensorimotor cortex.
Discussion: Increased connectivity of insula and DMN specific for FM was not replicated. Rather, changed connectivity of DMN was associated with depression and specific DMN-insula connectivity related to pain disability. Insular connectivity with ECN (normally anti-correlated with DMN) was stronger in FM.



[Figure: Executive Control Network more connected to bilateral insula for FM compared to controls]

1) Coppieters 2016 https://doi.org/10.1016/j.jpain.2016.04.005

P591

UNIQUE ELECTRICAL STIMULATION FOR ACUTE PAIN STUDIES COMPATIBLE WITH MAGNETOENCEPHALOGRAPHY

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Background and aims: Experimental acute pain stimulation is challenging in magnetoencephalographic (MEG) brain imaging because of the recording equipment is highly sensitive to electrical noise. We tested an intracutaneous electrical stimulation method to elicit acute pain-related fields. Our aim was to identify pain-related magnetic fields in somatosensory brain areas and localize their generators.
Methods: We recorded ten participants with 306-channel MEG (Elekta Neuromag® Triux™). Participants showed no depressive symptoms, had no contraindications to MEG recording and signed informed consent. We used a rare intracutaneous electrical stimulation for nociceptive stimulation adapted from Kochs et al., (1996). Participant´s right hand third finger was stimulated. Superficial layers of the glabrous skin were removed with a small drill. A copper tip electrode was placed to the skin hole. A return electrode was placed in the metacarpo-phalangeal joint of the third finger. Participants described each stimulus as a stinging pain. Stimulus intensity was set individually so that it was subjectively rated as moderately painful, 6-7 on a visual-analog scale. Data was analyzed in Brainstorm following commonly accepted steps.

Results: Grand averages of evoked fields revealed three clearly identifiable waveform components: ~41ms, ~103ms and ~213ms. The generators were localized in contralateral primary somatosensory cortex and in secondary somatosensory cortices in both hemispheres.
Conclusions: Our intracutaneous stimulation produced stinging pain sensation. Relatively slow current arrival in primary somatosensory cortex supports A-delta fiber activation. Later activations of secondary somatosensory areas are compatible with reports on brain processing of pain stimuli.
Kochs, E. et al. Anesthesiology, 85, 304-14, 1996.

P592

MORPHOLOGICAL BRAIN ALTERATIONS IN SUBGROUPS OF FIBROMYALGIA PATIENTS

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Background and aims: Despite of decades of research there is still no clear understanding of the pathophysiology of fibromyalgia syndrome (FMS). While there has been evidence that some FMS patients have deficits in peripheral small nerve fiber function and morphology, other studies show alterations in pain processing of the central nervous system. The aim of our study is to investigate the central and peripheral nervous system in the same patients in order to identify possible interactions.
Methods: This prospective case-control study included female patients, diagnosed with FMS according to the 2010 ACR guidelines (n=40) and a healthy, age and sex matched control group (HC, n=40). MR imaging of the brain included functional and structural sequences. Skin biopsies were taken to evaluate the intraepidermal small nerve fiber density (IENFD).
Results: We found that FMS patients had smaller gray matter volumes than HC in the orbitofrontal cortex and a volume increase in the occipital lobe ($p < 0.001$). The subgroup analysis showed that patients with low IENFD compared to patients with normal IENFD had lower gray matter volumes in the dorsolateral prefrontal cortex (DLPFC) and the pars triangularis and an increase of grey matter volume in the posterior cingulate cortex (PCC) ($p < 0.001$).
Conclusions: Our data suggest that the fibromyalgia symptoms are related to pathophysiology in both the peripheral and central nervous system. Furthermore, our results suggest that patients with the more pronounced phenotype in the periphery also show more pathological patterns in the brain structure.

MEASUREMENT OF PSYCHOSOCIAL ASPECTS OF PAIN

P593

THE NORWEGIAN INJUSTICE EXPERIENCE QUESTIONNAIRE: TRANSLATION AND VALIDATION THROUGH INTERVIEWS AND REGISTRY DATA

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Background and aims: Experience of injustice may negatively affect trajectories in patients with chronic pain by prolonging rehabilitation and increasing pain severity. Injustice also predicts pain-related disability and emotional

distress. Patients with chronic pain may experience injustice due to undeserved and unnecessary suffering, and irreparable losses in terms of impaired physical and psychosocial function. The Injustice Experience Questionnaire (IEQ) measures the degree of perceived injustice in patients with pain after injury. However, the understanding of injustice may differ among patient groups and cultures. Therefore, we aimed to translate the IEQ to Norwegian, and test its' reliability and validity in patients with chronic pain conditions.
Methods: A forward-back-translation, cultural adaptation and linguistic validation procedure was used to translate the questionnaire from English to Norwegian. Individual and group interviews were used to explore the patients' perception of the questionnaire. Registry data from the Oslo Pain Registry was used to investigate scale reliability (internal consistency), criterion and construct validity of the IEQ.
Results: Sixteen patients participated in the interviews. In general, the items were easy to understand and relevant to the feeling of injustice. Data from 2779 patients showed that IEQ had high correlations with similar constructs such as pain catastrophizing ($r = 0.71$) and psychological distress ($r = 0.61$)($p < 0.001$). Internal consistency of items were high (Chronbach's Alpa = 0.922). A principal component analysis suggested a one-factor structure.
Conclusions: The Norwegian version of the questionnaire is a reliable and valid tool to measure experienced injustice in patients with chronic pain conditions.

P594

THE PREVALENCE OF ANXIETY, DEPRESSION, CATASTROPHIZING AND KINESIOPHOBIA IN PATIENTS WITH CHRONIC PAIN REFERRED TO A TERTIARY HOSPITAL

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Background and aims: Anxiety, depression, catastrophizing and kinesiophobia are associated with reduced treatment efficacy in patients with chronic pain. It is therefore important to screen patients with chronic pain on the presence of these influencing factors before initiating pain treatment using validated questionnaires (the Hospital Anxiety and Depression Scale (HADS), the Pain Catastrophizing Scale (PCS), and the Tampa Scale of Kinesiophobia (TSK)). The aim of this study was to present normative data on anxiety, depression, catastrophizing and kinesiophobia of a chronic pain population in a tertiary hospital.
Methods: Between May and November 2018, the scores of 370 patients with chronic pain referred to the University Medical Centre Utrecht were collected for analysis.
Results: The study population with a mean age of 56 years (sd 16) included 155 men (42%). Overall, 41% scored above the cutoff value for anxiety, 49% for depression, 33% for catastrophizing, and 50% for kinesiophobia; 50% of patients scored above the cutoff value for two or more of these dimensions.
Conclusions: The prevalences of anxiety, depression, catastrophizing and kinesiophobia in chronic patients in a tertiary centre are high when using the available cutoff values. We argue that either these patients have not received the appropriate treatment before tertiary referral or the cutoff values of the questionnaires need to be reassessed for this specific population.

P595

TRANSLATION, CULTURAL ADAPTATION AND VALIDATION OF CURRENT OPIOID MISUSE MEASURE (COMM) FOR EUROPEAN PORTUGUESE

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Background and aims: The Current Opioid Misuse Measure (COMM) is a questionnaire that helps clinics to monitor chronic pain patients over the course of opiod therapy and identify aberrant drug-related behaviors. The aim

of this study was to translate, adapt to Portuguese reality and validate the Portuguese version of COMM.
Methods: In order to develop a valid Portuguese version of COMM, the translation and cultural adaptation process followed guidelines and a model of principles for good practice. We enrolled 98 patients who aged 18 or older, had chronic pain and were currently on opioid therapy. Regarding statistical methods: descriptive statistics, Cronbach's alpha coefficient, inter-item and item-total correlations (to access internal consistency), intra-class correlation coefficients (to access test-retest reliability) and principal components analysis (to access validity) were used.
Results: A global Cronbach's alpha of 0.778 was found, traducing good internal consistency. Item-total correlation showed that itens 9, 12, 15 and 17 don't correlate well with the total of the scale, with item-total correlations less than 0.2. Cronbach's alpha would increase if questions number 12 and 17 were removed but other criteria needs to be taken in account. Concerning test-retest reliability, one month test-retest was excellent, with an intra-class correlation coefficient of 0.90 (95% CI= 0.76-0.96). Six principal components were extracted and they explained 66.3% of the variance.
Conclusion: The Portuguese version of COMM was successfully translated and adapted to the Portuguese reality and demonstrated a good internal consistency, validity and test-retest reliability.

STRUCTURAL AND FUNCTIONAL IMAGING OF PAIN

P596

CONTACT COOL EVOKED BRAIN POTENTIALS CORRELATE WITH LASER BUT NOT WITH VIBROTACTILE EVOKED BRAIN POTENTIALS IN PATIENTS WITH SUSPECTED DYSFUNCTION OF THE THERMONOCICEPTIVE PATHWAYS

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Background and aims: Laser-evoked potentials (LEPs) are considered the best neurophysiological method to assess the function of thermonociceptive pathways. A promising alternative could be the recording of contact cool-evoked potentials (CEPs). Our aim was to compare LEPs and CEPs in patients with a suspected dysfunction of the thermonociceptive pathways.
Methods: 21 patients (10 males; 49±9 years old) suspected of thermonociceptive pathways dysfunction, based on clinical examination, were tested. LEPs were obtained using a temperature-controlled CO_2 laser (>1000°C/s, 30 stimuli, 60°C, 100ms, 28mm^2). CEPs were obtained using a high-speed cooling device (300°C/s, 30 stimuli, 20°C, 100ms, 120mm^2). Stimuli were delivered to the left and right foot dorsa. Vibrotactile somatosensory-evoked potentials (SEPs) were also recorded using a vibrotactile transducer (30 stimuli, 300Hz, 100ms). LEPs, CEPs and SEPs were recorded in separate blocks (randomized order across patients).
Results: There was a significant positive correlation between the N2-P2 peak-to-peak amplitudes of LEPs and CEPs (r=0.60, p< .0001) but no significant correlation with the amplitudes of SEPs. The N2 and P2 peaks latencies did not correlate significantly across modalities.
Conclusions: The positive correlation of CEP and LEP but not SEP amplitudes recorded in patients with suspected thermonociceptive dysfunction may be explained by the fact that LEPs and CEPs are both dependent on the state of peripheral Aδ-fibers and their spinothalamic projections, while SEPs depend mainly on the state of large-diameter Aβ-fibers and their lemniscal projections. These findings suggest that CEPs might become an alternative to LEPs for assessing the functional status of the thermonociceptive pathways.

P597

PROSTATE SPECIFIC MEMBRANE ANTIGEN (PSMA), A TARGET FOR PAIN VISUALIZATION AND A POSSIBLE REGULATOR OF NOCICEPTORS

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Background and aims: The enzyme prostate-specific membrane antigen (PSMA) is increasingly expressed in neuropathic pain conditions at the peripheral nerves. Whether the educts or products of the enzyme such as glutamate alter pain signaling pathways and whether PSMA can be used as a target structure to visualize peripheral neuropathic pain using PET tracers is unknown.
Methods: In models of inflammatory and neuropathic pain, the accumulation of a PSMA tracer at the pain-causing site was investigated using small animal PET. Furthermore, the effects of glutamate as the main product of PSMA on pain signaling pathways was investigated in cultures of primary sensory neurons. Neurons were either used in live cell calcium imaging or stimulated with glutamate, fixed and examined by immunocytochemistry. Changes in phosphorylation of RII-PKA and Erk1/2 was quantified by high content screening microscopy and evaluated on single cell basis.
Results: The application of a PSMA PET tracer shows clearly amplified signals at the pain-causing site in the inflammatory and neuropathic pain models. Under basal conditions in sensory neurons of naïve animals, even high concentrations of glutamate do not lead to activation of PKA or Erk1/2 or influx of calcium. Whether other educts or products of PSMA activate the sensitizing pathways of the sensory neurons is under investigation.
Conclusions: PSMA upregulation along nociceptive neurons in long-lasting pain models suggests that it can be a suitable biomarker for pain-causing conditions. PSMA function and its relevance to molecular mechanisms of the pain pathway needs further investigation.

COMPLEMENTARY MEDICINE

P598

LAUGHING AWAY THE PAIN: A NARRATIVE REVIEW OF HUMOR, SENSE OF HUMOR, AND PAIN

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Background and Objective. The link between humor and sense of humor with pain has been a topic of research for decades. The purpose of the present article is to review the different studies that have been conducted to date on the association between humor and sense of humor with pain. Databases and Data Treatment. The literature search was conducted using the PubMed, Science Direct, and ProQuest databases.

Forty-two studies were reviewed and the results are summarized and structured into three sections: experimental pain, chronic pain, and pain in children. Results. For experimental pain, the findings support the idea that humorous distractions, such as watching a comedy clip, increase pain tolerance, although most of the studies indicate that other non-humorous distractions produce similar effects. Regarding chronic pain, humor has been studied as a way of coping with pain and the emotional distress produced by chronic pain conditions. The results of correlational studies show significant associations between the use of humor and main variables such as anxiety and catastrophizing. Finally, concerning pain in children, similar findings to those described for the previous sections have been reported, with a notable presence of studies on clinic clown interventions, which promote emotional wellbeing among children and their parents, although their effectiveness in pain reduction is controversial. Conclusions. The study of the link between humor and pain is still on an early stage, and overcoming the limitations of previous studies is required to strengthen the promising results that have been observed up to date.

INTERVENTIONAL BLOCKADE THERAPIES

P599

ULTRASOUND-GUIDED PULSED RADIOFREQUENCY OF SAPHENOUS NERVE: PRELIMINARY DATA OF EFFICACY AND SAFETY ON KNEE OSTEOARTHRITIS CHRONIC PAIN

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BACKGROUNDS AND Aims: Radiofrequency (RF) is a known treatment for knee osteoarthritis (OA) pain . Usually RF is applied to genicular nerves (GN) either under ultrasound e or fluoroscopic guidance. However, pain perception in knee OA patients is often localized to the medial articular surface, ascribable to the innervation territory of the saphenous nerve. Then, this nerve is a potential target for pulsed RF. The aim of this study was to evaluate safety and long-term improvement in knee pain and function after PRF of saphenous nerve.
Methods: This was a double blind controlled randomized study**.** Seventeen outpatients with knee OA mild to severe pain underwent to diagnostic block of saphenous nerve. Responders were then randomized in two treatment arms: PRF and SHAM control. Ultrasounds and sensitive stimulation (50 Hz, 0.3 V) were used to detect the nerve in the adductor canal. After 2 ml of ropivacaine 0,2% injection, procedure or sham were performed. Pain relief from baseline (T0) was evaluated after 2 weeks (T1), 1 month (T2) and 3 months (T3) by numerical rating scale (NRS). Oxford Knee Scale (OKS) was used for functional evaluation. The quality of life was assessed with SF-36 questionnaire.
Results: Patient demographics were similar in all comparisons. Mean NRS scores OKS score reduction were greater in saphenous arm ($P< 0.01$; $P< 0.01$ respectively). SF-36 was greater in saphenous arm ($P< 0.01$). No complications were observed.
Conclusions: Preliminary data show how the PRF of saphenous nerve in patients with OA is a safe and effective technique.

P600

ERECTOR SPINAE PLANE BLOCK IN THE MANAGEMENT OF POSTHERPETIC NEURALGIA

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Background: Post herpetic neuralgia (PHN) is a debilitating condition that is often interfering daily life of patients. Recently, several studies have reported evidence for the efficacy of erector spinae plane block (ESPB) in the management of thoracic neuropathic or postoperative pain. The resolution of neuropathic pain after ESPB suggests that both dorsal and ventral rami of thoracic spinal nerves affected by local anesthetic and it is thought to be the main mechanism of analgesia. We present a case of pain reduction after ESPB in thoracic PHN which have been showed poor response to other treatments. A 43-year-old woman visited with a chronic pain of right lower thoracic region started four years ago after herpes zoster. She suffered from continuous burning and intermittent stabbing pain with a numerical rating score (NRS; 0=no pain, 10=worst pain imaginable) from 3 to 7 out of 10, mainly at T9 and including several dermatomes. She had received various therapies several times at other hospital. However, there was no significant improvement.
Methods: We performed an ultrasound-guided thoracic ESPB at the level of T9 on the right side. We injected the 0.375% ropivacaine 25cc in the fascial plane.
Results: During a follow-up of three months, she reported a significant resolution of symptoms with a NRS from 0 to 2 out of 10.
Conclusions: ESPB is an effective treatment for PHN which have been showed poor response to other treatments. Furthermore, it's a simple and safe method with a low complication rate.

P601

NEUROLOGICAL INJURY AFTER TRANSFORAMINAL EPIDURAL STEROID INJECTION IN A PATIENT WITH PROGRESSIVE NEUROLOGICAL SIGNS: A CASE REPORT

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Background: transforaminal epidural steroid injections (TFESI) are commonly used in the conservative treatment of radicular pain. Concern has risen about potential neurological complications, however often it is unclear if a procedure was performed during an ongoing progressive deterioration, or the procedure as such is the causal event.
Methods: a retrospective case report
Result: An 83 year old patient presented with subacute L5-S1 radiculopathy and progressive neurogenic claudication due to lumbar spinal stenosis (LSS). A lumbar Magnetic Resonance Imaging (MRI) showed at L3-L4 moderate to severe central spinal canal stenosis, at L4-L5 anterolisthesis and bilateral foraminal narrowing at L5-S1. We performed a right TFESI at L5 using 40 mg of lidocaine and 40 mg of methylprednisolone acetate. The day after the procedure, the patient developed a cauda equina syndrome and a severe paresis of the right foot. An urgent CT showed additionally at L4-L5 a descending gas containing disc extrusion paracentrally on the right side in contact with L5 nerve root.
An urgent laminectomy at level L2 to L5 was performed. No signs of bleeding or abscess were found peroperatively. Three months later the pain was significantly reduced and the patient could walk again with a leg orthosis and a rollator.
Conclusions: Although the pathophysiology is unclear, the progressive neurogenic claudication before the procedure and the presence of a new disc extrusion afterwards suggests a progressive neurological deterioration leading to a cauda equina syndrome. To what extent the TFESI interfered with this process is unclear.

P602

COMPARISON OF 4 MG DEXAMETHASONE VERSUS 8 MG DEXAMETHASONE AS AN ADJUVANT TO LEVOBUPIVACAINE IN FASCIA ILIACA BLOCK- A PROSPECTIVE STUDY

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Introduction: To compare the effects of adding two different doses of dexamethasone on the duration and quality of the fascia iliaca block in patients undergoing proximal femoral fracture surgery.
Methodology: A total of 60 patients (age 18-70 years) undergoing proximal femoral nailing surgery in spinal anesthesia were given fascia iliaca block after random assignment to one of the two groups: Group H- received injection levobupivacaine (0.5%) 28 ml plus 2 ml (8 mg) dexamethasone & Group L received injection levobupivacaine (0.5%) 28 ml plus dexamethasone 1ml (4 mg) plus 1 ml normal saline. Assessment of duration of analgesia and total tramadol requirement over 48 hours were noted after a successful block.
Results: The duration of analgesia was found to be significantly longer in Group H (17.02 ± 0.45 hr) than the Group L patients (14.29 ± 0.45 hr) with a p-value of 0.000. Postoperative analgesic requirement (amount of tramadol in mg) was significantly higher in Group L (Q2: 200.0; IQR: 100.0, 200.0) as compared to Group H (Q2: 100.0; IQR: 100.0, 200.0) with a p-value of 0.034. No patient showed any sign of neurotoxicity.
Conclusion: Dexamethasone in a dose of 8mg is superior to 4mg when used as an adjuvant with levobupivacaine in FIB. Though both prolonged analgesia and effective reduction of oral/ intravenous analgesics, 8mg dexamethasone can be recommended as a more efficacious adjuvant to local anesthetics in FIB.

P603

COMPARISON OF THE INCIDENCE OF INTRAVASCULAR INJECTION DURING CAUDAL EPIDURAL INJECTIONS BETWEEN WHITACRE AND CHIBA TYPE NEEDLES

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Background: Intravascular injection is one of complications of caudal block, which can increase failure rate of procedure and cause vascular embolization. Whitacre type needle is reported to be effective to reduce intravascular injection during transforaminal epidural injection. In this study we compared the Whitacre needle and Chiba needle with a respect to the incidence of intravascular injection during caudal block.
Methods: A total of 164 caudal blocks were performed in patients with disc herniation or spinal stenosis on the lumbosacral spine. Patients were randomly allocated to group W (n=82) and group C (n=82). Patients in group W received caudal block with Whitacre needle and those in group C received the intervention with Chiba needle. Intravascular injection was assessed with blood aspiration and angiography during real-time fluoroscopy.
Results: There were no differences in terms of demographic data in two groups. There was no significant difference in the incidence of intravascular injection between group W (19.5%) and C (11%). In addition, there were no complications associated with caudal block in two groups.
Conclusions: In this study, Whitacre needle was not effective to decrease the incidence of intravascular injection, compared to Chiba needle during caudal block.

MULTIDISCIPLINARY PROGRAMS

P604

A COST-UTILITY ANALYSIS OF MULTIMODAL PAIN REHABILITATION IN PRIMARY HEALTHCARE

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Background and aims: Chronic pain is a major public health challenge with heavy economic burden on society. It is one of the most common reasons for long-term sickness absence. Multimodal rehabilitation programmes (MMRP) have been shown to be both cost-effective and an effective method for managing chronic pain in specialist care. Despite this, MMRPs are rarely used in primary healthcare (PHC). Limited time and resources for everyday PHC activities alongside the complexity of chronic pain makes the management of chronic pain challenging and the focus is on unimodal treatment. The aim was to evaluate the cost-effectiveness of MMRP in PHC in two county councils in Sweden.
Methods: This is a register-based study based on data from the Swedish Quality Registry for Pain Rehabilitation for primary care (SQRP-PC). 234 patients who had filled in and returned a SQRP-PC questionnaire at baseline and at one-year follow-up between 2012 and 2015, were included. A cost-utility analysis (CUA) from a societal perspective was carried out based on the EuroQol EQ5D with cost per quality-adjusted life year (QALY) as outcome. Sickness absence was also assessed.
Results: The CUA showed a cost per QALY of 21 135€ The results showed significant improvement in HRQoL. Sickness absence decreased by 14%.
Conclusions: When a cost-effectiveness threshold for one gained QALY is set at 22 500€ , MMRP can be considered to be cost-effective. Considerable cost savings may be generated if the effects of MMRP are maintained beyond one-year follow-up.
Keywords: Chronic pain, multimodal rehabilitation, CUA, QALY

P605

EFFECTS OF A BRAZILIAN BACK SCHOOL PROGRAM ON DISABILITY, PAIN, FEAR-AVOIDANCE AND RESILIENCE

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Background and aims: Evaluate the effects of a back school program composed of Education, Physical Therapy and Physical Exercise in modifying disability, pain intensity, fear-avoidace belief and resilience.
Methods: Before and after study performed with 20 patients in a pain clinic in Brazil. Outcomes were disability (Oswestry Scale), pain intensity (Visual Analogue Scale), neuropathic pain (DN4 scale), fear-avoidance (Tampa Scale of Kinesiophobia) and resilience (Connor Davis Scale). The intervention consisted of 3 sessions of Education, 6 sessions of Physiotherapy and 6 sessions of Exercise. Descriptive analysis and normality test of the variables were performed. Fisher´s Exact Test was used for the categorical variables and T-Test for the numerical variables.
Results: The majority of the sample was female (70%) with mean age of 48.65 ± 10.91 years. The periodicity of the pain was continuous in 55% of the patients, and 57% had a herniated disc. The results in the pre and post-test showed, respectively, reduction of disability (39.30 ± 17.02; 31.96 ± 19.47, p = 0.02), reduction of fear of movement (47.90 ± 7.45; 43,25 ± 7,20; p =0,01), reduction of pain intensity (5.85 ± 2.49; 2.80 ± 2.82, p < 0.001), improvement

neuropathic pain symptoms (5.80 ± 2.56; 2.55 ± 2.50; p < 0.001). There was no statistical difference for resilience.
Conclusion: The back school program improved disability, fear-avoidance belief, pain intensity, and neuropathic pain symptoms.
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PAIN THERAPIES WALK 5

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MAINTENANCE OF QUALITY OF LIFE IMPROVEMENT FOR PATIENTS WITH CHRONIC PAIN AND OBESITY AFTER MULTIMODAL PAIN REHABILITATION

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Obesity and chronic pain are serious health concerns and both conditions are related to reduced health-related quality of life (HRQoL). This study aimed to investigate whether pain patients with comorbid obesity were able to maintain the improved HRQoL after multimodal pain rehabilitation program (MMRP).
Methods: Data was obtained from the Swedish Quality Registry for Pain Rehabilitation, between 2016-08 and 2018-08. MMRP participants (N= 872) reported body weight and length, pain aspects and HRQoL (RAND 36-Item Health Survey). Mild obesity (Body Mass Index, BMI 30-34.9 kg/m^2) and severe obesity (BMI ≥35 kg/m^2) were defined according to the classifications from WHO. We used linear mixed regression models with HRQoL as outcome to assess the main effects as well two-way interactions between BMI category and time controlling for sociodemographic factors and pain aspects.
Results: More than one in four patients (224/872) were obese and nearly one third of the obese patients (63/224) were severely obese. Among all the BMI subgroups, significant improvements were shown in both physical and mental summary scores of HRQoL after MMRP (pre- and post-MMRP, P< 0.001). The improvements persisted through the one-year follow-up (post- vs FU-MMRP, P >0.05). Severe obesity group had lowest physical health and showed least improvements after MMRP (Cohen‘s d= 0.422) among all the groups. BMI-time interaction (BMI x time) did not show significant impact on physical or mental health.
Conclusion: Across all the BMI groups, patients achieved improvements in HRQoL after MMRP. The improvements were maintained for all patients, including patients with comorbid severe obesity.

P607

CLINICAL PAIN RELIEF AFTER REAL AND SHAM MOTOR CORTEX REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IS PREDICTED BY DISSOCIABLE RESTING-STATE FUNCTIONAL CONNECTIVITY PATTERNS

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Background and aims: Evidence suggests that motor cortex repetitive transcranial magnetic stimulation (M1-rTMS) relieves fibromyalgia syndrome (FMS) symptoms, although not all patients benefit from this intervention.

Further, individual differences in resting-state functional connectivity (rsFC) in FMS are related to FMS symptoms. We therefore investigated how baseline rsFC relates to improvement in FMS symptoms in patients treated with M1-rTMS.
Methods: Twenty-five female FMS patients underwent two 10-day series (real; sham) of 10Hz right M1-rTMS. Resting-state functional magnetic resonance imaging scans and clinical assessment took place before and after each series. rsFC was investigated in sensory and modulatory pain, and motor-related regions; and resting-state networks implicated in pain: salience, executive-control, sensorimotor, and default-mode networks (SN, ECN, SMN, and DMN). Treatment-specific post[ES1] -minus-pre-differences in FMS symptoms were regressed against baseline rsFC.
Results: Real, but not sham, M1-rTMS resulted in significant relief in pain severity, affect, and functioning. Weaker rsFC of ECN- and DMN-related regions predicted greater improvement in pain severity and functioning following real M1-rTMS, while weaker rsFC of SN- and SMN-related regions were associated with sham M1-rTMS effects on the improvement in the affective symptoms.
Conclusions: 1) The prediction of M1-rTMS treatment success in FMS by rsFC reflects brain neuroplasticity associated with a pro-nociceptive state that contributes to dynamically shift the brain away from this state; 2) Real and placebo M1-rTMS have distinct effects on FMS symptoms, which are reflected in distinct neural pathways that predict different aspects M1-rTMS therapeutic outcomes.
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P608

DESYNCHRONISATION OF ALPHA BAND OSCILLATIONS DURING PARASTHESIA-FREE SPINAL CORD STIMULATION FOR NEUROPATHIC PAIN

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Spinal cord stimulation (SCS) is an effective treatment for neuropathic pain. However, little is known of the therapeutic mechanisms underlying paraesthesia-free burst SCS. We sought to investigate the effect of modulating burst SCS intensity on resting electroencephalography (EEG) oscillations.
Patients using SCS for neuropathic leg pain underwent EEG during four 5-minute blocks of SCS intensity: ‚Therapeutic' (100%), ‚Moderate' (66%), ‚Low' (33%) and ‚Off'. Relative spectral power was calculated for each condition, and differences in prefrontal, central and occipital electrodes were analysed with repeated-measures ANOVAs. Frequency bands of interest were: theta (4-7 Hz), lower alpha (8-10 Hz), upper alpha (10-12 Hz), beta (16-24 Hz) and gamma (42-48 Hz).
Six participants using burst SCS have completed the study to date. Results showed a significant modulation of cortical oscillations in lower and upper alpha bands in prefrontal ($F(3, 15) = 3.32$, $p = .049$) and occipital electrodes ($F(3, 15) = 3.29$, $p = .05$), respectively. Post-hoc t-tests indicated a significant decrease in upper alpha band power at occipital electrodes for therapeutic SCS ($M = -.93$, $SD = .61$), in comparison to off ($M = -.73$, $SD = .50$; $t(5) = 2.66$, $p = .045$).
Preliminary results suggest that burst SCS is associated with a widespread decrease in synchronised neural activity. Reduced alpha power may reflect increased activity of thalamocortical feedback loops, dysrhythmia of which is related to neuropathic pain (Schulman et al., 2005). Further analysis upon completion of data collection will explore the estimate sources of these effects.

P609

PATIENTS´ NEEDS AND EXPERIENCES WHEN ACCESSING PHYSIOTHERAPY BECAUSE THEY ARE IN PAIN - A META-ETHNOGRAPHY TO INFORM PAIN EDUCATION AND TRAINING

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Background and aims: Research demonstrates the need to improve pain education and training for health professionals. Research findings propose that the views and experiences of patients should be used to inform the development of pain education. The aim of this meta-ethnography was to develop new conceptual understandings of patients' needs and experiences of physiotherapy when in pain and to translate these into education and training needs for physiotherapists.
Method: We conducted a qualitative evidence synthesis using Noblit and Hare's 7-stage meta-ethnography method. We searched five databases (MEDLINE, CINAHL complete, ERIC, PSYCHINFO, and AMED) for studies that used qualitative methods to investigate and report patient experience of physiotherapy when experiencing musculoskeletal pain.
Results: We screened 366 citations, retrieved 43 full texts, and included 18 studies in the synthesis. Patients reported experiences from a variety of physiotherapy settings which were predominantly outpatients. Concepts that were clearly identified and described by authors in the studies were extracted and organised into eight conceptual categories; each representing different patients´ needs. Three overall themes emerged for physiotherapy pain education and training;
(1) personal characteristics and professional attributes,
(2) professional hope and guidance,
(3) skilled teacher.
Conclusions: This meta-ethnography provides evidence that patients needs are multi-factorial when accessing physiotherapy for pain management. Thus physiotherapy education needs to facilitate the development of a complex set of skills where physiotherapists learn to strike a balance in personal characteristics and professional attributes, are able to skilfully educate patients and provide feedback, whilst giving professional hope, reassurance and guidance.

P610

DOUBLE DISSOCIATION OF ENDOGENOUS PAIN INHIBITION DUE TO CONDITIONED PAIN MODULATION AND PLACEBO IN HUMANS

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Background and aims: Animals and humans are able to inhibit pain without pain-relieving medications by activating their own endogenous pain inhibition system. Placebo and conditioned pain modulation (CPM) are two prominent paradigms testing endogenous pain inhibition. Although the ability varies tremendously among individuals, several CPM studies have shown that endurance athletes possess a better endogenous pain inhibition system than healthy controls.
Methods: Here we investigated 16 endurance athletes (mean training frequency 9.3 h/week) and 17 healthy non-athletes (mean training frequency 0 h/week) in well-established placebo and CPM paradigms to assess whether the mechanisms of CPM and placebo are the same.
Results: We found a significantly greater CPM effect in athletes than in non-athletes. In contrast, we could only find

a significant placebo effect in non-athletes. Interestingly, there was a negative association between CPM effect and placebo effect in non-athletes, but a positive trend in athletes. Furthermore, we found a strong positive association between CPM effect and exercise-induced hypoalgesia, and negative associations between placebo effect and heart rate variability, as well as between placebo effect and interoceptive awareness.
Conclusions: Together, our results demonstrate a double dissociation of endogenous pain inhibition of CPM and placebo effect between endurance athletes and non-athletes, indicating that both effects do not rely on the same mechanism. Our results are compatible with the suggestion that CPM hypoalgesia involves other key structures in the brainstem and therewith other top-down pain inhibition pathways than placebo.

P611

THE EFFECT OF VIRTUAL REALITY ON EVOKED POTENTIALS AND PAIN SCORES

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Background: Virtual reality (VR) has shown to reduce pain scores in previous studies, however, outcome parameters are mostly of subjective nature and susceptible to bias. The purpose of this study was to investigate the effect of VR on cortical processing of pain-related evoked potentials (EPs) and pain scores. Additionally, we aimed to identify personal characteristics affecting a potential VR effect.
Methods: The analgesic effect of passive and active VR was investigated compared to a control condition using a randomized cross-over study design in 30 healthy volunteers. Subjects received noxious electrical stimuli at random intervals using a concentric electrode applied on the forearm during all conditions. EPs recorded at Cz were extracted time locked to the stimuli.
Results: Active VR significantly decreased amplitudes of N1 and P3, and significantly lowered pain scores compared to passive VR or no VR. Passive VR had no significant effect on EPs and pain scores. Age was significantly correlated to pain scores in both passive and active VR conditions, with older subjects demonstrating larger VR effects. Significant age-related effects were also found in N1 and P3 amplitudes of active minus passive VR, suggesting that the interactive component of VR is less important in elderly. Other characteristics had no significant impact on VR effects.
Conclusions: Active VR decreases both subjective pain experience and cortical pain processing. Passive and active VR seem to be more effective in reducing subjective pain relief in older subjects, while the interactive component seems less necessary according to pain related EPs.

NEUROMODULATIVE THERAPIES

P612

EFFECTIVENESS AND SAFETY OF SPINAL CORD STIMULATION IN PATIENTS WITH SEVERE RAYNAUD'S SYNDROME DURING PREGNANCY - CASE REPORTS

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Background and aims: Spinal cord stimulation (SCS) has been successfully employed to treat severe. Raynaud's Syndrome (RS) unresponsive to conventional therapies. It has shown a positive safety profile, with few associated

complications. Primary RS is more prevalent in women, but few studies about its safety during pregnancy have been conducted.
This case report describes the pain outcomes and safety profile of SCS in two patients who subsequently became pregnant, maintaining treatment via SCS during that period.
Methods: Two female patients presented with severe cases of RS, complaining of bilateral hand pain, rating 9 and 7 on the Numeric Rating Scale (NRS), respectively, with mild response to conventional therapy. Peripheral ischemic lesions and cyanosis of the fingertips were present.
They underwent SCS, with gradual withdrawal of chronic pain medication, pain improvement (NRS of 1 and 0, respectively) and improved quality of life, assessed by the Nottingham Health Profile questionnaire. Both patients maintained SCS during pregnancy and delivery, with serial evaluation of its effectiveness and complications.
Results: No complications related to the SCS were detected in any of the cases. Pain remained controlled during this period and no additional pharmacological therapy was required. The SCS was left functioning during delivery.
Conclusion: SCS implantation is a valuable tool to approach severe RS. In addition to improving patient's quality of life and pain intensity, it appears to be a safe treatment during pregnancy and delivery. Although no complications occurred in the two cases described, more studies must be conducted regarding SCS during this period.

P613

CAN PULSED RADIOFREQUENCY OF THE OCCIPITAL NERVES CAUSE SEDATION? A NEW PERSPECTIVE OF A CLASSIC TECHINQUE

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Background and aims: Pulsed radiofrequency (PRF) of the occipital nerves (greater & lesser GON & LON), is a minimally invasive technique for chronic headache management, due to its neuromodulative and analgesic properties. Due to a clinical observation of sedation during the procedure, the aim of this study was to investigate whether PRF of the occipital nerves can also cause sedation, using an objective measurement device.
Methods: Patients sufferring from chronic headache, not responding to systemic pharmacotherapy, were scheduled for PRF following a standardized protocol (needle 22G, 54 mm, with a 4 mm active tip, PRF of 40-60 V, 2Hz, impedance 150-400 Ω, plateau temperature 42°C, time: 6 min each). The Bispectral Index anaesthesia device was used to measure sedation (0=deep sedation-100=no sedation) and recorded every minute throughout the procedure.
Results: 22 patients were studied. BIS values were lowered in all but 3 patients during GON stimulation, and in all patients during LON stimulation. Values of decline compared to baseline ranged between 0-23 (median 8.5) for GON, and 1-27 (median 14) for LON, with LON decline being significantly lower ($p < 0.05$).
Conclusions: Pulsed radiofrequency of the occipital nerves and especially of the LON led to mild sedation in all patients. Further studies are required in order to investigate this effect and clarify the exact mode of action of pulsed radiofrequency.

P614

CLINICAL APPLICATION OF AN SCS DEVICE CAPABLE OF PATIENT-SELECTIVE USE OF MULTIPLE AVAILABLE NEUROSTIMULATIVE TREATMENT OPTIONS FOR CHRONIC PAIN: REAL-WORLD OUTCOMES FROM EUROPE

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Background and aims: Despite notable advances, there are no clear-cut, objective tools to definitively identify which of the several available Spinal Cord Stimulation (SCS)-based approaches are likely to induce robust pain relief within any given patient. Given this and the inherent subjective manifestation of pain, therapeutic devices that are equipped to provide multiple treatment options, thereby enabling patient-selective use of different modalities of neurostimulation, are expected to become increasingly essential when employing SCS for chronic pain. Here we describe our own real-world clinical experience using such an SCS system within a diverse cohort of patients with chronic neuropathic pain.
Methods: This is an observational case-series conducted at sites in Europe as part of an ongoing retrospective chart review evaluation of SCS outcomes for chronic pain (Clinicaltrials.gov identifier:NCT01550575). Patients were implanted with an SCS system (Precision Spectra/Montage, Boston Scientific) capable of multiple waveforms (standard tonic stimulation, paresthesia-based stimulation, sub-perception stimulation with high frequency or burst waveforms). Assessments collected include (but not limited to) baseline characteristics (demographics, medical history, pain diagnosis), procedural information (lead configuration, programming parameters), and pre- and post-implant pain and patient treatment preference.
Results: To date, data analysis is currently ongoing. Results from the initial cohort of included patients will be presented.
Conclusions: SCS devices that provide greater control and customization of therapy offer potential for better management of chronic pain over time including possible mitigation of neural tolerance, reduced post-implantation follow-up evaluation, and opportunity to use different neurostimulative options without need to replace the implantable pulse generator (IPG).

P615

OUTCOMES FOLLOWING UTILIZATION OF A DEVICE ADAPTOR IN PREVIOUSLY-IMPLANTED PATIENTS USING SCS FOR CHRONIC PAIN

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Background and aims: Patients using Spinal Cord Stimulation (SCS) systems enduring problems with device longevity and/or loss of efficacy may achieve better outcomes utilizing newer technologies that offer an increased variety of waveforms and programming options to address their chronic pain. In this retrospective study, we examined outcomes of previously-implanted patients who used a commercially-available adaptor enabling connection to an SCS system that offers multiple neurostimulation based treatment approaches to regain and maintain efficacious therapy.
Materials and methods: This is a real-world, retrospective study of patients who were previously implanted with an SCS system (commercially-available SCS device, Abbott) who then went on to utilize an adaptor (Precision S8, Boston Scientific) to connect to a new SCS system capable of multiple modality stimulation and/or combination therapy. Pain relief and other associated outcomes with both previously-implanted SCS systems and newly connected commercially-available systems (Boston Scientific) are being collected.
Results: To date, 7 subjects were assessed at baseline and at post-implantation follow-up visits after use of a previously-implanted system and a newly-implanted system (current system) as facilitated by utilization of an SCS device adaptor. An NRS mean score improvement of 4.7±1.8 points was reported by patients using their current system versus an improvement of 2.7±1.8 points when using their previous system. Additional data will be reported.
Conclusions: Outcomes of this small, multicenter observational case-series suggest that offering previously-implanted SCS patients a system capable of providing multiple waveforms may be helpful in salvaging or improving pain relief when using a commercially-available device adaptor.

PALLIATIVE CARE

P616

INDIVIDUAL QUALITY OF LIFE AND ITS ASSOCIATION WITH PAIN IN PATIENTS WITH MOTOR NEURON DISEASE

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Backgrounds and aims: Up to 80% of patients with motor neuron disease (MND) report pain, but whether pain is correlated to quality of life is unclear. The aim was to study individual perceptions of what constitutes quality of life in patients with MND, and its association with presence and severity of pain.
Methods: Sixty-one patients were recruited from four multidisciplinary teams. Thirty-nine were male, and 41 reported pain. Data were collected with The Schedule for the Evaluation of Individual Quality of Life - Direct Version, The Brief Pain Inventory - Short-form, and The Amyotrophic Lateral Sclerosis Functional Rating Scale - Revised Version. We performed a cross-sectional study applying qualitative content analysis and non-parametric statistical analyses.
Results: Nineteen areas were nominated as important for quality of life. *Social relations* (n=52)*, amusement and relaxation* (n=29)*,* and *being in the outdoor environment* (n=23) were most frequently nominated. Satisfaction with quality of life was good (scale 1-7, where 1 equals poor quality of life): median 5, interquartile range (IQR) 2.75. There was no difference in satisfaction with quality of life between those reporting/not reporting pain (median 5.25, IQR 2/median 5.25, IQR 3.5, p=0.452). Neither was there any association between pain severity and quality of life (r_s=-0.007, p=0.961).
Conclusions: There was a large individual variation in perceptions of what constitutes quality of life. We identified qualitative differences between those reporting/not reporting pain, but could not find any statistical associations supporting the assumption that pain and pain severity explain variation in satisfaction with quality of life.

PHARMACOLOGICAL THERAPIES

P617

CURRENT TREATMENT PATTERNS AMONG PATIENTS WITH OSTEOARTHRITIS IN JAPAN: ANALYSIS OF A REAL-WORLD DATASET

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Background and aims: Osteoarthritis (OA) causes pain and disability, limiting the performance of various activities of daily living. Pharmacological management of OA focuses on a reduction of symptoms including pain and functional decline. The aim of this study is to understand how physicians in Japan are currently treating OA.
Methods: Data were drawn from the Adelphi OA Disease Specific Programme (2017-18), a point-in-time study of physicians and their patients in Japan. OA severity was assessed by physicians, who categorised patients as mild, moderate or severe. Physicians provided details on prescribed OA therapy and rated their satisfaction with therapy from very satisfied to very dissatisfied. Descriptive statistics were reported.
Results: The study included 393 patients: 41% had mild (n=160), 50% moderate (n=196) and 9% severe OA (n=37). Overall, 81% of patients were treated with a drug for their OA (74% of mild; 85% of moderate; 89% of severe patients). NSAIDs (63%) and hyaluronic acid for intra-articular injection (35%) were most frequently used. A small proportion of patients received an opioid (13%). The mean number of pharmacologic drugs increased (1.0 for mild,

1.3 for moderate and 1.4 for severe) and physician satisfaction decreased (88% for mild; 71% for moderate; 52% for severe) with increasing OA severity.
Conclusions: High use of NSAIDs and/or hyaluronic acid suggests a preference for conservative pharmacologic treatment of OA in Japan. However, satisfaction levels suggest that physicians are looking for better efficacy and safety to treat patients as their severity worsens.

P618

THE EFFECT OF BOTULINUM TOXIN A ON NEUROPATHIC PAIN IN SPARED NERVE INJURY MOUSE MODEL

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Background and aims: Neuropathic pain is a debilitating chronic pain disorder characterized by sensory abnormalities such as dysesthesia, hyperalgesia, and allodynia. Diabetic polyneuropathy (DPN) and traumatic nerve injury are some of the most common causes of neuropathic pain. The Db/Db model and the Spared Nerve Injury (SNI) model are validated animal models mimicking DPN and traumatic nerve injury, respectively. Published data indicate that botulinum toxin A (BoNT/A) has analgesic effects against peripheral neuropathic pain.
This project aims to assess whether BoNT/A has an analgesic effect on the two mouse models representing neuropathic pain.
Methods: A total of 64 mice will be used (32 control mice (C57BL/6) and 32 Db/Db mice). In each group, 16 mice will be SNI operated while the remaining 16 will be sham-operated. In each group of 16, eight will receive either vehicle or 5 pg BoNT/A pr. mouse in 20 µL of gelatine phosphate buffer. Pain threshold will be assessed using Von Frey filaments and possible effects on the spinal cord, sciatic nerve, dorsal root ganglion, and brain will be evaluated using immunohistochemistry and quantitative light and electron microscopy.
Results: This is an ongoing study and the final results will be presented at the conference. We hypothesize that BoNT/A treatment will have an analgesic effect on both mouse models of neuropathic pain, compared with littermates that received placebo.
Conclusions: If the hypotheses hold, this project will lay the groundwork for clinical testing in human patients with neuropathic pain.

P619

A SINGLE CENTRE EXPERIENCE OF CAPSAICIN 8% PATCH EFFICACY. DOES DIAGNOSIS PREDICT PAIN OUTCOME?

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Background and aims: Chelsea and Westminster Hospital has administered over 800 treatments of Capsaicin 8% patches since 2011. This service evaluation aimed to explore the efficacy of Capsaicin patches in reducing pain and whether pain aetiology was associated with responses.

Methods: All patients receiving Capsaicin 8% patch treatment have telephone follow-up appointments where they are asked whether pain has decreased, stayed the same or increased and whether they have reduced their analgesic medications. Additional data collected included pain aetiology.
Results: 395 patients were contacted following initial treatment of which 315 responded (79.9%). 158 were female (50.1%). 204 patients (64.8%) reported pain reduction, 101 (32%) reported no change and 10 reported an increase in pain (3.2%).
The three commonest diagnoses were peripheral neuropathy (34.3%), scar and post surgical pain (27.3%) and post herpetic neuralgia (15.2%). Over 60% of patients with these diagnoses reported reduced pain following capsaicin treatment (63.9% peripheral neuropathy, 67.4% scar pain or post surgical pain and 62.5% post herpetic neuropathy). Patients with reduced pain diagnosed with scar pain or post herpetic neuralgia were more likely (24.1% and 26.6% respectively) to reduce medication, compared with those with a diagnosis of peripheral neuropathy (13%).
Conclusion: Nearly two thirds of our population self-reported a reduction in pain, consistent across the three commonest pain aetiologies. Whilst effective in reducing pain, the ability to reduce analgesic medication was not consistent and appears aetiology dependent. This may reflect nuances related to specific conditions or the heterogeneity in sensory changes seen with peripheral neuropathy.

P620

ANALGESIC EFFECTS OF THE NOVEL SEMICARBAZIDE-SENSITIVE AMINE OXIDASE INHIBITOR SZV 1287 IN RODENT MODELS OF NEUROPATHIC PAIN

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Background and aims: SZV 1287 [3-(4,5-diphenyl-1,3-oxazol-2-yl) propanal oxime] is our patented metabolism-activated multi-targeting drug under preclinical development. It inhibits semicarbazide-sensitive amine oxidase, its metabolite, oxaprozine, produced mainly under acidic conditions, blocks cyclooxygenases, and antagonizes Transient Receptor Potential Ankyrin 1 and Vanilloid 1 (TRPV1) receptors. We investigated the effects and kinetics of SZV 1287 in a rodent model of traumatic neuropathy.
Methods: Traumatic neuropathic pain was induced by partial unilateral sciatic nerve ligation. The antihyperalgesic effect of enterosolvent and non-enterosolvent SZV 1287 capsules (10, 20, 50, 100 and 200 mg/kg, p.o.) was investigated by aesthesiometry. due to its TRPV1 antagonistic action, core body temperature was measured by telemetry and termometry. Distribution was determined by ^{11}C-SZV 1287 *in vivo* PET/MRI, brain and plasma concentrations by HPLC, albumin binding by fluorimetry.
Results: SZV 1287 administered in enterosolvent capsules induced significant, dose-dependent antihyperalgesic effect with 47±12% efficacy and 16.64 mg/kg potency (ED_{50}). 1ºC degree, 70-min long core body temperature increase was detected only in case of the 50 mg/kg i.p. dose, but not after the administration of the effective oral doses. Its very fast blood-brain barrier penetration was shown both *in vivo* and *ex vivo*. It has stable albumin binding (logK~5,6).
Conclusions: Oral SZV 1287 exerts potent antihyperalgesic effect under neuropathic condition that is likely to have a central site of action and despite TRPV1 antagonistic action, it does not influence thermoregulation. Enterosolvent capsule is desired for its administration to achieve stable absorption.

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P621

ASSOCIATIONS BETWEEN HERBAL CANNABIS TREATMENT AND DECREASE IN ANALGESICS CONSUMPTION: A MULTI-CENTER PROSPECTIVE STUDY OF PATIENTS WITH CHRONIC PAIN

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Background and aims: Although the use of Herbal Cannabis (HC) for chronic pain is rising, scientific evidence for its associations with a reduction in analgesics reduction is scarce. The aim of this study is to present the changes from baseline in analgesics consumption during one year of HC treatment.
Methods: Patients with chronic pain for whom an application for using HC was completed, were requested to report their analgesics consumption at baseline and 1, 3, 6, 9, and 12 months following initiation of HC. A mixed linear model was used to assess analgesic alterations from the baseline.
Results: Study population consisted of 806 patients (459 men; age 49±16 years), with pain duration of 9±9 years for whom HC treatment was approved. Most patients had concomitant pain etiologies; neuropathic pain was the most common one (72%). Data on 806, 756, 630, 549 and 480 patients were available at the five follow-up time points. A significant (P< 0.0001) reduction was observed in the total amount of consumed analgesics. Generally, an average of 37% of the patients stopped using analgesic agents during the study period ($\chi^2_{(5)}$=155.6, p< 0.001). Specifically, 55% stopped using over the counter (OTC) analgesics, ($\chi^2_{(5)}$=241.1, p< 0.001), 55% -non-steroidal anti-inflammatory drugs (NSAIDs) ($\chi^2_{(5)}$=263.4), 49%-weak opioids ($\chi^2_{(5)}$=200.5), 34%-strong opioids ($\chi^2_{(5)}$=194.2) and 43%-anticonvulsants and antidepressants adjuvant analgesics ($\chi^2_{(5)}$=195.1 and $\chi^2_{(5)}$=227.0, respectively).
Conclusions: These findings suggest that HC treatment is associated with a long-term sparing effect for all analgesic classes among patients with chronic pain. Further follow-up is needed to substantiate these findings.

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ADRENERGIC-DEPENDENT MECHANISM OF ACTION OF THN101 IN A RODENT NEUROPATHIC PAIN MODEL

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Background and aims: Neuropathic pain arises as a consequence of a lesion or disease affecting the somatosensory system. First-line treatments (anticonvulsants and antidepressants), notably amitriptyline, usually partially relieve pain symptoms. Astrocytes functions and their networking connexin-based activities are modulated during the disease and in response to those treatments. In this context, Theranexus identified a new drug candidate, THN101, a combination with amitriptyline and mefloquine where mefloquine is used at low dose as an astrocyte

connexin modulator. THN101 demonstrated an efficacy superior to amitriptyline alone on hyperalgesia in a rodent sciatic nerve ligation model. The role of adrenergic receptors in the mechanism of amitriptyline has been recently characterized, the aim of our study was hence to evaluate their involvement in the pain-relieving action of THN101.
Methods: This study was performed using the cuff-induced neuropathic pain model on C57BL/6J mice, and mechanical sensitivity was assessed with von Frey filaments.
Results: THN101 displayed a longer antiallodynic action than amitriptyline alone, leading to 16-hour allodynia relief vs 2-h for amitriptyline. This improved action was not affected by propranolol (β_2-adrenoceptor antagonist) but was prevented by yohimbine (α_2-adrenoceptor antagonist), suggesting a preferential role of descending pathways in THN101 action. This was confirmed by lesion of peripheral or central noradrenergic fibers.
Conclusion: This work provides a basis for studying more precisely the impact of THN101 and the localization of its mechanism of action.
This work is supported by Theranexus, Association Nationale de la Recherche et la Technologie, CNRS, Université de Strasbourg, Graduate Pain School EURIDOL (ANR-17-EURE-0022).

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A RANDOMIZED CONTROLLED TRIAL WITH THE M2-SUBUNIT PREFERRING GABA POSITIVE ALLOSTERIC MODULATOR, N-DESMETHYL-CLOBAZAM (NDMC) IN HEALTHY VOLUNTEERS

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Introduction: Only half of neurpopathic pain (NP) patients respond to first line drugs partly because of sedation. N-desmethylclobazam (NDMC) has selective α2,3 (antihyperalgesic) and α1-sparing (non sedating) actions on GABAA receptors and may be an alternative for NP treatment.
Method: Phase I, randomized, placebo and active-controlled (clonazepam 1,5 mg), crossover trial assessing the antihyperalgesic and sedative effects of NDMC 20 and 60 mg. Primary outcome was the change of the size of the area of secondary hyperalgesia (ASH) elicited by the UVB pain model. Single (20, 40, 60 mg) and repeated doses (20mg over 15 days) NDMC pharmacokinetic were evaluated.
Results: Thirty-two subjects were randomized. The change in ASH (SD) overtime was significantly reduced by 79.2 (21.8) %, 82.8 (23.8) %, 77.5 (29.6) % and 92.4 (16.3) % for placebo, NDMC20, NDMC60 and clonazepam, respectively (LMM: p=0.051). As compared to placebo, the difference (SE) was only significant under clonazepam with 13.2 % (9.0) (p=0.030). Sedation was significant under clonazepam, 39.4 (4.9) mm on a visual analog scale (p< 0.001) from baseline, while NDMC, at any single or repeated doses, was free of sedative effect. NDMC pharmacokinetic after single doses showed poor absorption, but was linear. Steady-state plasma concentrations of NDMC20 were attained within 14 days. Mean steady-state concentration (CS-S, SD) reached 209 (22) ng/mL.
Conclusion: NDMC lacked significant effect after single doses because of unexpected poor absorption. NDMC absence of sedative effect at any doses raise the prospect of dose escalating trials in patients to quantify its clinical utility.

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DEVELOPMENT AND PRECLINICAL TESTING OF A PROTOTYPE LEVOBUPIVACAINE-ELUTING DEVICE FOR THE TREATMENT OF POSTOPERATIVE PAIN FOLLOWING INGUINAL HERNIA REPAIR

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Background and aims: Inguinal hernia repair is a common surgical procedure[1], after which up to 40% of patients report significant acute pain and 10% develop chronic pain[2,3]. We aim to develop a collagen-based mesh system to elute levobupivacaine to effectively manage acute pain.
Methods: Collagen and levobupivacaine were chosen based on their desirable safety/biocompatibility/efficacy. Elution experiments tested collagen alone(2-10mg/ml) and crosslinked by various concentrations of EDC/NHS(0.1-1000mM).
Twenty-three rats(n=5-6/group) underwent sham procedure, hernioplasty alone or with the collagen/mesh device loaded with 50mg or 100mg levobupivacaine. Open Field(OF) and Von Frey(VF) testing occurred at baseline(-24hrs), and 4, 24 & 48hrs post-surgery. Locomotor activity was also assessed in the homecage. Animals were euthanised 48hrs post-surgery.
Results: Following optimisation, elution of the maximum loadable drug was achieved over 48hrs. Surgery reduced locomotor activity in the OF 4hrs post-surgery and in the homecage during the first 4hrs post-surgery. Surgery also significantly increased responsiveness to VF filaments at 24 hrs. Reduced locomotor activity and increased responsiveness in the VF are important pain-related phenotypes in this model. Homecage and OF locomotor activity was unaffected by the 50 and 100mg devices. The 100mg device significantly reduced responsiveness in the VF test compared to controls at 24 hrs.
Conclusions: These data suggest that the device may be effective in alleviating mechanical allodynia following inguinal hernia repair. Improved effectiveness may be achieved by increasing the dose or testing alternative analgesics.
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SERVICE EVALUATION TO ASSESS THE EFFICACY OF INTRAVENOUS LIDOCAINE INFUSIONS IN CHRONIC PAIN PATIENTS

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Aim: With no NICE guidelines, a Cochrane review that casts doubts on its usefulness and increasing pressure from clinical care commissioning groups to stop providing IV lidocaine service for chronic pain patients, the aim was to study the efficacy of IV lidocaine in this patient group.
Method: A questionnaire with eight questions and boxes for comments were given to all patients who attended Calderdale Royal Hospital for their IV lidocaine infusion between October 2018 to February 2019.
Results: Seventy -four patients had IV lidocaine infusions in the study period with 69 (93%) questionnaires returned. Sixty-six patients answered all the questions in the questionnaire. The responses were overwhelmingly positive. Reduction of pain by at least 30% was seen in 81% of the study group. The pain relief lasted for over 5 weeks in 65% of patients and 45% were able to reduce their regular analgesics. Improvement in sleep and mobility was evident from the comments received. Seventy percent said their quality of life improved and 87% would like to have the infusion again.
Conclusion: Larger studies or multicentre trials are required to assess if these results are applicable to the wider population. However, this study does show that with careful patient selection, IV lidocaine certainly has a role in managing a subgroup of patients with chronic pain.

P626

CURRENT TREATMENT PATTERNS AMONG PATIENTS IN JAPAN WITH CHRONIC LOW BACK PAIN: ANALYSIS OF REAL-WORLD DATA

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Background and aims: Chronic low back pain (CLBP) is a leading cause of disability globally, and is associated with is also associated with higher use of health care services and greater work impairment. Current treatments have demonstrated only modest benefits. The aim of this study was to demonstrate real-world treatment patterns among Japanese patients with CLBP.
Methods: Data were drawn from the Adelphi CLBP Disease Specific Programme (2018-19), a point-in-time study of physicians and their patients in Japan. Physicians classified patients as currently having mild, moderate or severe disease severity and provided information on prescribed drug therapy and non-pharmacological treatments. Descriptive statistics were reported.
Results: Data was available for 847 Japanese patients (490 mild; 318 moderate; 39 severe). 82% patients were prescribed a drug for their CLBP (80% mild; 86% moderate; 77% severe). NSAIDs (64%), were the most frequently prescribed drug classes. Other drugs classes reported were opioids (22%), anticonvulsants (23%) and other analgesics including SNRIs (26%). Approximately one third (29%) of patients were also being managed with a non-pharmacologic measure (26% mild; 32% moderate; 31% severe patients). The most popular treatments were: fitness/exercise regimen (54%), weight loss (40%) and avoidance of painful activities (35%).
Conclusions: Physician‘s management of CLBP in Japan is predominantly through NSAID interventions with low use of non-pharmacological measures. The limited evidence suggesting changes in treatment despite increasing severity among CLBP patients, indicates likely sub-optimal treatment with existing management strategies.

P627

PREVENTING THE ACCESS OF NEURONAL MINERALOCORTICOID RECEPTORS BY ENDOGENOUS ALDOSTERONE ATTENUATES INFLAMMATORY PAIN

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Recently, glucocorticoid (GR, Shaqura et al., 2016) and mineralocorticoid (MR, Shaqura et al., 2016) receptors have been identified on peripheral nociceptive neurons suggesting a central role in pain modulation. While activation of MR by aldosterone led to enhanced mechanical sensitization (Li et al., 2018), activation of GR resulted in reduced pain sensation. In the past, aldosterone synthesis outside the adrenal glands through its key processing enzyme CYP11B2 within spinal and peripheral nociceptive neurons has been neglected. Following IRB approval, subcutaneous (s.c.) or intrathecal (i.t.) application of the selective MR antagonist canrenoate-K In Wistar rats (250-300 g) rapidly and dose-dependently attenuated nociceptive behavior associated with complete Freunds adjuvant-induced inflammatory pain suggesting intrinsic activation of neuronal MR. Double immunohistochemistry demonstrated MR as well as aldosterone, its processing enzyme CYP11B2 and two-pore-domain background potassium channels (TREK-1) predominantly localized in peripheral nociceptive neurons. Consistently, membranous MR co-immunoprecipitated with endogenous aldosterone, confirming a functional link between receptors and its endogenous ligand. Indeed, aldosterone synthetase inhibitor FAD286 dose-dependently attenuated inflammation-induced nociceptive behavior. Taken together, these findings indicate that sensory neurons express MR with

the endogenous ligand aldosterone and its processing enzymes CYP11B2. Application of an MR antagonist or aldosterone synthetase inhibitor reduced pain behavior most likely by peventing the access of peripheral neuronal MR through endogenous aldosterone. This work was supported by a grant fom the Prof. KH René Koczorek Foundation, Neuried, Germany.

P628

COMPARISON OF ANTINOCICEPTIVE EFFECTS OF CXCR2 AND CXCR3 RECEPTOR ANTAGONISTS AND THEIR INFLUENCE ON OPIOIDS ANALGESIA OF NEUROPATHIC PAIN MODEL

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Background and aims: Chemokine signaling has been implicated in the pathogenesis of neuropathic pain. Thus, the aim of our study was to investigate the roles of CXCR2 and CXCR3 antagonists on neuropathic pain symptoms and opioid effectiveness.
Methods: Chronic Constriction Injury (CCI) model of neuropathic pain was used. The pharmacological tools were injected intrathecally, and pain behavior was evaluated by von Frey/cold plate tests. Analysis of mRNA/protein expression was performed by qRT-PCR/Western blotting. The co-localization of CXCR2/CXCR3 with neural/glial cells was visualized by immunofluorescence.
Results: Our results demonstrated that each of the CXCR2 (CXCL1-3) and CXCR3 (CXCL4, CXCL9-11, CCL21) ligands induced hypersensitivity reactions in naive animals and the effect occurring shortly after administration is associated with the neural location of CXCR2 and CXCR3, as confirmed by immunofluorescence. Furthermore, the neutralizing antibodies against CCI-upregulated CXCL3, CXCL9, CXCL10, CCL21 and a selective antagonists of the CXCR2 (NVP-CXCR2-20) and CXCR3 (NBI-74330) reduced the neuropathic pain-related behavior. Interestingly, in contrast to NVP-CXCR2-20, the NBI-74330 also enhanced morphine analgesic potency, diminished the spinal microglial markers and pronociceptive factors in CCI-exposed animals.
Conclusions: Our data provide new evidence that CXCR2 and CXCR3 are a promising target for diminishing neuropathic pain. Importantly, the pharmacological modulation of neuroimmunological interactions via CXCR3 may represent a new strategy for effective polytherapy with opioids.
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P629

MODULATION OF OPIOID-INDUCED CHANGES IN THE ROSTROVENTROMEDIAL MEDULLA BY KETAMINE

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Development of morphine tolerance and hyperalgesia may involve changes in the rostroventromedial medulla (RVM) and descending pain modulation. Ketamine has been shown to attenuate both morphine and oxycodone tolerance. Here we studied whether morphine and oxycodone have similar acute and chronic effects on the discharge properties of RVM neurons and whether ketamine attenuates those chronic opioid-induced changes.
Single cell extracellular recordings of RVM pronociceptive ON- and antinociceptive OFF-cells in male SD rats were

performed. Effects of acute and chronic morphine or oxycodone on spontaneous activity and responses to heat and pinch were assessed under light pentobarbital anaesthesia. Opioid tolerance was induced during 6 days with continuous opioid administration via mini-pumps.
Subcutaneously administered acute morphine and oxycodone attenuated mechanically evoked responses in ON-cells. Morphine, but not oxycodone, attenuated responses in OFF-cells. Tolerance developed to these acute effects of morphine but not to those of oxycodone. Chronic morphine enhanced responses to heat stimuli in ON-cells. In contrast, chronic oxycodone attenuated spontaneous activity and the responses to mechanical stimuli in ON-cells. Ketamine attenuated this morphine-induced change but not the effect of oxycodone in ON-cells. Chronic treatment with either morphine or oxycodone did not affect the spontaneous activity or responses to noxious stimuli in OFF-cells.
The results suggest that RVM neurons play a role in the development of tolerance and hyperalgesia to morphine but not to oxycodone. Interestingly, ketamine attenuated chronic morphine-induced changes in the RVM. In conclusion, these results suggest that morphine and oxycodone have at least partly different actions in the RVM.

P630

THE ANTAGONISM OF THE PROKINETICIN SYSTEM COUNTERACTS PAIN AND NEUROINFLAMMATION IN VINCRISTINE INDUCED PERIPHERAL NEUROPATHY IN MICE

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Background and aims: Peripheral Neuropathy is a side effect of the antineoplastic drug vincristine (VCR).Among chemokines, Prokineticins (PK) have a fundamental role in the development and maintenance of inflammatory and neuropathic pain. Our study aims to elucidate the role of PK in VCR-induced neuropathic pain and to assess whether the block of PK receptors, using an antagonist (PC1), may represent a therapeutic approach.
Methods: Neuropathy was induced in male mice by administration of VCR (0.1mg/kg once a day for 14 consecutive days). Mechanical and thermal allodynia and thermal hyperalgesia were measured. When hypersensitivity was established (day 7), PC1 was administered (150µg/kg twice a day) until the end of VCR schedule. At day 7, before starting PC1, and at the end of VCR/PC1 schedule (day 14), Prokineticin2 (PROK2), PK receptors (PK-R1 and PK-R2), cytokines, GFAP, CD68, CD11b, TLR4 and ATF3 were evaluated by RealTime-qPCR in DRG and spinal cord.
Results: VCR induced a dose-dependent allodynia and hyperalgesia, correlated to an upregulation of PK system. Seven days of VCR treatment induced upregulation of cytokines, CD68, TLR4, and ATF3 in DRG. After 14 days of VCR in presence of a more pronounced neuroinflammatory condition and high PK2 levels in DRG, we also observed a marked activation in spinal cord, characterized by increase of PK system, glial markers and cytokines.
PC1 administration was able to counteract hypersensitivity, reducing neuroinflammation in DRG and preventing activation in spinal cord.
Conclusions: PK antagonism may represent a promising target to contrast chemotherapy-induced-neuropathy.
Supported by Fondazione Cariplo(2016-0897).

P631

ANALGESIC EFFECT OF PERIOPERATIVE CHLORZOXAZONE ON ACUTE POSTOPERATIVE PAIN AFTER TOTAL HIP AND KNEE REPLACEMENT SURGERY

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Background and aims: High acute postoperative pain has been associated with development of chronic postoperative pain, and chlorzoxazone is a muscle relaxant aiming to enhance acute postoperative pain recovery. The limited effect chlorzoxazone and the lack of larger randomized controlled trial questioned the continued use. Despite this, chlorzoxazone is continuously used for acute postoperative pain management following total knee or hip replacement (TKR or THR). The current study aimed to assess the effect of chlorzoxazone compared with placebo for perioperative pain management following TKR or THR.
Methods: 393 patients scheduled for TKR or THR were included in this randomized, double blinded, placebo-controlled clinical trial. Patients were assigned to 250mg chlorzoxazone three times daily for the first seven days postoperative or placebo. The primary outcome was pain after 5-meter walk assessed 24-hours postoperative. Secondary outcomes included, changes in preoperative pain at rest, worst pain in the last 24 hours and Oxford Knee or Hip Score compared with one-year follow-up. In addition, adverse events were assessed in the perioperative period.
Results: No significant effect was demonstrated for pain after 5 meters walk 24-hours after surgery (P>0.313), or for any of the secondary outcomes (P>0.288) or adverse event (P>0.112) in the group receiving chlorzoxazone compared with placebo.
Conclusions: The current study demonstrated no analgesic effects of perioperative chlorzoxazone administration compared with placebo on acute or chronic postoperative pain following TKR and THR. Therefore, chlorzoxazone cannot be recommended as standard analgesic treatment for TKR and THR.

P632

ANALGESIC EFFECT OF PENTADECA PEPTIDE BPC-157 ON NOCICEPTIVE PAIN IN RATS

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Background: Pentadeca peptide BPC 157 which was isolated from human gastric juice is a partial sequence of body protection compound (BPC). Recently the anti-nociceptive effect of BPC-157 was demonstrated in various experimental models. This study was aimed to evaluate the analgesic effect of BPC-157 on surgical incisional pain by using postoperative pain model in rats.
Methods: Adult 275-350g weighed twelve male Sprague-Dawley rats were were randomly divided into 3 groups (Control, Morphine, and BPC, n=4 in each group). Single longitudinal surgical incision was made on plantaris muscle under isoflurane anesthesia. After recovery, von Frei test was done hourly till 6 hours after surgery and 24 hours after surgery on the first day.
To control group, normal saline was injected intra-peritoneally, morphine group had morphine 5 mg/kg injected intraperitoneally and the BPC group had BPC-157 20 μg/kg intraperitoneally at the end of operation.
Kruskal-Wallis and Mann-Whitney tests were used for comparing between groups. Differences with $p < 0.05$ were regarded as significant.
Results: 1 hour after operation, tactile threshold was significantly increased in Morphine and BPC groups ($p< 0.01$). The increasing level of threshold 1 hour after operation was significantly less in BPC group compared with Morphine group ($p< 0.01$) but this difference was disappeared 2 hours after operation ($p>0.05$). The increased thresholds 1 and 2 hours after operation were returned 3 hours after operation. ($p< 0.05$).
Conclusion: BPC-157 may contribute to multimodal analgesia in postoperative pain management as the anti-nociceptive agent.

PAIN THERAPIES WALK 6

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CURRENT TREATMENT PATTERNS AMONG EUROPEAN PATIENTS WITH OSTEOARTHRITIS: ANALYSIS OF A REAL-WORLD DATASET

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Background and aims: Pharmacological management of osteoarthritis (OA) focuses on reducing pain and functional impairment. The aim of this study was to understand the current real-world treatment paradigm as it relates to OA disease severity, for patients in 5 European countries.
Methods: Data were drawn from the Adelphi OA Disease Specific Programme (2017-18), a point-in-time study of physicians and their patients in France, Germany, Italy, Spain and the UK. Physicians classified their patients as currently having mild, moderate or severe disease severity, and provided details on currently prescribed OA therapy and physician satisfaction with therapy, rated from very satisfied to very dissatisfied. Descriptive statistics were reported.
Results: The study included 4113 patients with OA: 25% mild (n=1035), 53% moderate (n=2197), 21% severe (n=881). Overall, 74% patients were prescribed at least one drug for their OA (66% of mild; 76% of moderate; 78% of severe patients). NSAIDs (63%), other analgesics, e.g. paracetamol, (45%) and opioids (38%) were the most frequently prescribed drugs, and opioid use increased as severity worsened (18% of mild; 36% of moderate, 63% of severe patients). The mean number of prescription analgesics increased (0.9 for mild; 1.4 for moderate; 1.7 for severe patients) and physician satisfaction decreased (86% for mild; 71% for moderate; 41% for severe) with worsening OA disease severity.
Conclusions: The reported decreasing physician satisfaction despite increased use of opioids and combination therapy with increasing disease severity, indicates sub-optimal management with current pharmacological OA therapeutic strategies.

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ANTINOCICEPTIVE PROFILE OF A NOVEL G PROTEIN-BIASED OPIOID, PZM21 AND ITS EFFECTS ON ADDICTION-LIKE BEHAVIOR IN RODENTS

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Background and aims: Opioids are highly effective analgesics yet produce several undesired effects. Numerous study showed that opioid analgesia is mediated by a G protein signaling pathway, whereas some side effects are mediated by β-arrestin-2. Therefore, synthesis of novel opioid ligands biased toward G protein pathway with minimal recruitment of β-arrestin-2 appears as a promising way of development of novel, effective and safer opioid therapeutics. Here, we aimed to investigate the antinociceptive profile of a novel G protein-biased μ opioid receptor agonist, PZM21 and its influence on addiction-like behavior.
Methods: PZM21-induced antinociception was assessed using a tail flick test and was measured after systemic and intrathecal drug administration in C57BL6/J mice and Wistar rats, respectively. To study for potential addictive

properties of PZM21, mice was tested for PZM21-induced tolerance, conditioned place preference, locomotor sensitization and withdrawal. Furthermore, we investigated the effects of PZM21 in self-administration paradigm in Sprague-Dawley rats.
Results: We demonstrate that treatment with PZM21 results in a long-lasting dose-dependent and μ opioid receptor-mediated antinociception after both systemic and intrathecal administration. PZM21 does not induce reinforcing effects in conditioned place preference, locomotor sensitization and self-administration paradigms. However, repeated administration of this compound causes the development of tolerance and leads to the occurrence of withdrawal symptoms.
Conclusions: Our results indicate that PZM21 presents antinociceptive efficacy, but at the same time induces tolerance and physical dependence. However, an analgesic but non-rewarding profile of G- protein-biased ligands make them a promising class of novel opioid therapeutics.
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P635

AN ASSOCIATION BETWEEN OPIOID-RELATED MORTALITY AND OPIOID DAILY DOSE IN THE UNITED KINGDOM GENERAL PRACTICES

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Background and aims: The opioid utilisation and its association with opioid-related deaths were not fully understood in the United Kingdom (UK); this study aimed to investigate the association between opioid daily dose and opioid-related deaths.
Methods: This case cross-over study used the UK Clinical Practice Research Datalink linking with the mortality data from 2000 to 2015. Adult opioid users recorded as opioid-related deaths were followed retrospectively from the date of death to the case period (0-89 days) and control periods (90-179, 180-269 and 270-359 days before death). Opioid daily dose in any given day during case and control periods and prescription sedatives were measured. The association between opioid-related death and opioid daily dose was assessed by conditional logistic regression and presented as odds ratios (OR) and 95% confidence interval (95%CI).
Results: During the study period, 62 (26.7%) of the 232 opioid-related deaths did not receive any opioid, and 124 (72.9%) of the remaining 170 cases were prescribed opioids in both case and control periods. Periods during which ever prescribed oral morphine equivalent dose more than 120 mg/day (OR: 2.2; 95%CI: 1.1, 4.6), gabapentinoids (OR: 2.3; 95%CI: 1.0, 5.3) and other antidepressants (OR: 3.0; 95%CI: 1.0, 9.0) were associated with an increased risk of opioid-related death.
Conclusions: In contrast to receiving high dose for long periods being associated with opioid overdose deaths in North America, a high daily dose of prescribing opioids in any given day and co-prescription of gabapentinoids and antidepressants were associated with opioid-related mortality in the UK.

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REAL-WORLD SAFETY OF TAPENTADOL: ANALYSIS OF DATA FROM THE GERMAN PAIN PRACTICE REGISTRY (GPPR)

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Background and aims: Classical opioids induce constipation (OIC), requiring laxatives, leading to discontinuation of treatment, thus compromising better patient outcomes. Novel analgesics, like Tapentadol (TAP), have favourable OIC profile. We analysed data from GPPR to evaluate TAP usage patterns and the GI outcomes in real world.
Methods: Patients with chronic pain (spine/low back) on TAP were retrospectively analysed using propensity scoring, for age, gender, chronification and graded pain scale (von Korff). Patients were assigned to 3 groups based on prior treatment, WHO1 non-opioids, 2 -weak opioids and 3-strong opioids (group 1, 2 and 3). The safety endpoints were the magnitude of Bowel Function Index (BFI) changes during treatment, the % of patients with clinically-normal stool function (BFI ≤28.8) at w12, and the use of over-the-counter or prescription laxatives to treat OIC.
Results: Of 174,222 patients in GPPR, 48,506 (27.8%) received analgesics, with 10,389 (6.0%) receiving TAP. In groups 1/2/3, the BFI increase was 15.0-17.6 (+2.6) / 26.6-20.1 (-6.5) / 52.8-24.5 (-28.3) mm VAS, with a clinically relevant BFI change of 2.0 / 1.2 / 57.1% (MCID of ≥12 mm VAS). Percentage of patients in groups 1/2/3 reporting normal stool function increased by 82.5-73.8 / 61.9-77.0 / 27.0-59.1% and those requiring over-the-counter and/or prescription laxatives decreased by 2.0 / 33.3 / 44.8%.
Conclusions: In TAP patients previously treated with WHO-2/3 medication, there was a marked improvement in bowel function and less need for supplemental laxatives, and a marginal improvement in WHO 1 group.

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RIFAMPIN REDUCES THE CONCENTRATIONS OF ORAL AND INTRAVENOUS HYDROMORPHONE IN HEALTHY VOLUNTEERS

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Background: Several opioids are metabolised by the highly inducible cytochrome P450 (CYP) 3A isozymes. Co-administration with strong inducers of drug metabolism, such as rifampin, can dramatically reduce systemic exposure to these opioids. As the CYP metabolism of hydromorphone is of minor importance, we studied in healthy volunteers whether hydromorphone would be an effective and safe analgesic for patients who concomitantly receive the prototypical enzyme inducer rifampin.
Methods: In this paired crossover study, 12 participants received oral placebo or rifampin for eight days. Oral (2.6 mg) hydromorphone was administered on day six followed by intravenous (0.02 mg/kg) hydromorphone on day eight. Hydromorphone and hydromorphone-3-glucuronide (HM3G) concentrations were measured for 24 hours and psychomotor responses, including perceived drug effect, change in pupil diameter and cold pressor threshold, were evaluated for six hours.
Results: Rifampin reduced areas under the concentration-time curve of intravenous and oral hydromorphone by 26% and 43%, respectively. The maximum concentration of oral hydromorphone was reduced by 37% and oral bioavailability decreased from 33% to 25% in the rifampin phase compared with placebo. The HM3G-to-hydromorphone metabolic ratio increased by 50% and 42% after oral and intravenous hydromorphone, respectively. Rifampin did not significantly affect any of the pharmacodynamic parameters.
Conclusions: Rifampin significantly reduces the concentrations of oral and intravenous hydromorphone. This interaction is due to an increase in both the first-pass and systemic metabolism of hydromorphone, likely involving induction of UDP-glucuronosyltransferase enzymes by rifampin. The interaction should be considered when managing pain in patients who are treated with strong enzyme inducers.

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INHIBITION OF TLR4/MYD88/TAK1/NF-ΝΒ/COX-2 PATHWAY ACTIVATION CONTRIBUTES TO PROTECTIVE EFFECT OF BEXAROTENE, A RXRΜAGONIST, AGAINST LIPOPOLYSACCHARIDE-INDUCED INFLAMMATORY HYPERALGESIA

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Background and aims: Bacterial LPS causes inflammation leading to decreased pain threshold or increased pain sensitivity termed as hyperalgesia. The aim of this study was to determine effect of a selective RXRα agonist, bexarotene, on TLR4/MyD88/TAK1/NF-κB/COX-2 signaling pathway in relation to proinflammatory cytokine expression in the central nervous system in LPS-induced hyperalgesia in mice.
Methods: Male Balb/c mice were divided into 5 groups:
(1) Saline,
(2) LPS,
(3) DMSO,
(4) bexarotene, and
(5) LPS+bexarotene.
DMSO (1%; 4 ml/kg) or bexarotene (10 mg/kg) were injected simultaneously with saline (10 ml/kg) or LPS (10 mg/kg). Following determination of reaction time to thermal stimuli within 1 min 6 h after injection, the mice were euthanized. Brains and spinal cords were collected from the animals for measurement of TLR4, MyD88, TAK1, phosphorylated TAK1, NF-κB, phosphorylated NF-κB, COX-2, IL-1β, RXRα, and β-tubulin protein expression by using immunoblotting method.
Results: LPS caused a decrease in hot plate latency compared to saline-treated group. Decreased RXRα protein expression was associated with increased expression of TLR4, MyD88, phosphorylated TAK1, NF-κB, phosphorylated NF-κB, COX-2, and IL-1β proteins in the tissues of LPS-treated mice. The LPS-induced changes were prevented by bexarotene. DMSO or bexarotene had no effect on the hot plate latency in saline-treated mice.
Conclusions: These findings suggest that decreased activity of TLR4/MyD88/TAK1/NF-κB/COX-2 pathway associated with proinflammatory cytokine expression contributes to the effect of bexarotene to prevent LPS-induced hyperalgesia in mice.
This work was financially supported by Mersin University (2018-1-TP3-2814) and The Scientific and Technological Research Council of Turkey (SBAG-217S235).

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PATTERNS OF NEUROPATHIC PAIN MEDICATION PRESCRIBING FOR PATIENTS BEFORE REFERRAL TO A UNIVERSITY HOSPITAL SECONDARY CARE PAIN MEDICINE SERVICE IN LIVERPOOL, UK

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Background and aims: Neuropathic pain medications are often used as adjuvants in the management of chronic pain; however, Pregabalin and Gabapentin have become drugs of misuse. In April 2019, Pregabalin and Gabapentin will be reclassified as class C controlled substances in the UK. This study aims to assess the prescribing of neuropathic pain medication before referral to a secondary care Pain Medicine Services in Liverpool, UK
Methods: A retrospective analysis of the prescribing of medication as recommended by the National Institute for Clinical Excellence NICE) for neuropathic pain to patients referred to The Royal Liverpool and Broadgreen University Hospitals NHS Trust's Pain Medicine Service (PMS) between June and November 2018.
Results: 430 patients met the inclusion criteria. 146 patients had neuropathic pain on assessment at the PMS; 33 (23%) patients with neuropathic pain were not prescribed a recognised neuropathic pain medication. 79 patients

were prescribed Pregabalin, of whom 50 had no neuropathic pain; 12 were previously prescribed Pregabalin, of whom 7 had no neuropathic pain; 104 were prescribed Gabapentin, of whom 48 had no neuropathic pain; 45 were previously prescribed Gabapentin, of whom 30 had no neuropathic pain.
Conclusions: Approximately 50% of patients prescribed Pregabalin or Gabapentin before referral did not have neuropathic pain on assessment at their first PMS appointment. Evidence to support Pregabalin and Gabapentin use in non-neuropathic chronic pain is limited. It is not yet clear if these prescribing patterns have contributed to medication misuse. Further collaborative work in prescribing between primary and secondary care is recommended.

PHYSICAL / OCCUPATIONAL THERAPIES

P640

PREVENTIVE EFFECTS OF PHOTOBIOMODULATION THERAPY (904 NM) DURING THE DEVELOPMENT OF DIABETIC NEUROPATHIC HYPERALGESIA

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Background and aims: Diabetic neuropathy develops as a complication of diabetes. No used treatment focused on curbing the development of mechanical hyperalgesia. Efficacy of photobiomodulation therapy (PBMT) in painful clinical conditions has been established by several recent studies. The aim of this study was to verify the preventive effect of PBMT against the development of mechanical hyperalgesia on streptozotocin (STZ)-induced diabetic neuropathic rats.
Methods: Experiments were approved by the UNICAMP Ethic's Commitee (#3902-1). Male Lewis rats (200-250 g; 6-8-weeks-old) received a STZ-low-dose (Sigma-Aldrich®, 25 mg/kg) once a day, during five consecutive days. Diabetic animals (250 mg/dL of glucose) were submitted to Randall-Selitto test at 7, 10, 14, 17, 21, 24 and 28 days after STZ injections. After the 7th day, rats were submitted to daily PBMT (GaAs 904 nm, 70 mW) under three different laser total energies: 2.03 J (29 seconds); 4.06 J (58 seconds); 8.12 J (116 seconds). PBMT was performed transcutaneously at the dorsal region between L4/L5 dorsal root ganglia (DRG) (bilateral).
Results: PBMT was able to partially prevent the development of hyperalgesia (Δ withdrawal threshold, g), especially for the 2.03 J total energy, when compared to diabetic neuropathic non-irradiated rats [at the 14th ($p< 0.001$), 17th ($p< 0.05$), 21st ($p< 0.05$), 24th ($p< 0.001$), and 28th ($p< 0.01$) days; Two-Way ANOVA followed by Bonferroni post hoc test].
Conclusions: Data of this study suggest that PBMT could be a promising tool to helping prevent the development of hyperalgesia linked to diabetic neuropathy.

P641

PHOTOBIOMODULATION THERAPY (904 NM) AS AN ALTERNATIVE TREATMENT TO PERIPHERAL DIABETIC NEUROPATHY: *IN VIVO* AND *IN VITRO* ASSESSMENTS

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Background and aims: Diabetic neuropathy is a complex syndrome, which affects peripheral nerves and culminates in mechanical hyperalgesia. Hyperglycemia-induced oxidative stress leads to neuronal damage through the formation of free radicals, reactive oxygen species, and mitochondrial failure. Efficacy of photobiomodulation therapy (PBMT) on painful clinical conditions has been established by several studies. We verified the pain relief

potential of PBMT on diabetic neuropathic rats and investigated *in vitro* potential mechanisms.
Methods: Experiments were approved by UNICAMP's Ethics Committee (#3902-1). Male Lewis rats received five streptozotocin (STZ) low-doses (Sigma-Aldrich®, 25 mg/kg) and were submitted to electronic von Frey test at 0, 7, 14, 21, 24 and 28 days after STZ injections. After the 21st day, rats were submitted to daily PBMT (GaAs 904 nm; 2.03 Joule; 70 mW; 29") at the region between L4/L5 dorsal root ganglia (DRG). In addition, primary cell cultures of DRG were kept at low (5.5 mM) or high glucose (55 mM) for 24 h and exposed to PBMT. To measure the calcium influx, neurons were loaded with FLUO 4-AM (Invitrogen™, USA); Tetramethylrhodamine ethyl ester (TMRE) (Invitrogen™, USA) was used for measure the mitochondrial membrane potential (MMP).
Results: PBMT was able to reduce the hyperalgesia at the 24th and 28th days. After stimulus with 15 mM KCl, DRG neurons previously exposed to PBMT showed a reduced fluorescence related to calcium influx. PBMT also showed influence over altered-MMP on hyperglycemia-stressed DRG neurons.
Conclusions: PBMT could be used as a coadjutant tool for the treatment of diabetic neuropathic pain.

PSYCHOLOGICAL THERAPIES

P642

FIGHTING OR ACCEPTING LONG-TERM PAIN - A QUALITATIVE STUDY ON ACCEPTANCE AND COMMITMENT THERAPY (ACT) IN TREATMENT OF LONG-TERM PAIN

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Background and aims: Non-malignant pain is the most prevalent reason for people to consult health services and the major cause for long-term sick leave in Norway. ACT is among the treatments with promising results on long-term pain. However, few studies have examined the lived experiences and the processes of adopting ACT principles among patients with long-term pain. The aim was to explore the experiences of patients with long-term pain who participated in ACT-treatment
Methods: Eight adults with long-term pain following a group-based ACT treatment participated in this qualitative interview study. The treatment was a three-month group-based program including three gatherings lasting three days each time. After completing the program,they were invited to a semi-structured in-depth interview. The analysis was based on systematic text condensation by Malterud, and the phenomenological approach described by Giorgi.
Results: Preliminary results indicated that the participants´ understanding and adoption of the principles of acceptance influenced the lived experience of their health issues. Two themes emerged as relevant to the process of acceptance; illness perception and fighting the illness. The participants´ relation to these two influenced their perception of living with long-term pain.
Conclusion: The ACT treatment induced a perceived meaningful reorientation in various aspects of life for some of the participants. However, others showed difficulties utilizing and adopting the ACT principles and had little or no effect of the treatment. Further understanding of these processes are necessary to take advantage of this in clinical settings.

REHABILITATION THERAPIES

P643

DO SOCIODEMOGRAPHIC FEATURES, PAIN SENSITIVITY OR PAIN CATASTROPHIZING RELATE TO CLINIC-BASED ADHERENCE TO PHYSIOTHERAPY IN PEOPLE SUFFERING FROM CHRONIC SPINAL PAIN?

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Introduction: Nonspecific chronic spinal pain (nCSP) is highly prevalent, and associated with an important personal, social and socio-economic impact. Obtaining a high effectiveness of therapy and thereby reducing the (re)occurrence of nCSP can be facilitated by adherence to the therapy. However, conflicting evidence still exists on whether socio-demographic variables, pain or functionality are related to the degree of clinic-based therapy adherence.
Objective: Examining the link between clinic-based therapy adherence and demographic variables, pain, function and pain beliefs in nCSP patients.
Patients: Native Dutch speakers, aged between 18 and 65 years, experiencing nCSP at least 3 days/week for at least 3 months. 120 participants were randomly allocated to two interventional groups with an equal amount of participants in each group. Of these 120 participants, 94 completed all therapy sessions.
Main outcome measurements: Degree of clinic-based adherence, defined as the amount of completed therapy sessions.
Results: For demographic data (i.e. sex, age or education), no significant associations were found with clinic-based therapy adherence in the total sample or the neuroscience group. For the traditional physiotherapy group, educational level was associated with at least 50% of the therapy sessions. Regarding pain-, belief- and function-related measures, only the association between change in kinesiophobia and number of completed sessions was significant for the traditional physiotherapy group.
Conclusions: Factors related to therapy adherence in the total group or the neuroscience group, could not be found. The educational level and change in TSK score were however related to therapy adherence in the traditional physiotherapy group.

EPOSTER ABSTRACTS

PAIN IN GENERAL

eP001

THE RELATIONSHIP BETWEEN PAIN-RELATED COGNITIVE AND EMOTIONAL FACTORS AND HEALTHCARE UTILIZATION: A SYSTEMATIC REVIEW

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Background and aims: In line with the “Behavioral Model of Healthcare Utilization” proposed by Andersen, HCU can be seen as a behavioral action, possibly influenced by cognitions and emotions. Several studies investigated relationships between pain-related cognitive and emotional factors and HCU, but a comprehensive overview of current evidence is lacking. Therefore, the aim of this systematic review is to provide an overview of the evidence for the research question “Are pain-related cognitive and emotional factors related to HCU in patients experiencing pain?”
Methods: A systematic search was conducted in PubMed, Web of Science and EconLit (final search: April 27, 2018). Full-text articles investigating the relationship between pain-related cognitive and emotional factors, assessed with self-reported instruments, and HCU in adults experiencing pain were eligible for inclusion. Downs & Black checklist (modified) was used for critical appraisal. Screening and critical appraisal were performed by 2 reviewers independently. Data extraction was performed by the first reviewer and checked for correctness by the second. Discrepancies were discussed between both reviewers assisted by the last author.
Results: The systematic search resulted in 3,181 unique studies. After screening 78 articles were included. Critical appraisal and data extraction are currently finalized. Results will be available for presentation at EFIC congress 2019.
Conclusion: If the suggested relationship can be confirmed, this review may provide a fundament for therapy options addressing pain-related cognitive and emotional factors to keep HCU at an appropriate level. Implementing such interventions may lead to important reductions in socio-economic burden related to pain.

eP002

RESPONSIVENESS OF THE PAIN DISABILITY INDEX IN PATIENTS UNDERGOING INTERDISCIPLINARY.PAIN REHABILITATION

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Background: For several widely-used patient-reported outcome measures (PROMs) in chronic musculoskeletal pain (CMSP) rehabilitation, it is still not known whether they are responsive to change, and what the smallest detectable change (SDC) and minimal clinically important change (MCIC) are. Knowledge of these values can be used to accurately interpret change scores in research and clinical practice.
Methods: In this retrospectivecohort study, the responsiveness, the SDC, and MCIC of the Pain Disability Index (PDI) were investigated in CMSP patients. The responsiveness, the SDC, and MCIC were determined according to the COSMIN criteria and by using both anchor and distribution-based methods.

Results: Therewas a progression from smallest to largest mean change scores between participants who did not perceive change and those who reported improvement after treatment. However, the correlations with the change scores and the general perceived effect (GPE) were low. Moreover, the SDC was larger than the MCIC, independent of the GPE used.
Conclusions: For this population, the PDI was shown not to be responsive. Furthermore, the PDI appeared not to be able to distinguish clinically important change from measurement error in individual patients. Probably the outcomes would have been different, if the GPEs were composed asking the patients to rate the change in experienced disability during physical activities. However, the finding of a large measurement error of a PROM is in line with previous research in pain rehabilitation. Using outcome measures to examine changes in disability due to a pain rehabilitation program is therefore highly questionable.

ePO03

FINDINGS AFTER EXPERIENCE WITH AN ONLINE RESOURCE FOR RESEARCHERS WORKING IN CHRONIC PAIN

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Background and aim:

- There is a broad spectrum of chronic pain conditions, many with a high disease burden and no adequate standard of care.
- The aim of this initiative is to provide a comprehensive and single point of reference for those chronic pain conditions with the highest burden of disease and unmet medical needs, to increase knowledge and encourage cross-team working.

Methods:

- Search strings were conducted using the most relevant publication data bases: Pubmed, Google Scholar and Embase
- Structured interviews were conducted with more than 50 physicians across 7 European countries.
- Indications were selected as those with a high burden of disease and (perceived) knowledge limitation index'.
- The McGill pain score was utilised in an analysis of the selected conditions; where this was not available, correlation between McGill and NRS scores were estimated.

Results:

- More than 500 conditions with pain as a key feature were identified, but only a few selected for different reasons
    - 80 pain indications were placed for development into presentation modules following a standard format, including pathophysiology, clinical presentation, therapy, targets under research, unmet needs.

Conclusions:

- A high disease burden and unmet needs are apparent across many chronic pain conditions.
- Differences but also, similarities have shown evident in different pain indications.
- A strategy is being implemented to try to find the biological basis for those findings
- The comprehensive repository is available online to pain researchers willing to join efforts to this initiative.

ePP004

GENERALIZED INFORMATION PROCESSING AND EXECUTIVE FUNCTION PREDICTS PAIN MODULATION IN HEALTHY MALES

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Background and aims: Information processing and executive functions in the brain are known to influence pain processing. However, to date the characteristics of their predictive relationship with pain have not been evaluated. To that aim, we tested the effect of basic attention and stimulus evaluation ,via the P300 oddball task amplitude, and executive function, via the trial making test (TMT) part B, on the parameters of inhibitory pain modulation.
Methods: The P300 amplitude, obtained by auditory oddball task, and TMT-B scores were evaluated in 35 young healthy males. All then underwent conditioned pain modulation (CPM) assessment with 30-sec long tonic heat (test stimulus, Ts) conditioned by ice water immersion.
Results: In a regression model that includes P300 amplitudes and TMT-B scores, the two together predict the dynamic changes along the pain scores of standalone Ts (p_{model}=0.035; p_{P300}=0.018; p_{TMT}=0.044) and conditioned Ts (p_{model}=0.016; p_{P300}=0.022; p_{TMT}=0.009) albeit in opposite directions. Wherein higher P300 amplitude predicts pain adaptation and lower conditioned Ts pain, and better TMT-B performance predicts sensitization and higher conditioned Ts pain.
Conclusion: Neurocognitive variables relate to pain modulation. Joining of P300-based attentional capabilities and TMT B-based executive functions into one model seems to represent the frontal-parietal network communication in pain evaluation. A possible explanation for the opposing directions of the cognitive-pain relationships could be the ability to switch attention away from pain in subjects with better stimulus evaluation, reducing their need to activate pain inhibition in the context of experimental pain in subjects with high executive functioning.

ePP005

CHRONIC PAIN ASSOCIATED WITH TRAUMATIC FOOT AND ANKLE AMONG ATHLETES

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Background and aims: In literature, we notice that the percent of females developing foot and ankle trauma after performing intense sports is higher comparatively to males. The higher incidence of ankle and foot traumatism (45%) is among runners, basketball and volleyball players and also among track athletes. Also, a significant percent of ballet dancers, up to 55% suffer from this type of traumatisms.
Material and methods: Our paper presents a review and the results of our retrospective study analyzing the most common types of the foot and ankle trauma noticed among our athletes and also the proper therapy management strategies.
The study enrolled 10 athletes, aged between 15 and 25, that suffered a foot or ankle traumatism in the last 2 years.
Results: With a proper therapeutic management the risk for developing further instability significantly decreases up to 10%. That way the range of motion, muscle strength and neuromuscular coordination will be regained properly. A gradual program of physical activity reduces the risk of further recurrent injuries.
The overall goal is to reduce inflammation initially, proceed through a range of-motion improvement and strengthening program, address proprioceptive and neuromuscular control, and implement a return program to sports.
Conclusion: A proper rehabilitation program reduces significantly the risk of developing instability in the future from 30-35% to 20-25%. Return to an active life is a multifaceted decision based on the evaluation of the interdisciplinary team based on the type of sport activity the athletes are performing, the age and the personal history.

eP006

THE MUTUAL INFLUENCE BETWEEN SOCIAL DEFEAT STRESS AND REPEATED INFLAMMATORY STIMULUS ON INDUCTION OF DEPRESSIVE-LIKE BEHAVIOR AND PERSISTENT HYPERALGESIA IN MICE

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Clinical studies indicate co-morbidity between depression and chronic pain. Moreover, chronic stress is associated with both conditions. Based on this, the present study investigated the relationship between social stress and inflammatory stimulus inducing depressive-like behavior and persistent hyperalgesia in mice. Males C57Bl/6JuniB mice were submitted to repeated social defeat stress protocol (10 days) followed by social interaction and mechanical hyperalgesia test. After 3 weeks we performed 7 days of Prostaglandin E2 (PGE2) intraplantar injection (mild persistent hyperalgesia protocol) followed by weekly assessment of mechanical hyperalgesia. In another set of experiments, we first performed 14 days of PGE2 intraplantar injection (persistent hyperalgesia protocol) followed by social interaction and mechanical hyperalgesia test. After 24 hours, mice were submited to a mild social defeat stress protocol (just one day) followed by weekly assessment of social interaction. Stressed mice showed higher hyperalgesia after social defeat stress compared to non- stressed mice. Also, only stressed mice showed long-lasting hyperalgesia followed by mild persistent hyperalgesia protocol. In the second set of experiments, we first demonstrated the 14 daily PGE2 intraplantar injections inducing persistent hyperalgesia. Next, our results revealed that only mild social defeated stressed mice - preceded by persistent hyperalgesia - showed long-lasting depressive-like behavior. Our data demonstrated that social stress predisposes to persistent hyperalgesia, whereas persistent hyperalgesia predisposes to depressive-like behavior, corroborating the clinical data showing co-morbidity between depression and chronic pain. Our data suggests that this two conditions may share common neural mechanisms that should be addressed in future studies.

eP007

THE NIH HEAL INITIATIVE: ACCELERATING THE DISCOVERY AND CLINICAL DEVELOPMENT OF NON-ADDICTIVE THERAPEUTICS FOR PAIN

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Background and aims: The NIH HEAL (Helping to End Addiction Long-term) Initiative is an aggressive, trans-NIH effort to speed scientific solutions to stem the national opioid public health crisis. Launched in April 2018, the Initiative is focused on improving prevention and treatment strategies for opioid misuse and addiction and enhancing pain management. The trans-agency, multi-institute HEAL Initiative is being led by the National Institute of Drug Abuse (NIDA) and the National Institute of Neurological Disorders and Stroke (NINDS). Together, programs within the HEAL Initiative will reduce the burden of illness due to pain and addiction. Within HEAL, NIDA is focused on understanding, preventing, and treating addiction. NINDS is focused on understanding pain mechanisms and developing effective, non-addictive treatments for pain.
Methods: NINDS was tasked with the goal of enhancing pain management through identification of non-addictive pharmacologic and non-pharmacologic interventions. As a result, NINDS, along with multiple Institutes across the NIH, built a collaborative infrastructure of therapeutic development programs designed to enhance our understanding of the development and prevention of chronic pain. These programs span the discovery process from target validation through clinical trials.
Results: Programs in the infrastructure include: (1) A Preclinical Screening Platform for Pain (PSPP) focused on the identification and profiling of non-addictive/non-opioid therapeutics for pain, and (2) an Early Phase Pain Investigation Clinical Trial Network (EPPIC-Net), to test new therapies for pain conditions in adults and children.
Conclusions: This presentation will describe the two programs and efforts to test new therapies for pain conditions.

eP008

PAIN AND SLEEP: A SERVICE EVALUATION OF PAIN INTERVENTIONAL PROCEDURES

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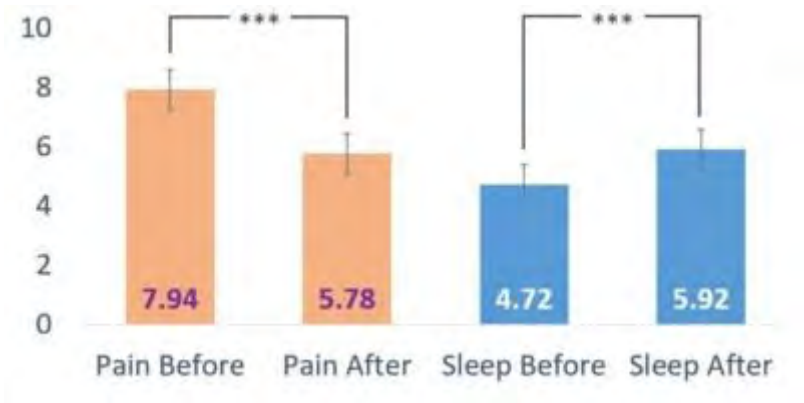
Aim: To evaluate impact of interventional procedures offered by our service on pain and sleep.
Methods: Interventions were broadly classified into 6 categories. Table1
Data was collected via a self-reported questionnaire before and 12 weeks after intervention. Graph1
Total of 1000 questionnaires were analysed. Response rate was 60% with 19 forms excluded due to incomplete data.
Wilcoxon Signed Ranks test and Linear Regression were used for data analysis.
Results: Significant reduction in Pain ($Z = -20.5$, $p < 0.0001$) and improvement in Sleep quality ($Z = -14.4$, $p < 0.0001$) was seen post intervention. Graph2
Reduction in Pain accurately predicted increases in Sleep scores ($F(1, 979) = 543.1$, $p < 0.0001$), $R^2$of 0.352. Sleep improved by 0.544 points for each point improvement in pain. Graph3
There was no significant difference in the effectiveness of the six interventions.
Conclusion: Interventions offered by our service significantly reduce pain and improve sleep.

Code	Category	N
SMI	Spinal Musculoskeletal Injections	272
NB	Neuraxial blocks	60
PMI	Peripheral Musculoskeletal Injections	161
PNB	Peripheral Nerve Blocks	83
IVI	Lignocaine IV infusions	162
MI	Multiple interventions	243

[Intervention Categories]



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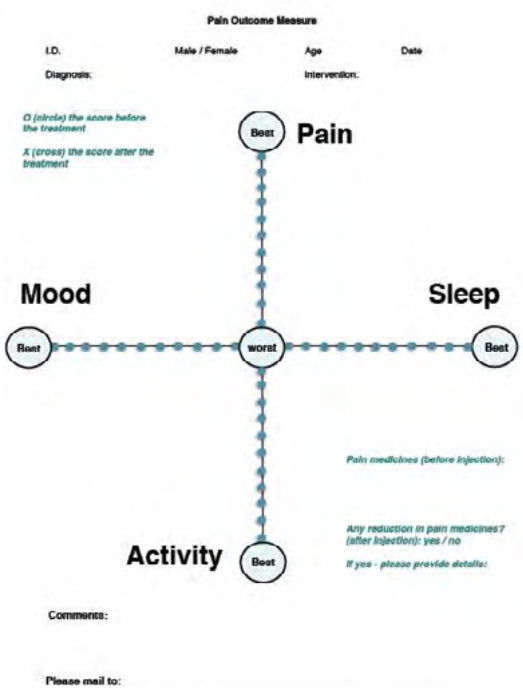
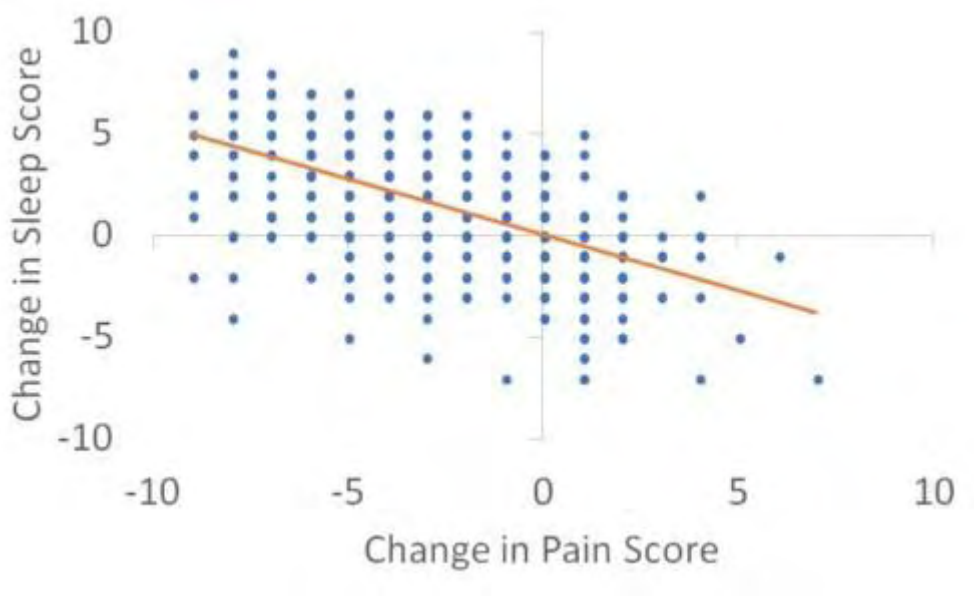


[Pain and Sleep Scores]



[Scatter Plot and Line of Best Fit]

eP009

RELIABILITY AND VALIDITY OF THE TURKISH VERSION OF PAIN VIGILANCE AND AWARENESS QUESTIONNAIRE (PVAQ-TR)

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Background and aims: A person's degree of attention to pain can affect the existing experience of pain, and also contribute to the development of chronic pain. PVAQ is a self-report questionnaire for assessing habitual "attention to pain", and has different language versions. The aim of this study is translating and culturally adapting PVAQ into Turkish, and investigating the psychometric properties of the Turkish version (PVAQ-TR).
Methods: PVAQ is translated into Turkish in accordance with international standards. Its comprehensibility is tested on a pilot group (n=20). Physical and sociodemographic characteristics of 160 volunteers composed of pain-free university students and patients with spinal musculoskeletal pain or fibromyalgia will be recorded. Pressure pain threshold will be evaluated by an algometry. Pain characteristics of the patients will be recorded. In addition to PVAQ-TR, all subjects will complete Hospital Anxiety and Depression Scale, Fear of Pain Scale III, Pain Catastrophizing Scale and Tampa Scale for construct validation. Factor analysis, internal consistency, test-retest reliability and content validity of the PVAQ-TR will be investigated.
Results: Comprehensibility of the questionnaire was high, since 95% of items were marked as "quite/completely comprehensible". Other findings will be analyzed as soon as the data collection is completed.
Conclusions: Analysis results will show if PVAQ-TR is a reliable and valid tool for assessing pain vigilance and awareness in patients with spinal musculoskeletal pain or fibromyalgia, and also in healthy subjects.
Acknowledgement: This paper has been granted by the Muğla Sıtkı Koçman University Research Projects Coordination Office.

eP010

EVALUATION OF THE EFFECTIVENESS OF PRF IN SELECTED PAIN SYNDROMES

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Diagnostic-therapeutic blocks and pulsed radiofrequency therapy (PRF) have proven efficiency in the treatment of pain. The medical documentation of patients treated in the period from November 2015 to March 2018 was analyzed due to pain in the knee joint, headaches caused by the occipital nerve and in the area of the suprascapular nerve. The subject of research were: age, sex, BMI, percentage of reduction of symptoms and duration of PRF effect. The use of an ultrasound device to identify nerves increases the safety of the blockade. 177 patients were enrolled to the study. In each case a prognostic-therapeutic block was performed before the PRF. The pain intensity was determined on the numerical scale (NRS) during pharmacological treatment, before and immediately after the prognostic-therapeutic block, as well as before PRF and also 3 months after PRF. The treatment turned out to be effective in 91% of cases. The highest percentage of improvement was observed in the case of blockage of the suprascapular nerve - 70.50%, the lowest percentage of improvement was in case of blocking nerves of the knee - 65%. The average time to reduce pain was about 8 months. No side effects were noted. It has been proven that PRF is effective in the treatment of chronic pain syndromes. In the course of further analysis of the data, it was found that the efficacy of PRF is related to the BMI of the patient. The relationship between gender, BMI and duration of the therapeutic effect was demonstrated.

eP011

PILOT STUDY: PAIN, FUNCTIONAL STATUS AND QUALITY OF LIFE IN WOMEN ACCORDING TO REGULAR EXERCISE HABIT

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Objective: The aim of this study is indicate to women have regular exercise have better functional status, higher life quality, less pain.
Methods: A total of 37 women aged 15-65 years. Their regular exercise habits(REH), max-step distance, one leg stance, time up and go(TUG) were measured. In addition, knee and low back pain were evaluated with the visual anolog scale. The physical activity level evaluated with The International Physical Activity Questionnaire(IPAQ) and the quality of life with the SF-36(Short Form). People who continue to exercise 2 times a week for more than 3 months, have been accepted as regular exercise habit group(REH). Those who exercise less have been accepted as nonregular exercise habit group(non-REH).
Independent t-test was used to compare group differences. Spearmen correlation analysis was used to examine the relationships between variables.
Results: The participants in the study were 43% of had REH and 57% non-REH. While compared to REH and non-REH group; IPAQscore, physical function and overall health perception of SF-36 were significantly different($p< 0.05$), there were'nt significant differences in the other parameters($p>0.05$). There was negative correlation between knee pain, IPAQscore and TUG($-602< r< -499$) in non-REH group. There was positive correlation between IPAQscore and max-step distance and IPAQscore and sf-36 energy viability($506< r< 732$) in REH group.
Conclusion: As a result, it was seen that individuals with REH were in higher energy status and functionally better. The negative correlation between physical activity level and pain emphasizes the impact of physical activity on pain and quality of life.

eP012

CORRELATIONS OF FOUR DIFFERENT PATIENT-REPORTED OUTCOME MEASURES IN PATIENTS WITH SHOULDER PAIN

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Background and aims: Patient-reported outcome measures (PROMs) provide important information about the severity of symptoms related to and the functional status of the shoulder. Shoulder Pain and Disability Index-SPADI, Oxford Shoulder Score-OSS, Penn Shoulder Score-PSS and Upper Extremity Functional Index-UEFI are widely used, reliable and valid PROMs in patients with shoulder pain. The aim of this study is to investigate their correlations with patient-reported severity of pain and pain-free active range of shoulder motions (pfROMs).
Methods: Physical and sociodemographic characteristics of 52 patients with shoulder pain, their medical diagnosis, pfROMs (flexion, abduction, internal and external rotation) and severity of pain (Visual analogue scales-VASs) were recorded. The patients were also asked to complete Turkish SPADI, OSS, PSS and UEFI.
Results: The resting pain had the highest correlation with PSS-pain ($r=0.508$); and the activity pain with SPADI-pain scores ($r=0.558$). The pfROMs had the highest correlations with PSS-total ($r=0.509$ for flexion, $r=0.540$ for abduction, $r=0.527$ for external rotation), except pfROM-internal rotation which had the highest correlation with PSS-function ($r=0.435$). The total value of all pfROMs were mostly correlated with PSS-total ($r=0.553$). All correlations were

significant at the 0.01 level.
Conclusions: It seems that PSS and SPADI are more related with the level of pain during resting and activity, as well as with pfROMs. They may be considered to be more preferable than OSS and UEFI in patients with musculoskeletal shoulder pain.
Acknowledgement: This paper has been granted by the Muğla Sıtkı Koçman University Research Projects Coordination Office.

PAIN IN CHILDREN

eP013

POSTHERPETIC NEURALGIA, CERVICAL MYELITIS AND CEREBRAL VASCULOPAHTY CAUSED BY VARICELLA ZOSTER VIRUS IN A PREVIOUSLY HEALTHY 9-YEAR-OLD CHILD

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A previously well 9-year old boy presented to our hospital with 1-month history of pain and itching sense around multiple crustic lesions on his posterior neck and occipital area. He had developed painful pruritic vesicles on his right posterior neck and posterior auricular area 5 months before. Though the lesions had been spontaneously resolved within three weeks without any treatment, vesicular eruptions had developed again around the previous lesions in 2 months.
On examination, he was shown to have hyperesthesia with multiple crusts and scars in the distribution of the C2-C4 dermatomes. He had no history or physical findings suggestive of an underlying immunodeficiency.
The serum VZV IgM (enzymie-linked immunosorbent assay) revealed equivocally positive and VZV IgG was positive. (After treatment for 3 weeks, the serum VZV IgM became negative.) On the T-cell subset pannel, the CD4 to CD8 ratio was revered to 470/ul per 520/ul.
Brain MRI revealed increased signal intensity along grey matter of superior frontal, middle frontal and singulated gyrus on T2 weighted images. MRA revealed focal narrowing in right transverse carotid artery. Spine MRI demonstrated diffusely increased signal intensity at C1-C7 levels of spinal cord.
Under the diagnosis with postherpetic neuralgia, encephalomalacia, cervical myelitis, cerebral vasculopathy, he was treated with intravenous acyclovir (30mg/kg) and garbapentin for pain control for 3 weeks including 10 days of oral acyclovir treatment. His symptoms were all resolved within the 3 weeks. Without any neurologic impairment, the patient has been well for 1 year.

eP014

COMPARISON OF SUBTENON BLOCK, PERIBULBAR BLOCK AND IV FENTANYL FOR PERIOPERATIVE ANALGESIA IN PAEDIATRIC CATARACT SURGERY

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Background: Congenital cataract surgery is the most commonly performed intraocular surgery . Ophthalmic blocks in children were previously studied by various researchers in conjunction with general anaesthesia.
We designed this prospective randomised, study to evaluate the effect of sub-tenon & peribulbar block on perioperative analgesia & compare with IV fentanyl in pediatric cataract surgery.

Primary objective: (I/O & P/O fentanyl, paracetamol requirement, TFA
Secondary outcome : To assess the incidence of OCR PONV, Surgeon satisfaction, Parental satisfaction and recovery profile.
Methods: After approval by the institutional ethics committee and informed written parental consent, 60 children of ASA grade I and II, Age (6m-10 yrs.) were allocated into three groups. **Group 1: STB (n=20)-** received peribulbar .Block groups received 0.5% bupivacaine(0.06-0.08ml/kg) along with hyaluronidase 10 IU/ml after induction **Group 3: F (n=20)-Control group**. Children perioperative rescue analgesia was managed with IV fentanyl (0.5mcg/kg)
Results: Demographic data were comparable
Rescue analgesic requirement, TFA in the immediate postoperative period was significantly higher in Control Group 55 %(n=11/20) as compared to block groups. Postoperative paracetamol/ibuprofen consumption was similar between the groups
Incidence of PONV& OCR was comparable between the groups. No patient in the study population suffered any serious complication of the regional ophthalmic blocks or opioids
Conclusion: Sub-tenon block contributed significantly to immediate postoperative analgesia, had faster recovery , better surgeon satisfaction & operative conditions .Block groups were comparable in terms of perioperative rescue analgesia consumption. Incidence of OCR, PONV and parental satisfaction score were comparable between all the three groups.

eP015

INTRAOPERATIVE EVALUATION OF THE NOCICEPTION LEVEL INDEX IN PAEDIATRIC PATIENTS UNDER GENERAL ANAESTHESIA

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Background: Anaesthetized patients cannot experience pain, since the cerebral cortex does not interpret the noxious signal, so it is more accurate to evaluate the nociception measured by the autonomic nervous system. The nociception level (NoL™) is an index of nociception based on nonlinear combination of heart rate, heart rate variability, photoplethysmograph wave amplitude, skin conductance, skin conductance fluctuations, and their time derivatives. The authors evaluated the abilities of the NoL index to discriminate between noxious and nonnoxious stimuli in pediatric patients under general anaesthesia.
Methods: An observational evaluation of intraoperative nociception was performed using NoL™ technology in four paediatric patients under general anaesthesia; three of them also received a nerve block (one patient an external popliteal sciatic nerve block- case 1- and two patients an epidural anaesthesia - case 2 and 3) and one patient (case 4) received total intravenous anaesthesia. Pic. 1
Results: During general anaesthesia in paediatric patients, an adequate monitoring of nociception could be observed; revealing that maintaining the same harmful level and increasing the level of analgesia or performing a nerve block, an adequate level of nociception was reflected (NoL™ values between 0-25).
Conclusions: The NoL index changes proportionately with paediatric patients' response to various clinical noxious stimuli under general anaesthesia and discriminates noxious from nonnoxious stimuli.

[NoL, heart rate and blood pressure]

eP016

INTERCOSTAL ULTRASOUND GUIDED BLOCK IN A PAEDIATRIC PATIENT WITH NOONAN SYNDROME AND CHRONIC REFRACTORY PAIN

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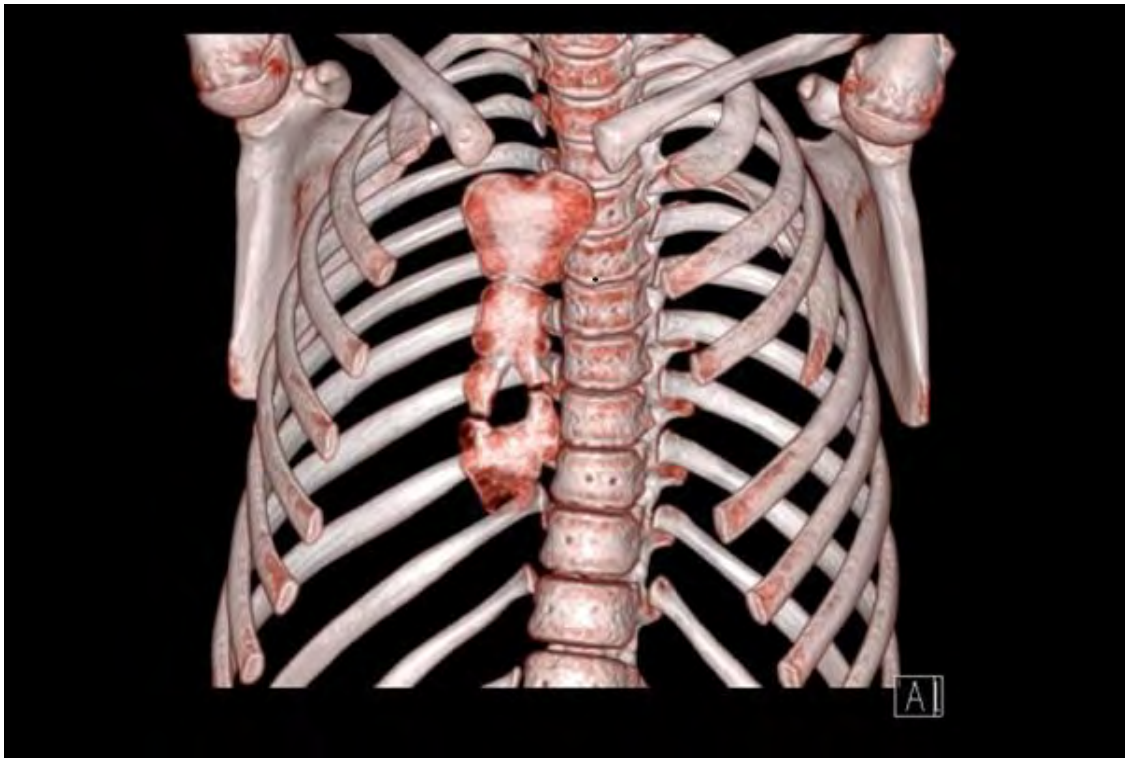
Background: Noonan syndrome is a condition that affects many areas of the body. It is characterized by mildly unusual facial features, short stature, heart defects, bleeding problems, skeletal malformations, and many other signs and symptoms. Mutations in multiple genes can cause Noonan syndrome. Mutations in the PTPNN11 gene cause about half of all cases. This condition may cause chronic pain condition by different musculoskeletal malformations.
Methods: A 10-year-old female patient with Noonan syndrome and an accessory intrathoracic rib with non-articulated origin in the posterior third of the costal body, suffered from pain in the left rib cage, the pain increases with expiratory efforts and with maintained left lateral decubitus. An intercostal left block T3, T4 and T5 was performed under general anesthesia in which 5 mg of levobupivacaine per level and triamcinolone were administered, after refractory treatment (nonsteroidal anti-inflammatory and tramadol). Pain relief was observed in the following checkups every month.
Results: The goal is to report the successful of an intercostal left block T3, T4 and T5 in a patient with accessory intrathoracic rib with non-articulated origin and refractory chronic pain.
Conclusions: Selected paediatric patients with chronic and refractory pain in the rib cage may benefit from intercostal block.



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eP017

MULTIDISCIPLINARY TREATMENT IN PHANTOM LIMB PAIN IN A PAEDIATRIC PATIENT AFTER AMPUTATION SURGERY

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Background: Phantom limb pain syndrome is a type of neuropathic chronic pain developed after amputation. Diagnose could be easy but the effective treatment remains as a challenge. Physiopathology is also unclear, so the trend now is the multidisciplinary approach trying to treat both central, peripheral and psychological factors.
Methods: treatment of two paediatric patients with phantom limb pain is described;
A 15-year-old male patient (Case 1) and a 15-year-old female patient (Case2) with phantom limb pain after amputation of the right inferior limb due to distal femur osteosarcoma.
They were both treated with neuromodulators every 8 hours (gabapentine 300mg up to 600mg in Case 1, and pregabaline 25mg up to 50mg in Case 2); tricyclic antidepressants (amitriptyline 10mg every 24h) in both cases, minor opioids (paracetamol 325mg/ tramadol 37,5mg if needed in Case 1 and tramadol 40mg every 12h and the same dose if needed). It was also included in Case 2 clonazepam 0,5mg after dinner if paroxistic pain was observed.
Intensive rehabilitation was started from the very beginning of diagnoses.
An important clinical improvement of neuropathic pain was observed in both cases after increasing the dose of neuromodulators.

Pain score was recorded by Visual Analogue Scale
Results: Clinical improvement of phantom limb pain with multimodal treatment and multidisciplinary approach in paediatric patients was observed.
Conclusions: Multidisciplinary approach is necessary to achieve an efficient improvement of the phantom limb pain syndrome.
Protocols for phantom limb pain might be necessary for the effective treatment of this patients.

ePO18

MOTHERS´ EXPERIENCES IN TAKING CARE OF THEIR CHILDREN DURING PAINFUL INTRAVENOUS SAMPLING

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Background: When a child is hospitalized, her mother suffers from various discomforts. One of the most disturbing cases for a mother is a child with pain, especially when painful intravenous sampling is running by nurses. Thus, the present study aimed to explain mothers´ experiences in caring for their children during painful intravenous sampling.
Methods: In this study, the qualitative approach and content analysis method were used. Thirty mothers were selected for participation after intravenous sampling of their children by using purpose sampling. Data was collected through semi-structured interviews. Using continuous analysis, data collection and comparison were performed at the same time.
Results: The main category was “Endless torment” which includes four subcategories,
“Shaky and intolerable”, “Horrible loneliness”, “Numerous attempts” and “Tears for fears”.
Conclusion: Given the importance of humanistic nursing care in paediatric wards and its effects on the well being of children, the results of this study can be applied by nursing support not only for the children, but also for the mothers during painful intravenous sampling.
Keywords: Mothers, Painful Intravenous Sampling, Children, Qualitative study

ePO19

GROWING PAIN AND VITAMIN D

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Growing pains a well known clinical entity, is considered to be a normal occurrence in about 25% to 40% of children with no organic pathology.d is almost always bilateral and constitute the most frequent cause of musculoskeletal pain in children, the disorder´s exact nature and aetiology remain unclear little is known about the association between vitamin D deficiency and musculoskeletal pain in children. studies shown that vitamin D receptors are present in both the nuclei and plasma membranes of skeletal muscle cells in mammals, indicating an association between vitamin D and skeletal muscle. We presents our observation that growing pain was less prevalent in children with vitamin D supplementation.
112 children attending our clinic 9 months to 2 years age were studied who were diagnosed with growing pain .their parent were given a questioner and were interviewed. and were given 400iu of vitamin D daily for 60 days and were reevaluated.
It was noted that 82 (72%) children has shown remarkable improvement ,who were taking vitamin D supplementation regularly after 60 days. It was noted that 40 children who showed poor pain tolerance were not taking vitamin D regularly and their parents were reluctant to give vitamin D.

Though our observation and study is small but suggest possible vitamin D deficiency as cause of growing pain in children. More large scientific studies may be done for further studier.

eP020

RESILIENCE AND FAMILY DYNAMICS IN CHILDREN WITH PAIN: A SCOPE REVIEW OF LITERATURE

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Background and aims: A growing amount of research is focusing on studying chronic/recurrent pain in children. This is a common problem in childhood (11-38% of children and adolescents), affecting 5% of them with significant pain-related dysfunction. An important body of this research examines resilience among children with pain and their families as a key factor that can reduce disability and increase their strengths to cope with pain. This work aims to review the empirical research which has examined children's resilience in pain experience in order to determine which resilience dimensions related to individuals and family are associated with favourable outcomes in families of children with chronic pain.
Methods: This review will be conducted and reported in accordance with the PRISMA guideline. Studies written in English or Spanish involving paediatric chronic pain in a theoretical or an experimental (longitudinal and cross-sectional) approach will be included. In addition, those treatment studies setting a resilience framework will be taken into consideration as well as studies including siblings and patient's parents.
Results: It is expected to obtain wider knowledge about pain-specific constructed resilience and its dimensions in children with pain and their families, and a proposed agenda for futures studies that will advance the field.
Conclusions: A better understanding of the role of resilience and its components in family pain adaptation will facilitate the development of more promising and novel treatment approaches and lay the foundation for more effective self-management in the context of paediatric chronic pain.

PAIN IN THE ELDERLY

eP021

EXERCISE AND NEURAL MOBILIZATION IN INSTITUTIONALIZED OLDER ADULTS

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Aim: Pain and disability are major concerns in older adults who are institutionalized. Exercise is recommended to improve pain and functioning. It has been suggested that neural mobilization may have a positive impact on pain and on postural control, and consequently on functioning. However, the effect of exercise and neural mobilization is understudied in this group. The aim of this study was to assess the effect of nervous system mobilization (gliding technique) on pain intensity and postural control of older adults who were institutionalized.
Methods: Twenty-six older adults who were institutionalized were randomly allocated into 2 groups of 13 participants. One group received exercise (mobility, strengthening and postural control exercises) and the other received the same exercise plan and neural gliding mobilization (4 series of 10 repetitions). Both groups attended 2 sessions per week over an 8-week period. Participants were assessed at baseline and pos intervention using the

numeric pain rating scale, and balance, gait speed and timed up and go tests.
Results: There was a significant effect of time of assessment and intervention for pain intensity (ρ< 0,05) and a significant effect of time for balance and gait speed (ρ< 0,05). No other significant effects were found (ρ>0,05).
Conclusion: There were improvements for pain intensity, balance and gait velocity in both groups. There seems to be no additional value in neural gliding mobilization, but it is unclear whether a higher dose of neural gliding would be required to produce effects.

eP022

STUDY OF THE EFFECTS OF THERMOSENSORY AGING BY COLD STIMULATIONS WITH HIGH TEMPORAL RESOLUTION

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Background and aims: The method of limits (MLi) is the most commonly used paradigm to measure the threshold of thermal stimuli. However, the measured threshold in MLi is reaction time (RT) dependent and may induce an overestimation of the thermal threshold in the elderly. The use of the method of levels (MLe), a method independent of RT would be more suitable for evaluating thermal threshold in the elderly. The purpose of the present study was to provide a new comparison of the two methods (MLi and MLe) of measuring the cold perception threshold in the elderly, using a high-speed (300°C/sec) thermal stimulator.
Methods: Eleven elderly subjects and 14 younger adults were recruited for this study. In the MLi session, we used two experimental conditions, referring to 2 cooling ramps: 2°C/sec and 4°C/sec. In the MLe session, we defined three experimental conditions, regarding the duration of stimulation: 50, 100, 300 ms.
Results: Results showed that the MLe method allows a threshold measurement accuracy gain greater than 2°C compared to the MLi in the elderly. In addition, our data with the MLe confirm the existence of a change in the cold perception threshold with age, but this modification seems less important than that measured with MLI.
Conclusions: The use of MLe with high cooling rate opens new perspectives for the study of mechanisms underlying the alteration of thermal perception with age, including in pain perception.

eP023

CHRONIC PAIN IN THE ELDERLY WITH TOTAL FUNCTIONAL DISABILITY

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Background and aims: The population of elderly, with diminished functional ability, is characterized by polymorbidity, polytherapy and psycho-social changes. High prevalence of chronic pain is recognized. The aim of the study was to analyze association of long lasting pain with degree of functional disability in the elderly.
Methods: Descriptive-analytical study was performed. Data has been obtained interviewing randomly selected elderly patients. The applied questionnaire covered the items of pain assessment and Functional Status Index test.
Results: A total of 203 older patients (78.80±8.34 year) with (179/203) and without (24/203) pain displayed high dependence on a devices/other person help in performing activity of daily living, ADL (moving, using hands, personal care) and instrumental activity of daily living, IADL (interpersonal activities, home chores). Patients with pain (PP), had pain diagnoses classified as Relatively Generalized Syndromes, 38.9%; Localized Syndromes of

Lower Limbs, 24.4%; Spinal or radicular pain syndromes of lumbal, sacral or coccigeal region, 12.7%. PP performed better functional ability in performing activity of ADL and IADL, p< 0.001. There were no other differences between observed groups, except in a place of living in childhood. Different to urban population of patients without pain, PP grown up in rural area, p< 0.04. Entities, such as, marital status and gender differences in late life, attract attention, p=0.05.
Conclusion: Multiple factors influence both functional ability and chronic pain in the elderly. Complexity of ageing requires detailed personalized assessment of pain, overall health, psycho-social and environmental entities in the aim of accurate pain management strategies.

eP024

THE ROLE OF FASCIA ILIACA COMPARTMENT BLOCK AS PREOPERATIVE ANALGESIA IN ELDERLY PATIENTS WITH HIP FRACTURES

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Background and aims: The use of systemic analgesics for pain treatment in elderly patients with hip fractures is often followed with side-effects and can delay surgery. Contrary, fascia iliaca compartment block (FICB) is safe and simple to use, with rapid onset of pain relief, without causing major side-effects.
The aim of this study was to investigate the role of FICB as preoperative analgesia in elderly patients with hip fractures and to compare it with the use of conventional parenteral analgesics.
Methods: This was a prospective-retrospective study performed on the elderly patients (older than 65) who were admitted and treated for hip fracture in Clinical Center of Vojvodina in Novi Sad, Serbia, from January-June 2018. Patients were divided into two groups: a FICB group (n=30; patients receiving FICB) and a control group (n=30; patients receiving systemic analgesia). Outcome measures were pain scores (NPRS - numerical pain rating scale) from admission to after the analgesic treatment, and complications.
Results: Average pain scores according to NPRS, before receiving analgesics, were 8.33 in FICB group, and 8.56 in control group. The pain scores were significantly lower (p=0.000) in patients receiving FICB as preoperative analgesia. There was significant difference (p=0.000) between the two groups in pain scores after the analgesic treatment. There were no complications in FICB group and 2 cases of acute psycho-organic syndrome in control group.
Conclusion: FICB is an effective and safe way of providing preoperative analgesia for elderly patients with hip fractures, which is not followed with major side-effects.

eP025

HEPARIN-PROPELLED TOPICAL DICLOFENAC: REACHING NEW HEIGHTS

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Background and aims: This case report highlights the role of technology in improving topical administration. Topical NSAIDs for knee or hand osteoarthritis has been supported by published evidence, but are they effective for deeper anatomical structures1?

Methods: A 82-years old woman complained of a right shoulder pain flare up with arm irradiation (Numeric Rating Scale, NRS, 6/10, incident pain 8/10): her PainDetect (PDq) score was 12/38 with ongoing pain and frequent incident pain.
Her comorbidities included atrial fibrillation under anticoagulation, ischemic cardiomyopathy, chronic kidney disease.
Physical examination showed moderate swelling, reduced range of motion, significant mechanical dynamic and static allodynia, thermal allodynia and punctate hyperalgesia.
Ultrasound scan revealed a full-thickness supraspinatus muscle tear and diffuse tendinopathy.
Thermography displayed an increase of skin temperature localized at right shoulder confirming the inflammatory nature of pain (Figure 1).
Different topical NSAIDs failed to improve her pain until it was prescribed a diclofenac epolamide patch with a hydrogel matrix containing heparin (DP+H).
Results: After two months of therapy with DP+H, micronized palmitoylethanolamide and tramadol+paracetamol as rescue analgesia the follow-up thermography findings reversed (Figure 2), PDq decreased to 3/38 with only mild incident pain (NRS 3/10) and the patient started physical therapy.
Conclusion: The addition of heparin to the matrix increased the delivery of diclofenac through electrostatic repulsion2. This technology allowed us to treat inflammatory shoulder pain without oral NSAIDs, thus reducing the systemic burden of medication in a fragile patient.
Figure 1: Pre-treatment thermography
Figure 2: Post treatment thermography
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eP026

MAKE THE DIFFERENCE BETWEEN ACUTE OR CHRONIC PAIN IN OLDER ADULTS NOT ABLE TO SELF-REPORT

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Aim of investigation: The pain situation among older adults is still a major challenge in residential care homes (RCH). The increasing number of people with severe dementia and the resulting consequences for an adequate pain assessment illustrates the necessity of health care professionals‘ knowledge, skills, and competencies in pain management nursing.
The aim of the investigation, as part of a registered cluster-randomized controlled, was to get to know how nurse identify chronic pain and how they differentiate it from acute pain in older adults not able to self-report.
Methods: The trial was conducted from 2016 - 2018. Within the study nurses in 20 RCH were interviewed with the focus pain management for chronic pain. Beside others we added open ended questions on the differentiation between and assessment of acute and chronic pain. A qualitative content analysis according to Mayring was conducted.
Results: In the survey 311 nurses participated. Responds showed, nurses do not differentiate between acute and chronic pain because they are not asked to do so and see no impact on pain intervention.
Conclusions: To achieve optimized outcomes for older adults in RCH nurses should have the knowledge and understand of the different pain syndromes. The results show the necessity to assess individual abilities of nurses in pain nursing and support the increase in competencies. It might bring changes and nurses can serve as advocates and negotiated the best individual care plan for the older adults who are not able to self-report or negotiate their treatment.

eP027

SYMPTOM PREVALENCE AND MANAGEMENT IN OLDER ADULT PATIENTS IN LEBANON

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Objectives: The purpose of this study is to explore symptoms and the effectiveness of their management in older adults receiving palliative care (PC) in Lebanon. The aims of this study were to:
1) determine symptom prevalence in Lebanese older adults receiving palliative care.
2) identify the severity and distress of symptoms.
3) identify the prevalence of symptom management and its efficacy.
4) explore the relationship between overall symptom burden and its correlates.
Methods: An observational cross-sectional design using convenience sampling (N=203) to recruit older adults qualifying for PC from three major medical centers in Lebanon.
Results: The mean age of the sample was 78.61 years. The most prevalent symptoms were lack of energy (93.5%), worrying (83.2%) and pain (71.4%). Psychological symptoms had the highest mean scores only preceded by the physical symptom, lack of energy. The most treated symptoms were physical with pain having the highest treatment prevalence (91%). Although psychological symptoms were the most burdensome, they were poorly treated. Multiple regression analysis showed that symptom scores had significant positive associations with financial status, social functioning, and comorbidities and a negative one with age.
Significance of results: Lack of energy and psychological symptoms were the most prevalent with the latter having the highest mean total symptom scores. Treatment was poor for psychological symptoms and effective for physical. Associations were found between age, comorbidity, financial problems, social functioning, and total physical and psychological mean symptom burden scores. More attention needs to be given to psychological symptoms among older adults receiving palliative care.

eP028

SUBSTANTIAL CLINICAL BENEFIT OF COMMON OUTCOME MEASURES FOLLOWING SHOULDER ARTHROPLASTY

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Background and aims: Advanced osteoarthritis of the shoulder joint is associated with significant pain and disability. There is minimal information on substantial clinical benefit (SCB) and responsiveness of the American Shoulder and Elbow Surgery (ASES) score, the relative Constant Murley score (CMS) and the Western Ontario Osteoarthritis of the Shoulder (WOOS) index following shoulder arthroplasty. The purpose of this study was to examine the SCB and responsiveness of these three outcome measures based on patient's report of change at six months and two years following surgery.
Methods: The SCB and responsiveness were calculated based on external anchors related to change in pain, range of motion (ROM) and ability to carry out activities of daily living (ADL). The areas under curve (AUCs) represented responsiveness.
Results: The data of 159 and 131 patients with complete follow-up at six and two years were reviewed. The SCB for pain at 6 months varied from 29.1-39.5 and increased to 48.9-53.3 at 2 years. A similar pattern of increased SCB values was observed for ROM and ADL for all measures over time. Responsiveness of all measures was high (AUCs >0.80) at 6 months and further improved at two years (AUCs >0.86). There were no statistically significant

differences between the AUC values of the ASES and CMS when compared with the WOOS (P>0.05).
Conclusion: The lack of a difference in responsiveness between the joint-specific outcomes (ASES, CMS) and a diseases-specific measure (WOOS) demonstrates equivalence, as opposed to superiority of the WOOS over the ASES and CMS.

ePO29

CHRONIC NEUROPATHIC PAIN AND COGNITIVE IMPAIRMENT IN INDIAN POPULATION: A CASE CONTROL STUDY.

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A growing body of research has confirmed an association between chronic pain and cognitive dysfunction. The aim of the present study was to determine whether cognitive function is affected in patients with a diagnosis of chronic neuropathic pain relative to healthy control participants matched by age, gender, and years of education. We have specifically investigated the interaction effect of pain and age on cognitive performance. Patients (n = 53) and controls (n = 50) were administered a battery of cognitive tests measuring IQ, spatial and verbal memory, attention, and executive function. Both the level of depressive symptoms and the state anxiety score were higher in chronic pain patients than in matched control participants. Chronic pain patients had a lower estimated IQ than controls, and showed impairments on measures of spatial and verbal memory. Attention responding was altered in the patient group, possibly indicative of impaired inhibitory control. There were significant interactions between chronic pain condition and age on a number of cognitive outcome variables, such that older patients with chronic pain were more impaired than both age-matched controls and younger patients with chronic pain. Chronic pain did not appear to predict performance on the Wisconsin Card Sorting Task, which was used a measure of executive function. Compared to healthy control participants, patients with chronic neuropathic pain showed cognitive deficits which were most pronounced in older pain patients. Our study shows that chronic pain is associated with impaired memory and attention.

ePO30

OLDER ADULTS' PAIN PERSISTENCE IN A 10-YEAR FOLLOW-UP - A POPULATION-BASED STUDY

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Background and aims: Chronic pain markedly affects quality of life of an individual. The objective was to examine persistence of both pain intensity and interference in community-dwelling elderly.
Methods: Questionnaire-based and clinical data of 1,954 subjects included at baseline were collected in four visits (year 2002, 2005, 2008, 2012). Based on self-reports, subjects (mean age 62.6 years in 2002) were divided into four pain categories using a foursquare model: Category I: no to mild SF-36 pain intensity and interference; Category II: Moderate to very severe pain intensity, no to a little bit interference; Category III: no to mild pain intensity, moderate to extreme interference, Category IV: Moderate to very severe pain intensity and interference.Pain persistence and pain-associated factors were examined. Childhood index was calculated to reflect the childhood home environment.
Results: Higher age, low education years, co-morbidity and negative childhood environment were related to higher levels of pain interference regardless of intensity.Category IV participants improved their pain situation, whereas Category I remained stable throughout the follow-up. Musculoskeletal disease (OR 0.22 [CI 0.16 to 0.30], p < 0.001), BMI (OR 0.93 [CI 0.90 to 0.97], p < 0.001) and Childhood index (OR 1.03 [CI 1.00 to 1.05], p < 0.05) were

associated with subjects‘ permanence in Category I.
Conclusions: Separate assessment of pain intensity and interference is important in older adults. Already early life years affect individual‘s pain situation in adulthood. Several factors were identified to which preventive methods may be targeted in order to prevent pain chronification.

eP031

CHRONIC PAIN IN THE ELDERLY: THE THERAPEUTIC ITINERARY EXPERIENCED IN THE CITIES OF BOTUCATU/SP (BRAZIL) AND SEVILLE (SPAIN)

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Objective: To understand the therapeutic itinerary gone through by elderly patients with chronic pain in search for health care services in the cities of Botucatu and Seville.
Method: qualitative study using the social phenomenology frameworks by Alfred Schütz, which offer a systematic approach for understanding the social aspects of human action. Data were collected by means of open interviews with 31 elderly patients, 15 of whom were in Brazil and 16 in Spain and answered the following question: “how have you solved your chronic pain problem? Tell me”.
Results: the analysis of their accounts allowed for designing three categories: 1) Search for medical services in primary care; 2) Inequalities and access difficulties; 3) Knowledge of the multi-professional team and its benefits. It was observed that the elderly patients in both cities lived with chronic pain and that it was predominant in the spine and lower limbs. The search for medical services in the primary health care level was similar in both cities. The use of home remedies, analgesic cream, massage and rest, in addition to allopathic medicines recommended by relatives, was frequent in both groups. The search for help was centered on the doctor‘s figure. When accessing the health service, the patients make contact with other health care professionals and benefit from it. In both institutions, it was necessary to resort to secondary care services, with greater access difficulty in Botucatu. Although the two systems are similar in their organization, quality differences are reported as regards the care provision culture.

eP032

IMPACT OF PAIN ON THE QUALITY OF LIFE AFTER THIGH AMPUTATION DIABETIC ETIOLOGY

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Introduction: The most common need for amputation is due to the complication of the underlying diabetes mellitus disease.
Objective: Determination of the presence of pain in patients with amputation and impact on the quality of life of patients with ambulatory dysfunction of diabetic etiology.
Methodology: The study included 30 patients with amputation of diabetic etiology who were treated at the Clinical Center for Medical Rehabilitation of the Clinical Center of Vojvodina in Novi Sad. To evaluate the quality of life, the Short Form 36 questionnaire (SF-36) was used, in which the domain of pain was specifically analyzed, as well as the impact of bodily pain in the overall quality of life.
Results: The results show that all domains of quality of life of patients with amputation of diabetic etiology of significantly lower values compared to standard values. The most pronounced poor physical functioning (34,00 /

85,40) as well as the limitation of physical functioning (33,33 / 81,20) of these patients, which was expected, while minor deviations in the domains of mental health, social functioning and vitality of these patients compared to the general population. It was also observed that the values of the domain of pain (55,07) in patients with ancillary amputation of diabetic etiology are significantly lower than in the general population (75,50), which affects the overall quality of life of these patients.
Conclusion: Pain in a patient with an amputation of diabetic etiology has a significant effect on the quality of life of these patients.

ePP033

EVIDENCE REVIEW TO GUIDE THE PHARMACOLOGICAL MANAGEMENT OF CHRONIC PAIN IN OLDER ADULTS IN THE UK

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Background and aims: In older adults, chronic pain remains a major unmet clinical need. There is a strong reliance on pharmacological treatment which is based on evidence from younger adults. This study will review the current evidence from older adults and will be used to update clinical guidelines for pain management for older people in the United Kingdom.
Methods: A structured search of multiple databases was conducted to identify articles (2009-2018) which focused on pharmacological pain management in older adults (>65 years). Articles were reviewed and graded according to quality of evidence. Additional systematic reviews were identified through manual searches to provide baseline state of evidence in younger adults.
Results: The review initially identified 168 articles. Most studies were of limited quality or expert opinion and very few focussed specifically on older adults. 42 studies were identified and reviewed in depth; these included randomised controlled trials, systematic reviews and cohort studies. As with evidence from younger adults there was a tendency toward poor efficacy of most medicines for chronic pain. Many of these medicines were associated with adverse events which would be contraindicated in older adults due to unacceptable risks. The quality of evidence from this review and results for specific medications will be presented.
Conclusions: This review demonstrates that there is a paucity of evidence for the pharmacological management of chronic pain in older adults and stresses the need for large-sized properly conducted studies in older people to deal with this common problem.

ePP034

EVIDENCE-BASED GUIDANCE ON THE PHARMACOLOGICAL MANAGEMENT OF CHRONIC PAIN IN OLDER ADULTS IN THE UK

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Background and aims: Chronic pain management remains a major unmet clinical need in older adults, with most evidence based on studies from younger adults. The aim of this study was to analyse published studies on the pharmacological management of chronic pain in older adults, to inform updated clinical guidelines.
Methods: A detailed analysis and interpretation was undertaken from the results of a structured literature review which focused on the pharmacological management of chronic pain in older adults (>65 years). Studies conducted on older adults were compared with those from younger adults to derive appropriate medicine specific guidelines.
Results: The literature review revealed that there were very few quality studies conducted on older adults over the study period (2009-2018). Overall, studies showed that there was limited efficacy for most medicines in chronic pain and that evidence for guidelines must be extrapolated from studies on younger adults. Regular paracetamol is still recommended despite limited efficacy in chronic pain and possible increased risk of side-effects. Systemic non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided due to cardiovascular and bleeding risks, although topical formulations can offer similar efficacy with fewer side-effects. Opioids have limited benefit for chronic pain and may be associated with unacceptable side-effects in older adults. Anticonvulsants gabapentin and pregabalin remain first choice treatments for neuropathic pain but their use requires caution.
Conclusions: The paucity of primary evidence to inform the pharmacological management of chronic pain in older adults highlights the importance of a multifaceted approach to chronic pain in older people.

PAIN IN VULNERABLE GROUPS

eP035

ANALGESIC MEDICATION FOR PEOPLE WITH DEMENTIA: THE PERSPECTIVES OF PEOPLE WITH DEMENTIA, FAMILY CAREGIVERS, AND HEALTHCARE PROFESSIONALS

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Background and aims: Dementia and pain are common in older adults. Clinical features of dementia (e.g. cognitive deficits and associated communication difficulties) may complicate the identification, assessment, and treatment of pain. This study explored the perspectives of people with dementia, family caregivers, and healthcare professionals (HCP) on the use of analgesic medication for people with dementia.
Methods: Dyadic semi-structured interviews (person with dementia and their family caregivers) and individual semi-structured interviews (family caregivers and HCPs) were conducted. Interviews were analysed thematically.
Results: 8 dyadic interviews, 1 individual interview with a caregiver, 9 interviews with GPs and 5 with psychiatrists. Four subthemes relating to the “the challenges, concerns, and considerations of analgesic treatment” were identified. 1) Identifying and assessing pain 2) Concerns about analgesic medications 3) Consideration of comorbid health conditions, and 4) Social and environmental factors. These themes highlight the complex nature of pain identification, assessment and decision making in analgesic treatment for this population, many of whom were

already taking numerous medications, and the important role of caregivers in identifying pain and in pain control.
Conclusions: People with dementia, caregivers, and HCPs highlighted a number of concerns regarding assessment of pain and analgesic use for this population, making the decision to give or prescribe analgesics challenging. It is essential to develop guidance to support family caregivers to identify and manage their relative's pain. Future research should also continue to investigate and develop strategies to identify and manage pain that are appropriate for community settings.

eP036

MANAGING BONE CANCER PAIN DURING PREGNANCY: A CASE REPORT

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Bone cancer is uncommon. It occurs predominantly during adolescent reproductive age of 15-19 years old; hence there are cases of bone cancer during pregnancy. Most frequent symptom is pain and if this is undertreated, there is a risk of acquiring long term pain and decrease quality of life. Data on cases of managing pain among pregnancy are few. This case reports a 25 year old, osteosarcoma patient who is pregnant and suffering from right pelvic pain. Patient was managed initially with Tramadol with the use of patient controlled analgesia (PCA) which provided pain relief. Upon discharged, she was prescribed with Tramadol as a maintainance and rescue medication for incidental pain. Pain is controlled throughout the course of pregnancy. She then delivered a preterm (35 weeks) baby boy APGAR score 9, Ballard score: 35weeks, birth weight: 1,720 grams, birth length: 39cm via primary low transverse caesarean section under spinal anaesthesia due to premature prelabor rupture of membrane and cord prolapsed. The born child has no congenital malformation and heart defect.
This case presented an option to health care providers to prescribe Tramadol as safe and viable in managing patients with cancer pain during pregnancy. However the cause of premature rupture of membrane that led to prematurity cannot totally rule out caused by the medication.

eP037

CHALLENGES IN THE PAIN MANAGEMENT OF MACHADO-JOSEPH DISEASE

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Background and aims: Muscle cramps are frequently found in patients with Machado-Joseph Disease (MJD). Though pain is a significant, sometimes disabling symptom, quantitative and validated assessment tools are less developed and treatment guidelines do not consider it.
Case description: We report the case of a patient reporting severe myofascial pain as a predominant symptom of his MJD. He had persistent truncal muscle cramps and suffered recurrent mechanical injuries due to accidental falls. He was initially treated with simple analgesics and given a trial of pregabalin, baclofen and tramadol. He also tried acupuncture and cupping with limited effect. The patient reported improvement with stretching exercises.
Discussion: The possible aetiologies of pain in MJD are multiple, including neuropathic pain from somatosensory system degeneration, and nociceptive pain from osteoarticular and muscle excitability abnormalities. Though symptomatic analgesia is necessary, it risks predisposing the patient to both physical and psychological dependence on the reflex use of analgesics to treat breakthrough episodes.
Significant concern was raised over the concurrent usage of baclofen and pregabalin causing worsening drowsiness and imbalance, which coupled with his ataxia, could increase the risk of unsteadiness and falls causing injury and further deconditioning.

As MJD is not life-limiting, using long-term opioids in chronic non-cancer pain remains controversial as it has been associated with physical and psychological dependence.
Conclusion: Currently, there is no known cure for MJD but studies have shown a potential use for agents such as antiepileptics and varenicline to improve ataxic symptoms. Providing analgesia remains challenging in such patients.

eP038

PREVALENCE OF PAIN IN PEOPLE LIVING WITH HIV/AIDS

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People living with HIV/aids have several persistent symptoms that develop during the course of illness, with pain being one of those symptoms that may be related to changes in health-related quality of life and mood.
Objective: to analyze the prevalence of pain people living with HIV/aids and to analyze their relationship with major depressive episode and health-related quality of life.
Method: Cross-sectional study. A sociodemographic questionnaire, a clinician, the Patient Health Questionnaire-9 (PHQ-9), the Brief Pain Inventory and the HIV/aids Targeted Quality of Life were used. Participants: 302 people living with HIV/aids, in the age group from 18 to 59 years, treated at a specialized care service.
Results: 59.27% reported pain of mild intensity. As for multiple logistic regression, the one-point increase in the Targeted the Quality of Life HIV/aids instrument decreased the chance of pain reports by 4%. Women had a 79% higher chance of reporting pain and 2.07 times more likely to report moderate or severe pain than men. As for schooling, a higher level of school education presented a 35% less chance of reporting pain, scoring ≥ 9 on the PHQ-9 had a chance to report 2.11 times greater than those who scored < 9 and 2, 48 times more likely to be moderate and severe.
Conclusions: There is a high prevalence of pain in people living HIV/aids, the prevalence of pain in these people has a negative impact on health-related quality of life and is a significant factor in the development of major depressive episodes.

eP039

DEVELOPMENT OF AN ECOLOGICAL MONITORING AND PAIN SELF-MANAGEMENT APP FOR OLDER ADULTS

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Background and aims: Untreated pain in older people is a major impairment of the quality of life and not infrequently leads to enormous psychological disturbances such as social isolation, limited activity or depression. Due to reduced mobility, it is very strenuous for many older people with pain to be present to participate in an ambulatory treatment. It is where E-health programs can be considered.
Currently there are over 300 pain self-management apps on the market. However, many of them have been developed with minimal input from clinicians and very few are based on a scientific theoretical and conceptual foundation. And very few have focused specifically on the needs of older people.
Therefore, the main aim of this project is the development and feasibility testing of a mobile health app for older people with chronic pain that will later be used in a RCT study.
Method: For this pilot study, we will include 40 participants with chronic pain over the age of 65. We will use

evidence-based elements from cognitive behavioral therapy and self-management programs for the treatment of chronic pain in older adults to develop the content of this self-help application. For the programing of the app we will use an already existing platform called SelfHelp WebApp to create web applications for self-help interventions.
Results: Preliminary results of the development process will be presented.
Conclusion: Potential benefits for older adults with chronic pain are invaluable as this app will address most barriers for effective treatment of older people with chronic pain.

eP040

ANALYSIS OF THE CLINICAL CHARACTERISTICS OF FRAIL PATIENTS WITH BREAKTHROUGH PAIN

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Background and aims: Frailty is a complex situation, characterized by a deterioration of multiple physiological systems. The appearance of breakthrough pain (BTP) in frail patients has a significant impact on their quality of life (QOL). The aim of the study was to analyze the clinical and social characteristics of frail patients with BTP.
Methods: A cross-sectional, observational, multicentre study was conducted, involving frail adult patients (Frail-scale score≥3), with adequately controlled baseline pain and diagnosis of BTP. The socio-demographic characteristics, socio-family assessment (Gijón scale), Karnofsky Performance Status (KPS), comorbidities, QOL (EuroQoL-5D-5L) and characteristics of chronic pain and BTP were recorded.
Results: A total of 240 patients (mean age 68 years (24-91); 58.5%men) were included. The mean Frail scale score was 3.9 points (IC95% 3.8-4) with a mean KPS of 63.3% and a mean Gijón scale score of 4,9 points (IC95% 4,5-5,3). Most patients were oncologic (92.9%; n = 222). Patients presented 3.8 episodes of BTP/day with a mean

duration of 34.1 minutes. The intensity of BTP was mild (3%), moderate (33.8%), intense (45.9%) and excruciating (17.3%). BTP was spontaneous 51.3% of the cases and appeared at night (12.6%) or during the day (38.5%). BTP was unpredictable in 65.4% of the patients. Pain was somatic (25.4%), visceral (22.9%), neuropathic (15.8%) and mixed (32.1%). Opioids were mainly (89.2%) the treatment of choice for BTP.
Conclusions: To our knowledge this is the first study describing the clinical characteristics of frail patients with BTP. BTP characteristics did not differ from those described in non-frail patients.

eP041

ALTERNATIVE MEDICINE SYSTEM AND MUSCLE PAIN CONTROL IN HIV CASES

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Issues: Pain/myositis very-common in HIV patients. don't have access to palliative & rehabilitation services. No specific-centre in asia for hiv-patients-rehabilitation. Hence our Our-NGO used locally-available Complementary-alternative-Medicines [CAM] for providing home-based-care of pain.
Aims: To provide CAM in collaboration with Traditional-faith-hearers[TFH]. Evaluate cost-efficacy/responses of CAM IN muscle pain of HIV-patients-on-ARV-drugs
Methods: 122 patients [n=122] of RA, 34-67 years enrolled. 68% females, 32% males. 73% complained of severe muscle-pain post-ARV-therapy. 12% physical-deformities.
Mud therapy 21%, Bach-flower remedy 40%, Accupressure/Accupuncture 57%, Hydrotherapy 24%, Hypnotherapy 75%, ayurvedic-therapy 82%, 26% Unani Medicines, 61% Homeopathic-medicines, 72% on Herbal-Oil-TFH massage -therapy, 58% Aromatherapy. 8 sessions CAM. feedback Performa responses evaluated. Our NGO functioning shown graphically to EAACI-2009-conference-participants. pain recorded scale of 1-10. mean score pain fell from 8.2 (SD 1.4) to 3.8 (SD 2.7) point($p < 0.001$).
Results: Group-1 NSAIDs + corticosteroids [n=60], Group-2 CAM [n=122], Group-3 NSAIDs+corticosteroids +CAM [n= 32]. GROUP-4 NSAIDS+OPIOIDS . Symptom relief(n=90), Gr-1, 2, 3 preferred CAM compared to standard pain-killers (n=95). CAM 52% cheaper compared to Allopathic medicines. CAM-available locally/high-acceptance.
Conclusion: 122 of hiv-Patients used/preferred CAM. CAM needs further evaluation. At EFIC congress, We shall form group with researchers from USA/Europe to develop this policy to exchange experiences/knowledge.
Limitations : due to lack of expertise/resources/technical-assistance sample size was small.

eP042

LEVEL OF PAIN AND ANALGETICS CONSUMENT AFTER CESAEAN SECTION AND ITS DIFFERENCES DUE TO ANESTHESIA TYPE AND DEMOGRAPHICS FACTORS

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The aim of this study was to investigate the level of pain and analgesic consumption in puerperas after cesarean section in relation with the administered type of anesthesia. This was a prospective study conducted in the Department of Obstetrics and Gynecology Hospital Mostar in the period from September 2015 to June 2016. The study included a sample of 111 puerperas. The experimental group consisted of 54 puerperas which were operated under spinal anesthesia, while the comparative group were 57 puerperas which were operated under general anesthesia. Output parameters of the study were feeling pain and the number of used analgesics. Input parameters of the study were: age, gestational age, education and environment of life. To determine the level of pain was used a visual-analogue scale of pain (VAS). Results show that puerpera surgery in spinal anesthesia had significantly lower pain sensation ($p = 0.031$) and less need for analgesic consumption in the post-operative period in relation to those

operated under general anesthesia (p = 0.024); increased age is associated with a lower sense of pain (p= 0.014) and less need for analgesics (p < 0.05); higher level of education is associated with greater need for analgesics (p = 0.016)); life in an urban environment is associated with a greater sense of pain (p = 0.023) and less need for analgesics (p < 0.17). Spinal anesthesia for cesarean section results with less pain and less need for analgesics after surgery in the postoperative period compared to general anesthesia.

eP043

A NEW TOOL FOR PAIN EVALUATION IN BLIND POPULATION

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Background and aims: Visual impairment nearly affects 2 millions people in France and the causes of this deficiency may be congenital or acquired. Variations in pain perception in blind and visually impaired persons may distort pain assessment when using standard tools and when persons have several sensory disabilities (1). A pain assessment scale for blind people has been developed to limit pain underestimation and therefore under-treatment of pain in this population.
Methods: The design of the granulometric scale (VISIODOL®) is based on the ability of blind people to discriminate their pain intensity using their fingertip on a sandpaper scale with increasing roughness. Preliminary studies have validated the ergonomic parameters in our target population in order to acquire the final prototype. The sensitivity assessment of this new tool is being carried out in persons with no impairment, using thermal stimuli delivered by the Pathway Médoc® (Medoc Ltd, Ramat Yishai, Israel) system.
Results: The sensitivity analysis of VISIODOL® versus the visual analogue scale showed a good correlation (r = 0.982) between the different intensity measurements. The granulometric scale is being validated currently in blind people with the support of centres and associations for blind people.
Conclusion: When fully validated, VISIODOL® will be integrated in a pain evaluation kit for vulnerable people and persons with sensory disabilities.
Bibliographie:
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eP044

WORK RELATED MUSCULOSKELETAL DISORDERS AMONG GARMENT WORKERS IN SOUTH ASIA: A SYSTEMATIC REVIEW

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Background and aims: Work-related Musculoskeletal Disorders (WMSDs) are considered one of the central occupational health problems in both the developed and developing countries. Localised pain, swelling, and discomfort in the affected area are the common symptoms of WMSDs and may result in chronic pain and lifelong disability. The aim of this systematic review is to estimate the burden of WMSDs among garment workers in South Asian Countries.

Methods: Protocol and search strategy were registered with PROSPERO [CRD 42018089638]. In brief, 15 electronic databases, 1 academic search engine and 4 grey literature sources were used to search publications. Studies focusing on garment workers in South Asia were included, irrespective of type and date of publication. Joanna Briggs critical appraisal tools were used for quality assessment.
Results: Initially 2320 studies were identified. Following screening and assessing eligibility, 30 studies from 4 countries were included in the full paper review. Heterogeneity existed in study population, sample size, and measurement of determinants. The reported prevalence of WMSDs among garment workers ranged between 15.5% - 88%. 14 studies reported shoulder and low back pain, while 12 studies reported neck and knee pain among garment workers. Static work posture, long working duration, repetitive actions and low job satisfaction were reported as main contributing factors. The most frequently used assessment instrument was Nordic Musculoskeletal Questionnaire.
Conclusions: This systematic review affirmed that the burden of WMSDs among garment workers in South Asian region are high. There may be opportunities to intervene and minimize WMSDs based on identified factors.

ACUTE PAIN

eP045

ULTRASOUND GUIDED INTERSCALENE BLOCK ASSOCIATED TO SEDATION FOR ARTHROSCOPY SHOULDER SURGERY

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Background: Accuracy in brachial plexus localization techniques due to ultrasound and nerve stimulation allowed regional anesthesia to become the method of choice for shoulder surgery. Shoulder surgery produce severe postoperative pain. The interscalene block associated to sedation makes possible a faster postanesthetic recovery. It has been demonstrated that interscalene block offers good control of postoperative pain.
Methods: An observational descriptive study has been done in a period of a year. Aiming to demostrate that interscalene block associated to sedation is effective and safe. A total of 53 patients ASA I-II scheduled for elective arthroscopy shoulder surgery were collected. Midazolam 1-2mg was administrated previous nerve stimulation and echo guided interscalene block with ropivacaine 0,5% 15ml. Once in operating theater sedation was carried out with remifentanil.
Analgesia status was assessed by visual analogue scale (VAS).
Results: During the year 2018, data were collected from 53 patients undergoing arthroscopy shoulder.
The average age was 60 years (22-85), 23 men and 30 women.
The average hospital staying was 8 hours.
At PACU , VAS was 0 in 50 patients, VAS 4 in 2 patients and VAS 3 in 1 patient.
At hospital step out, VAS was 0 in 49, VAS 2 in 2 and VAS 5 in 2 patients.
It was found headache and gastritis in 2 patients.
No patient complained of nausea or vomiting.
Conclusions: Interscalene block associated to light sedation for shoulder arthroscopy simplifies perioperative management without important side effects.
This allow to perform arthroscopy shoulder on a day case surgery.

eP046

THE EFFECT OF LOCAL WOUND INFILTERATION VERSUS CAUDAL BLOCK ON WOUND INFECTION AND HEALING AFTER INGUINAL HERNIOTOMY IN PAEDIATRICS-A RANDOMIZED STUDY

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Background and aims: To compare the use of wound infiltration infiltration (LWI) versus caudal block (CB) on wound infection and healing after inguinal herniotomy in pediatrics.
Methods: 50 patients were assigned randomly to two groups (n = 25/group) that received LWI using up to 1mg/kg bupivacaine 0.25% or CB in group C using 1mg/kg bupivacaine 0.25%. We measured wound infection and healing (primary outcome) using Southampton scoring system and postoperative analgesia (secondary outcome) using FLACC scale.
Results: There was statistically significant as regard Southampton scoring system between the 2 studied groups with higher number of patients with higher scores in group L (P=0.008). Comparison between the two groups according to preoperative and postoperative white blood cells count shows statistically significant increase in group C at day 7 postoperative (P=0.015). There was statistically significant decreased in pain score scale in group C compared to group L at 15min (P=0.035), 60min (P=0.007), 3 hours postoperatively (P=0.049). Analgesic requirement shows statistically significant increase in group L at 15min. & 60 min. postoperative (P=0.022). Postoperative complication was not statistically significant (p=1.000)
Conclusions: LWI is safe and satisfactory analgesia for surgery, and compared to CB it is not overwhelming. CB provides better and longer analgesia, however complications are more common. Wound healing found to be better with CB but it was clinically insignificant, as all patients healed normally. LWI did not cause wound infection in any of the patients included in the study and showed decrease in WBCs in group L in day 7 postoperative.

eP047

CAN CENTRAL PAIN MODULATION AND CIRCULATING BETA-ENDORPHINE LEVELS PREDICT ACUTE POSTOPERATIVE PAIN IN KNEE ARTHROSCOPY?

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Background and aims: Almost one third of surgical patients report moderate to severe pain in the acute postoperative period, and approximately 5% are at risk of developing severe persistent pain after surgery. Attempts towards precision medicine have resulted in proposing parameters that can predict the risk of developing pain after surgery. The aim of this study was to investigate if conditioned pain modulation (CPM) and salivary levels of beta-endorphine (BE) can identify patients at risk of developing acute postoperative pain.
Methods: Twenty-four men scheduled for elective knee arthroscopy participated in this study. Three consecutive sessions were carried out preoperatively, 1.5 hours postoperatively, and one day after the operation. Measurement of pressure pain threshold (PPT, test stimulus) was conducted on both operated and control knee. CPM was induced by a cold pressor test (CPT, conditioned stimulus) for 2 minutes, while simultaneously measuring PPT. Saliva samples were analyzed for BE concentrations.
Results: CPM and salivary BE were affected by knee arthroscopy (p=0.028; p=0.039), and the functioning of CPM improved after surgery (13%). Neither CPM nor BE presented any correlation to acute postoperative pain (p=0.169; p=0.822). A tendency was evident that patients with a better CPM function preoperatively had lower pain intensity shortly after the surgery.
Conclusion: The functioning of CPM and salivary levels of BE were affected by knee arthroscopy. None of the parameters were associated to acute postoperative pain. This is a preliminary study to inspire larger studies to investigate the potential predictive value of these parameters to acute postoperative pain.

eP048

PREDICTING ACUTE POSTOPERATIVE PAIN IN KNEE ARTHROSCOPY BY THERMOGRAPHIC IMAGING AND EVALUATION OF SALIVARY LEVELS OF PROSTAGLANDIN E2

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Background and aims: In the acute postoperative period 30 % of patients report moderate to severe pain. Identification of patients at risk for developing acute postoperative pain may help in more efficient pain management. The aim of this study was to investigate whether average surface temperature on the knee prior to knee arthroscopy and salivary concentration of prostaglandin E2 (PGE2) can predict acute postoperative pain.
Methods: Twenty-four men (18-48 years) who underwent knee arthroscopy participated in three consecutive sessions. Session 1 was conducted preoperatively, session 2 1.5 hours postoperatively, and session 3 one day postoperatively. Knee pain at rest was rated on a visual analog scale (VAS). The average surface temperature on each knee was assessed by thermographic imaging and salivary concentrations of PGE2 were determined by enzyme-linked immunosorbent assay (ELISA).
Results: Surface temperature on the knee and salivary PGE2 concentrations were affected by knee arthroscopy (p=0.001; p=0.001). The average surface temperature on the operated knee dropped 1.9ºC 1.5 hours after operation and increased with 3.8°C one day after operation. Preoperative surface temperature on the knee did not show a correlation to acute postoperative pain (p=0.904). Preoperative PGE2 concentration was correlated to acute postoperative pain (p=0.036).
Conclusions: Preoperative surface temperature on the knee did not show a correlation with postoperative pain. Preoperative PGE2 concentration in saliva may predict acute postoperative pain in male patients undergoing knee arthroscopy. This suggests that circulating biomarkers might be of higher value for prediction of acute postoperative pain compared with regional temperature at the knee.

eP049

AUDIT OF POSTOPERATIVE PAIN MANAGEMENT RECOMMENDATIONS (PPMR) USE IN HOSPITAL OF LITHUANIAN UNIVERSITY OF HEALTH SCIENCES KAUNAS CLINICS (LUHS KC)

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Poorly controlled acute postoperative pain is associated with increased morbidity, functional and quality-of-life impairment, delayed recovery time, prolonged duration of opioid use.
Aim: To determine the use of PPMR by the anaesthesiologists in LUHS KC and to identify patients‘ postoperative pain intensity.
Patients and methods: During 2017 prospective observational Survey was conducted in LUHS KC. Data analysis performed in 2018. The Survey consists of 3 parts: 65 anaesthesiologists were questioned about PPMR use. Questionnaire was made by the authors of the Survey (goal of the questionnaire was to find out if anaesthesiologists were using PPMR in their clinical practice). 2nd and 3rd parts took place in the departments of Obstetrics & Gynecology, Orthopedics & Trauma and Surgery. The medical records of 100 patients were analysed and 81 of the patients, whose medical records had been analysed, were interviewed according to Questionnaire was made by Survey authors.Statistical data analysis performed with SPSS 23.0 (p< 0.05).
Results: 42 (64.6 %) respondents-answered that they were following PPM Recommendations in their clinical practice, meanwhile the rest - 23 (35.4 %) anaesthesiologists stated, that they were not following the guidelines. Patients who underwent surgery have been feeling averagely 5.6 out of 10 pain intensity. 19 (23.5 %) patients felt mild pain, 29 (35.6 %) moderate and 33 (40.7 %) felt severe pain after surgery. According to medical documentation

only in 45.0 % of cases doctors followed the PPMR. In those cases, when doctors did not follow the PPM Recommendations, patients felt pain more severely ($p < 0.05$).
Conclusions: More than a half of anaesthesiologists stated that they were using PPM Recommendations in their clinical practice. However, we found out that in clinical practice PPM Recommendations were followed less frequently. In most of the cases patients felt severe pain after surgery.

eP050

POSTOPERATIVE PAIN AFTER TONSILLECTOMY: EFFECT OF ADJUVANT APPLICATION OF HONEY

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Introduction: Pain after tonsillectomy is an unsolved problem in otorhinolaryngology. For this reason, the effect of an oral application of honey every two hours (20g, 8 times/d) on postop-day 1 was measured with the benchmark project QUIPS (quality improvement in postoperative pain management).
Material and methods: Data of the honey group (56 patients between 18 and 75 years) was collected between 12/2015 and 03/2017, data of the control group (18 patients between 19 and 65 years) between 02/2013 and 11/2013.
Results: Pain during activity of the control group was more than 4 (NRS 5.00 ± 2.33 to 4.28 ± 2.54), with a re-increase of pain intensity on day 5. In the honey group, pain during activity decreased continuously. However, neither minimum nor maximum pain was significantly lower in the honey group on the first day than in the control group ($p = 0.217$, $p = 0.980$). With regard to pain-related impairments, there was a clear improvement on the first day ($p = 0.026$) in the honey group compared to the control group, as well as significantly fewer postoperative haemorrhages ($p = 0.028$). Use of opioids on day 1 was six times higher in the control group (odds ratio = 6.051, $p = 0.011$).
Conclusion: Maximum pain and pain during activity after tonsillectomy remain high. Applying honey therapy, the opioid intake on day 1 as well as the number of postoperative haemorrhages could be lowered. Re-assessing these results in a larger cohort might show the effect of honey after tonsillectomy more clearly.

eP051

POST OPERATIVE PAIN SCORE AFTER NEPHRECTOMY IN THE ABSENCE OF BOTH INTRAVENOUS PATIENT CONTROLLED ANALGESIA AND OPIOIDS: AN OBSERVER BLINDED STUDY

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Background and Aim: Adequate post operative pain management is a major problem in our University Hospital due to absence of intravenous patients controlled analgesia (IVPCA) devices together with opioids restriction. The aim of the present research was to study post operative pain score after open nephrectomy in the absence of IVPCA devices and opioids restriction.
Patients and methods: After local ethical committee approval and informed consent , 80 adult patients were studied for the first 24 hours after open nephrectomy under general anesthesia with or without single shot regional analgesia depending on patients approval , anesthetist preference and skills and availability of ultrasound. Post operative Paracetamol and Ketorolac were used when needed.
Measurements: 1-Mean hourly post operative Visual Analogue Scale (VAS) for the first 24 hours considering no pain VAS 0-3 moderate pain VAS 4-7
severe pain VAS 8-10
2- Mean analgesics in the first 24 hours

3- operative regional analgesia was recorded
Results: There was Statistically significant higher percentage of patients having no pain 42 % when compared to patients with moderate pain 26 % or severe pain 32% .
No statistically significant difference of paracetamol or ketorolac consumption.
Intraoperative Regional analgesia was done in all patients with no pain , in 30 % of patients with moderate pain . No patients with severe pain had block.
conclusion: Absence of IVPCA and opioids leads to higher post operative pain scores after open nephrectomy. Patients had better pain relief when regional analgesia was combined with general anesthesia.

eP052

POSTOPERATIVE PAIN MANAGEMENT IN LAPAROSCOPIC COLON SURGERY. HOW TO REDUCE PAIN LEVELS WITHIN AN ENHANCED RECOVERY PROGRAM?

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Background and aims: Since the introduction of enhanced early recovery program (ERAS) in laparoscopic colon surgery, patient-controlled epidural analgesia (PCEA) is stopped within 24 hours postoperatively, often leading to significant rebound pain. Recently, the Sufentanil Sublingual Tablet System (SSTS) was introduced to manage postoperative pain. Reported pain and side effects of both treatment methods were evaluated.
Methods: This retrospective study compared a group receiving STSS for 48 hours (N=54) to a PCEA-group with parenteral opioids as needed on postoperative day (POD) 1 (N=49). All laparoscopic segmental colectomies for cancer were included in the study period. Patient records between February 2017 and May 2018 were reviewed for reported pain intensity (NRS), length of stay, first defecation, postoperative nausea and vomiting (PONV) and prolonged ileus.
Results: Overall, 103 patients were included. NRS was measured 6 times on POD 1. A significant difference in the maximum NRS was found in favor of the SSTS-group (4 vs 5 p=0.006). The frequency of NRS > 3 in the PCEA-group was significantly higher (2 vs 1 p=0.001). Even after STSS was removed on POD 2, this effect continued (1 vs 0,50 p=0.042). There was no difference in length of hospital stay (p=0.695), median day of first defecation (p=0.613), prevalence of PONV (p=0.616) nor prolonged ileus (p=0.106).
Conclusions: Treatment of postoperative pain with STSS after laparoscopic segmental colectomy for cancer significantly improved experienced pain without increasing side effects. STSS may have a prominent place in pain management within ERAS, although further research in other populations is necessary.

eP053

CORRELATION OF PRE-OPERATIVE DEPRESSION WITH POST-OPERATIVE PAIN INTENSITY IN PATIENTS UNDERGOING MAJOR ABDOMINAL SURGERY: A PROSPECTIVE STUDY

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Background and aims: Post-operative pain intensity varies widely among patients and is affected by physiological, psychological, cognitive and behavioral factors. We investigate the association of pre-operative depression with post-operative pain in patients undergoing major abdominal surgery.
Methods: 31 patients, ASA I-III, undergoing elective colectomy under general anesthesia, were studied. Surgery and anesthetic management were performed by the same surgeon and anesthesiologist respectively in order to

ensure procedural uniformity. Depression was assessed using the PHQ-9 questionnaire. Pain was evaluated using the Numerical Rating Scale (NRS). Before the end of the surgical operation, patients received a bolus dose of intravenous morphine, following which a continuous infusion was started. Post-operatively, in case of pain, patients received additional morphine using a nurse-controlled analgesia protocol and the dose was recorded. Student's t-test was applied to compare quantitative variables. Chi-squared or Fischer's exact test were performed for ratios comparison. Statistical significance was set to 0.05.
Results: Patients with depression received significantly higher additional cumulative morphine dose. Patients reporting mild to severe pain at rest 24 hours and on cough 48 hours post-operatively were significantly more depressed compared with patients reporting no pain (p=0.021 and p=0.005 respectively). Logistic regression analysis showed that pain at rest 24 hours and on cough 48 hours post-operatively are independently related to and predict depression (OR=7.51).
Conclusions: Depression is likely to be a prognostic factor of post-operative pain. Its diagnosis could promote early identification of patients at risk and effective pain management for major surgery.

eP054

PATIENT SATISFACTION AFTER EPIDURAL ANALGESIA FOR RADICAL CYSTECTOMY

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The aim of this study is to precise opioid consumption and to investigate the association of analgesia, opioids or epidural, or the combination of both during and after radical cystectomy and evaluate patient satisfaction. We monitor RE-SE entropy intraoperatively and hypothesized that nociception could be detected and graded by significant changes in these variables.
Fiftheen patients scheduled for radical cystectomy participated in the study. Patients were class ASA III and were devided into two groups. Intraoperative RE-SE entropy was monitored. Primary outcomes were change in patient-reported visual analogue scale (VAS) pain score, time to first request for analgesia, overall opioid consumption measured in morphine milligram equivallents, patient satisfaction.
We performed statistical analyses to find out whether monitoring RE-SE entropy can help individualize opioid consumption intaoperatively and found out that there were no difference between RE and SE entropy to predict analgesic requirement. There was a significant difference in VAS score between 8 and 24 hours. We found a decrease in overall opioid consumption in epidural goup vs morphine group.
Combination of information from different sources may be required for monitoirng the adequacy of analgesia during anesthesia. Epidural analgesia in radical cystectomy provides optimal dynamic pain relief. Because RE includes muscular frequency analysis, it does not allow analgesic requirement evaluation in paralyzed patients. By idnetifying at-risk patients, implementing multimodal analgesia, and intervenning promptly with rescue therapies, the anesthesilogist may improve outcomes, reduce cost, and optimize the patient experience and qaulity of recovery.
acute pain management, radical cystectomy, epidural analgesia, patient satisfaction

eP055

ERECTOR SPINAE PLANE BLOCK IN PATIENTS UNDERGOING DOUBLE PORT MEDICAL THORACOSCOPY; A TRUMP CARD FOR THE PAIN PHYSICIAN IN CRITICAL CARE

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Background and aims: Pleural diseases are frequently encountered problem in critically ill patients. Thoracoscopy is useful and necessary for diagnosis, maximizing diagnostic yield and also for the treatment of pleural diseases. Conventionally, it is done under conscious sedation and local anaesthesia(LA). Acute pain following the procedure has been expressed as one of the major concern. Block is not an often tried option therefore ,we evaluated the efficacy of erector spinae plane block for intraoperative and post operative analgesia in 2 patients undergoing medical thoracoscopy.
Methods: The block was performed with sterile technique and deep to the erector spinae muscles(ESM) in a left lateral decubitus position, Ultrasound views of the T5 transverse process were obtained in the sagittal plane using a linear, high-frequency transducer. Care was taken to ensure needle-tip placement within the ESM plane by watching for a lenticular spread of LA on injection. A total of 30 mL of 0.5% ropivacaine and 50 micrograms dexmedetomidine was injected into the ESP.
Perioperative intravenous benzodiazepine and opioid requirements along with VAS scores were noted at 1 hour, 4 hours, 8 hours and 24 hours post procedure.
Results: The average benzodiazepine requirement of 2 mg midazolam and the average intravenous fentanyl requirement was 25 micrograms. Average VAS scores were 30, 20, 10 and 10 at 1 hour, 4 hours, 8 hours and 24 hours post procedure respectively.
Conclusions: Erector spinae plane block is a highly effective in providing analgesia for medical thoracoscopy with substantially reduced systemic opioid need.

eP056

POSTOPERATIVE PAIN MANAGEMENT CHALLENGES AND DIFFICULTIES IN CHANGING DAILY HABITS

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During general survey of postoperative pain management at the General Hospital of Prizren many daily clinical practices was needed to be improvement. From the key findings can be mentioned the pharmacologic treatment of pain in combination with non-pharmacologic treatment which was just in 30% cases, the evaluation of the pain using objective (33.3%) and subjective (66.7%) data, the continuous documentation which was not done due to administrative issue, and evaluation of the pain, giving of analgesics according to the description (60%) and not “as needed” (40%) etc. After this stage was done interventional phase with recommendations regarding the improvement of daily practices, it has been noted that postoperative pain management has been improved to be reflected by decreasing the degree of postoperative pain and increasing patient satisfaction. After a period of time, a survey of postoperative pain management has been conducted and it has been seen that most of the everyday practices have become the old practices, so changing the daily clinical practice or habits has been seen as a challenge for health professionals at the General Hospital of Prizren.
Based on these findings we recommend implementation of pain management programs and care policies to build pain management into standing orders, protocols and patient charts.

eP057

LOW-DOSE INTRAVENOUS KETAMINE INFUSION FOR POSTTHORACIC SURGERY PAIN: OPIOID-SPARING EFFECT AND IMPROVED FUNCTIONAL RECOVERY. A RANDOMIZED CLINICAL TRIAL

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Background and aims: Thoracotomy is associated with severe pain. Postoperative pain is often uncontrollable despite the administration of large amounts of IV morphine. It may cause respiratory and hemodynamic depression. This study evaluates the efficacy of ketamine[1] as adjuvant in patients undergoing lobectomy by open approach, through the evaluation of opioid-sparing effect and functional recovery.
Methods: This single-blind, randomized, clinical trial was conducted from October 2017 to September 2018.
Inclusion criteria:

1. Open surgery lobectomy;
2. Patients aged ≥ 18 years.

Exclusion criteria:

1. Psychological disturbances;
2. Elevated intracranial or intraocular pressure;
3. Hepatic dysfunction;
4. Cardiovascular disease or uncontrolled hypertension.

In PACU, patients received IV morphine infusion at 0.015 mg/kg/h plus saline solution (MO) or IV morphine infusion at 0.005 mg/kg/h plus IV ketamine infusion at 0.5-1 mg/kg/h (MK) for 48 hours. If NRS>3, IV ketorolac was available. NRS, wakefulness degree, rescue analgesia requirement, and adverse reactions were registered every 2 hours.
Results: 28 patients were enrolled. NRS scores improved more in MK group than in MO group ($p< 0.05$), with more stable hemodynamic and respiratory conditions. No significant side effects were recorded.
Conclusions: Ketamine shows a consistent opioid-sparing effect obtaining quick functional recovery in absence of severe side effects.
References:

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eP058

OPIOID FREE ANAESTHESIA/ANALGESIA IN THORACIC SURGERY: A CASE SERIES

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Background and aims: Poor control of pain in thoracic surgery contributes to perioperative morbidity and mortality.
Methods: This is a retrospective study of patients undergoing thoracic surgery under general anesthesia using an Opioid-free (OFA-A) technique. Premedication included midazolam,induction ketamine, propofol, magnesium sulphate, and lidocaine. Maintenance was achieved with volatiles, dexmedetomidine, lidocaine infusion and

ketamine. Acetaminophen was administered prior to surgical incision. Acetaminophen, parecoxib and tramadol were prescribed for post-operative pain, while opioids as rescue therapy.
Results: 17 patients were included in the study. Demographics, intraoperative drugs and postoperative assessment are shown in tables 1,2,3.
*mean ± SD, ** n(%), *** median(IQR)
Conclusions: OFA can be a safe and effective approach for the perioperative management of patients undergoing thoracotomy.

Age (years)*	64±12
BMI (Kg/m2)*	27.16 ±2.21
Gender Male**	12 (70.5%)

[Patient Characteristics]

Ketamine (mg)*	165.3±85.89
Magnesium sulphate (mg)*	5.625±2.14
Dexmedetomidine (µcg)*	279.18 ±119.23
Lidocaine (mg)*	263.9±77.6

[Intraoperative drug use]

	PACU	24 h
VAS at rest***	0(0-0)	0(0-0)
VAS on cough***	2.5 (0-5)	2(0-3)
VAS on movement***	2(1-4)	2(0-3)
Mobilization**	0	14(82%)
Rescue opioid analgesia**	4 (23.5%)	1(6%)

[Postoperative assessment in PACU and at 24 h]

eP059

USING OF CONUS MEDULLARIS STIMULATION IN TREATMENT OF ACUTE POSTOPERATIVE ANOGENITAL PAIN IN PATIENT WITH OVARIAN CANCER

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SCS is widely used in treatment of various chronic pain syndroms. Much less attention is paid to SCS using for relief of acute pain, since it is not financially beneficial and there are many different effective alternative methods. We would like to bring to your attention a nonstandard clinical case of a patient, who underwent SCS in order to relieve acute pain in the anogenital zone, resulting from surgery for ovarian cancer.
In early postoperative period patient noticed the appearance of acute pain in anogenital region. In connection with absolute ineffectiveness of conservative therapy, non-standard decision was made that contradicted the basic rules of neuromodulation. Epidural electrode was implanted on the conus medullaris region to perform SCS. Implantation of electrode for sacral stimulation is not advisable, due to the lack of data on the effect of electrical stimulation on the course of the oncological process.
In postoperative period, the neurostimulation parameters were picked up, as a result of which, 60% pain regression was achieved. Patient underwent continuous neurostimulation, resulting for sustained regression of pain syndrome. After removal of electrode, no pain in anogenital region was noticed. Achieving the analgesic effect allowed further chemotherapy for cancer treatment.
The mechanisms for relieving pain in this patient remain unclear to us. Neuromodulation may help to relieve acute pain, in case of ineffectiveness or impossibility of using standard treatment options. We will be grateful to colleagues who will express their opinion on this clinical case and share their experience in similar patients treatment.

eP060

ADDITIVE UTILITY OF PAIN SENSITIVITY QUESTIONNAIRE IN EXPLAINING VERY EARLY ACUTE MTBI POST-MOTOR VEHICLE COLLISION CLINICAL HEAD PAIN VARIABLITY

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Background and aims: Quantitative Sensory Testing (QST) provides a current measure of nociceptive response. Pain Sensitivity Questionnaire (PSQ) reflects trait-like cognitive representations of previous or expected pain experiences. The role of these measures in determining pain variability in acute situations is not well-explored. Study aim - to determine the additive role of PSQ in expressing post-injury headache above QST alone.
Methods: Patients post-MVC with an mTBI (n=133) were recruited.
Pain in: head, neck, and body areas; static and dynamic QST measures, and pain-related psychological questionnaires compiled within 72h post-accident.
Correlation analysis performed to determine relationship between PSQ and: 1) state personality measures 2) clinical and experimental pain.
Linear Regression Models built to examine factors contributing to the headache variance. Partial correlation analysis provided influence of each predictor on headache intensity.
Results: PSQ and psychological measures (catastrophizing, depression and stress); clinical pain and psychophysical measures were correlated.
Regression model (R-squared=.160, p< 0.001) showed high PSQ, enhanced mechanical TS and less efficient PPT-CPM explain elevated reports of headache. State features were not significantly correlated. Partial analysis showed strongest contribution provided by PSQ (partial R=.235), PPT-CPM (-.223), mTS (.199). Neck pain model (R-squared .176, p=0.072) not significant.
Conclusions: Appraisal of cognitive pain representations and imagined daily-life pain situations provides an additional trait-like facet to explain the variability in the clinical pain experience above and beyond assessing nociceptive responsiveness to experimentally-induced pain. Head and neck pain seem to have different cognitive representations.
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eP061

INTRAVENOUS OXYCODONE AND KETAMINE IN DEMOLITIVE MAXILLOFACIAL SURGERY

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Introduction: Demolitive maxillofacial facial surgery presents high intensity of postoperative pain associated with difficulty in airway management. Postoperative pain in maxillofacial surgery is one of the most severe type of pain. In our clinical practice we decided to introduce oxycodone in association with ketamine as a new postoperative pain management to achieve good analgesia (NRS < 4) without delaying extubation times, reducing the incidence of opioid respiratory depression.
Methods: After approval of the Local Ethics Committee and Informed Consent, 24 patients undergoing demolitive maxillofacial surgery were enrolled. At the end of surgery, ketamine 0.5 mg / kg was given as a bolus followed by a continuous infusion of ketamine 0.25mg/kg /h and Oxycodone 2mg /kg/h upon recovery in ICU. All recruited patients belonged to ASA class I or II. The extubation parameters were VT> 6ml / kg, spontaneous FR 14 - 16 acts per minute, PEEP 4 and PS 12 in CPAP + PS ventilation mode.
Results: In all patients treated with ketamine + oycodone in continuous infusion we achieved a valuable pain relief (NRS < 4) with a reduction in extubation time. In addition, we reported no episodes of re-intubation and only 3 episodes of rilevant desaturation (SpO2 < 90%) treated with NIV.
Conclusion: The association of Oxycodone and Ketamin, ensuring a satisfactory postoperative pain control and shortening the extubation times with reduced incidence of respiratory complications, could be the new therapeutic standard for the treatment of postoperative pain in this kind of surgery.

eP062

PRESSURE PAIN THRESHOLD AND SALIVARY LEVELS OF CORTISOL IN PATIENTS UNDERGOING KNEE ARTHROSCOPY

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Background and aims: The management of acute postoperative pain is a major challenge for clinicians. If patients with increased risk of developing acute postoperative pain can be identified preoperatively, a better pain management can be achieved. Several predictive biomarkers have been proposed, but not for acute postoperative pain. This study was designed to investigate pressure pain threshold (PPT) and salivary levels of cortisol in male patients undergoing elective knee arthroscopy and determine if these parameters can predict acute postoperative pain.
Methods: 24 men (18-48 years) who underwent elective knee arthroscopy participated in 3 consecutive sessions: prior to, 1.5 hours after, and one day after the surgery. PPT was measured on the operated and on the control knee at 8 test sites with a handheld algometer. Saliva samples were collected with passive drooling technique and analyzed by enzyme-linked immunosorbent assay (ELISA) for cortisol. ANOVA test was used for data analysis and P< 0.05 was considered significant.
Results: Mechanical sensitivity was evident following knee arthroscopy (p=0.002). Salivary cortisol levels changed after surgery (p=0.001). Preoperative PPT and salivary concentrations of cortisol did not show a correlation to acute postoperative pain (p=0.2974 and p=0.5705, respectively). However, a tendency was apparent that patients with lower preoperative PPT values had higher pain intensity postoperatively.
Conclusions: Following knee arthroscopy the operated knee became sensitized to mechanical stimuli. Salivary cortisol levels showed a stress response after surgery. Preoperative values of PPT and salivary cortisol levels did not predict acute postoperative pain in male patients undergoing knee arthroscopy.

eP063

ANALYSIS OF POSTOPERATIVE PAIN REGISTERS OF CAESAREAN SECTIONS DURING THE 2013-2018 PERIOD

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The aim of the study: To analyze the evolution of indicators of Acute Postoperative Pain (APP) during hospitalization after caesarean section to assess effectiveness of analgesic protocols.
Material and methods: We have analyzed caesarean section performed with spinal anaesthesia, which was performed with hyperbaric bupivacaine 0.5% (10-12 mg) plus fentanyl 10 µg (2013-2014) or morphine 100 mcg (2015-2018). Postoperative analgesia was completed with metamizole plus paracetamol and morphine if pain ≥3 according to Verbal Numerical Scale (VNS). The APP values are recorded in the electronic medical record. The following indicators are analyzed: percentage of patients with VNS ≥3, ≥7, and two consecutive records of VNS ≥3 and VNS ≥7
Results and discussion: Table shows indicators. These data show a tendency to decrease the percentage of patients with VNS ≥3, ≥7, two consecutive records of VNS ≥3 and ≥7, in the 1st and 2nd postoperative day, due to the replacement of fentanyl by morphine

Year	NºC section	%VNS ≥3 1st day	%VNS≥3 2nd day	%VNS≥7 1st day	%VNS≥7 2nd day	%VNS≥3 2 consecutives times 1st day	%VNS≥3 2 consecutives times 2nd day	%VNS≥7 2 consecutives times 1st day	%VNS≥7 2 consecutives times 2nd day
2013	324	31.48	19.4	2.16	1.54	5.56	5.86	0.31	0.00
2014	312	26.96	19.23	1.60	2.24	3.21	3.85	0.00	0.32
2015	324	23.46	10.49	2.47	0.62	4.63	1.23	0.31	0.00
2016	324	27.47	9.26	1.54	0.31	4.94	1.23	0.62	0.00
2017	337	30.56	9.20	2.67	0.30	6.23	1.48	0.30	0.00
2018	297	20.88	6.06	2.69	0.34	3.03	0.67	0.67	0.34

[APP values during the first 48h. (VNS: Verbal Numeric Scale)]

eP064

PAIN-SPECIFIC MECHANISMS OF ACQUISITION AND EXTINCTION LEARNING

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Background and aims: Although electrical pain has been used as an unconditioned stimulus to investigate fear learning for decades, we know little about pain-specific mechanisms of learning and extinction of cue-pain associations. Thus, we aimed to identify pain-specific aspects of the acquisition and extinction of CS-US associations.

Methods: This fMRI study investigated the acquisition and extinction of CS-US associations using a differential conditioning paradigm in healthy subjects. We compared behavioral (valence and contingency ratings) and BOLD responses to visual cues (CS^+) that either predicted painful thermal stimulation or aversive auditory stimulation of matched unpleasantness. We hypothesized that CS-pain associations would be acquired faster and would be more resistant to extinction compared to CS-tone associations.
Results: Data of 23 subjects (11 male, 25±3 years) were analyzed using linear mixed effects models (LMM). Mean unpleasantness ratings for pain and auditory stimuli did not differ. Analyses on valence ratings provided during acquisition revealed a significant CS x time x anxiety interaction, indicating that higher anxiety ratings for pain than for tone were associated with an enhanced increase in valence ratings for CS^+_{pain} compared to CS^+_{tone}. Analyses on valence ratings during extinction revealed a significant CS x time x anxiety interaction suggesting that higher pain anxiety ratings were associated with a lower decrease in valence ratings for CS^+_{pain} compared to CS^+_{tone}. Preliminary imaging results will be presented at the conference.
Conclusions: Our behavioral results indicate enhanced acquisition and reduced extinction for CS-pain than CS-tone associations. These learning processes might be modulated by pain-related anxiety.

ePO65

THE EFFECT OF INTRAVENOUS MAGNESIUM SULFATE VERSUS INTRAVENOUS SUFENTANIL ON POSTOPERATIVE PAIN IN PATIENTS WITH TIBIA FRACTURE

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Background: controlling postoperative pain has become a popular topic as it leads to the reduces the costs for both patients and medical facilities.
Objectives: This study aimed at comparing intravenous magnesium sulfate versus intravenous sufentanil on the duration of analgesia and postoperative pain in patients undergoing tibia fracture surgery.
Methods: This double blind clinical trial study was performed on 70 candidates of tibia fractures between the ages of 18 and 55 years with American society of anesthesiologists (ASA) class I and II. The patients were randomly divided to 2 groups, 1 receiving magnesium sulfate (M) and another receiving sufentanil (S). Both of the groups underwent spinal anesthesia with bupivacaine10mg 0.5%. One hour after ensuring the sensorimotor blockade, in the S group 0.1 _g/kg/hour and in the M group 8 mg/kg/hour was diluted in 1 liter of Ringer‘s solution and infused. In this study, full weakness of the lower limb was considered as the sign of sensorimotor blockade initiation. The postoperative pain intensity was measured using the Visual Analog
Scale (VAS), 0, 1, 4, 8, 16, and 24 hours after the end of anesthesia duration. the time of requesting the first narcotic drug and the total usage of pethidine were recorded. **Results and conclusions:** Sufentanil was found to be more effective than magnesium sulfate in reducing postoperative pain and the time of first narcotics request was later in patients receiving sufentanil ($P < 0.05$).
Keywords: Tibia Fracture, Spinal Anesthesia, Postoperative Pain, Magnesium Sulfate, Sufentanil

ePO66

MODIFIED PECTORALIS NERVE BLOCK DOES NOT IMPROVE POSTOPERATIVE PAIN IN PATIENTS UNDERGOING BREAST SURGERY

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Background: Modified pectoral nerve block (PEC) has variable effect on perioperative pain in patients undergoing surgery for carcinoma breast. This randomised controlled trial was conducted to study the effect of modified PEC block on postoperative pain relief in patients undergoing breast surgery
Methodology: After CTRI registration (CTRI/2018/07/014728), Forty nine carcinoma breast patienst undergoing breast surgery were randomized to receive a modified PECS block with 30 ml of ropivacaine 0.2% after induction of anesthesia (PECS group) or no block (GA group). Primary outcome was time to first rescue analgesia.
Results: There was no difference in time to first rescue analgesia between two groups {56.06 (36.164) min in PECS group and 79.00 (50.357) min in GA group, t test}. Amount of fentanyl used was also comparable between both the groups. {mean difference -1.24(95% CI -12.84, 10.37). t test} 20/25 patients required rescue fentanyl in GA group as compared to 17/25 in PEC group.
Conclusion: Modified PEC block performed after general anaesthesia did not improve the postoperative pain in patients undergoing modified radical mastectomy

CANCER PAIN

eP067

ASSESSMENT OF QUALITY OF LIFE IN PATIENTS WITH CHRONIC CANCER PAIN USING BRIEF PAIN INVENTORY

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Methods: All new patients in chronic pain OPD are being administered BPI questionnaire and are asked to complete it once during their first visit to the pain clinic (Baseline) and then during subsequent visits (Follow up). Incomplete BPI questionnaire and patients who had not followed up were excluded. Data from December 2016 to December 2018 was collected.
Results: Analysis of 1 year data till Dec 17 showed the following results.:
Moderate to severe pain was observed in 102 patients (79%) in the follow up visit. The Pain severity index reduced from 6.5 to 6.2 (Range 0 - 10, CI 5.4-6.3)
Severe interference with daily functions due to pain was observed in 35.7% of patients. Pain interference score reduced from 6.5 to 5.85 (Range 0-10, CI 5.1 -
6.09). The reduction in Mood (p=0.008), Walking Ability (p=0.023), Normal Work (p=0.006), Relations (p=0.001), Sleep (p=0.001) and Enjoyment (p=0.001)
were statistically significant.
Analgesic treatment was inadequate in 47 patients (37.9%). The intensity of worst pain
(p=0.022, r = 0.623) was more related to increased interference
with daily functions than current pain (p=0.045, r =0.054).
Final results will be presented at the conference.
Conclusions: A positive correlation was observed between the intensity of pain and interference with daily activities. Multidimensional tools should be used to assess cancer pain, taking into account interference with daily activities and predictors of pain, and thereby treating “Total Pain”.
Therefore, treatment should be comprehensive in terms of not only managing pain symptoms but also improving overall quality of life.

eP068

SUBLINGUAL METHADONE: A NEW ROUTE FOR AN OLDER DRUG IN CANCER PAIN?

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The use of sublingual methadone for breakthrough cancer pain is an alternative where transmucosal fentanyl is not available. The incidence of breakthrough pain among cancer patients has been estimated at 40-80% depending on the setting. It`s typically rapid in onset, in 3 min or less, and short in duration, subsiding within 30 min. Finding faster and more effective treatments, and novel routes of drug administration for managing breakthrough pain, is critical. We conduct a study with 19 patients using sublingual methadone which resulted in great pain control for most patients in less than 10 min with one or at most two doses, with very low rate of side effect and excellent adhesion, even in excruciatin pain cases. Methadone is a mu receptor agonist and a very lipophilic drug with a long half-life (~24 h, ranging from 8 to 90 h),); the time required to reach steady-state levels can therefore be much longer than for other opiates. Onset of analgesia occurs 10-20 min after parenteral administration, and 20-30 min after oral route and its duration of action is 4-8 h in single-dose studies, which is shorter than its elimination half-life (Payne & Inturrisi 1985), so it accumulates in tissues with repeated administration. The inactive metabolites of methadone are excreted in the urine and feces; methadone is almost 90% protein bound. Methadone‘s incomplete cross-tolerance with other opiates requires areduction in dose when rotating from another opiate. And what about the sublingual use? Little is known and is underutilized.

eP069

TREATMENT OF NEUROPATHIC PAIN DUE TO RADIO-CHEMOTHERAPY IN CERVIX CARCINOMA WITH TAPENTADOL. CASE STUDY

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Aim: To analyze the administration route of tapentadol, ensuring its efficacy and safety.
Introduction: Oncological neuropathic pain is a frequent and invalidating symptom in cancer patients, and treatment with chemoradiotherapy can induce neuropathy.
Methods: 44-year-old woman diagnosed with Cervix Cancer (Stage IIIC) under radical treatment (QT-RT) and BQ-HDR. She presented a continuous, non-irradiated, diffuse pain with a VAS 6/10, as well as neuropathic pain crisis VAS 8/10. We added Duloxetine 60 mg/day and Pregabalin 150 mg/12 hours, without any modification in nocturnal symptons. Pregabalin was increased overnight by 300 mg+37.5 mg of Tramadol/8 hours with a daily laxative (lactulose), wich was poorly tolerated because of nausea and constipation so tramadol was eliminated.
Tapentadol was slowly introduced until 150mg every 12 hours, evidencing a great improvement achieving a VAS < 3/10 for both day and night crisis. Tapentadol was well tolerated with low constipation.
Results: Tapentadol provides effective and reliable analgesia in a wide range of indications, including nociceptive pain, neuropathic pain and chronic mixed pain, and demonstrates a better tolerability profile than other classic opioid analgesics. It is associated with a low risk of pharmacokinetic interactions, allowing its use in patients taking multiple medications. The favorable tolerability profile can lead to a better therapeutic compliance and allows an easy opioid titration and rotation.
Conclusions: Tapentadol, thanks to its double-action mechanism, can be highly effective and well tolerated in intense neuropathic pain induced by radiochemotherapy. It is about to become the 1st line of opioid treatment in these patients.

eP070

SOMETHING MUST BE WRONG WITH THE IMPLEMENTATION OF CANCER-PAIN TREATMENT GUIDELINES. A LESSON FROM REFERRALS TO A PAIN CLINIC

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Background and aims: The World Health Organization's (WHO) guidelines for cancer pain management were made simple for wide implementation by all physicians treating cancer patients. Referrals to pain specialists are advised if pain does not improve within a short time or intolerable analgesics side-effects. The present study aimed at testing whether the WHO guidelines are adhered to prior to the referral of cancer-related pain patients to a pain clinic.
Methods: Cancer patients referred to a pain specialist completed several questionnaires including demographics, medical history and cancer-related pain; the short-form McGill Pain Questionnaire (SF-MPQ) and the Short Form Health Survey SF-12. Data from referral letters and medical records was obtained. Treatments recommended by pain specialists were recorded and categorized as „unjustified" if they were within the WHO ladder framework, or "justified" if they included additional treatments.
Results: Seventy-three patients (44 women) aged [median(range)] 55(25-85) years participated in the study. Their pain lasted for a mean of 6(1-192) months. Mean pain intensity scores on a 0-10 numerical rating scale were 7(2-10) at rest and 8(3-10) upon movement. The majority of patients complied with their referring physician's recommendations and consumed opioids. Adverse events were frequent. No significant correlation was found between the WHO analgesic medication step used and mean pain levels reported. In sixty-two patients (85%) referrals were categorized as „unjustified" whereas only 11 patients (15%) required „justified" interventions.
Conclusions: These findings imply that analgesic treatment within the WHO framework was not reasonably utilized by non-pain specialists prior pain clinics referrals.

eP071

COMPARISON OF TWO TECHNIQUES (BOLUS MORPHINE VS. MORPHINE INFUSION) OF ANALGESIC TITRATION WITH INTRAVENOUS MORPHINE IN PALLIATIVE CANCER PATIENT - A PROSPECTIVE RANDOMIZED STUDY

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Background: The cancer may spread locally or metastasize to distant site leading to pain. Opiates remain the main stay of analgesic management in cancer patients. Rapid bolus titration with intravenous morphine is not described in literature. Our study compares the analgesic efficacy of two technique of morphine titration (bolus vs. infusion) by calculating total rescue dosage in one week after analgesic titration.
Methods: After institutional ethics committee approval, 140 palliative care patients were randomized in two groups by computer generated random numbers. In **morphine bolus group**, IV morphine 1.5 mg bolus given every 10 minutes till NRS< 4 is achieved. Total IV dose converted to oral dose (1:1) and was administered every 4 hours. In **morphine infusion group**, IV bolus Morphine 0.05mg/kg body weight administered followed by 0.025mg/kg/hour IV infusion. Pain was reassessed every 30 minutes. Infusion rate of morphine was doubled if NRS unchanged. Infusion was increased to 50% when NRS was between 4 and baseline. If NRS< 4, same infusion was continued. Once the NRS< 4 for two consecutive hours, total IV dose for 24 hours was calculated and converted to oral morphine(1:3) in 6 divided doses in 24 hours.Serum morphine level was calculated in both groups. For rescue (NRS>=4) analgesia, 4th hourly dose was prescribed. Total rescue dosages in one week was calculated.
Results and conclusion: 135 out of 140 patients have been enrolled. Only 5 patients are left for enrollment. after that, we will discuss result and conclusion.This must be ready at the time of presentation.

eP072

MUSCULOSKELETAL CHRONIC PAIN ON PATIENTS WITH BREAST CANCER TREATED WITH AROMATASE INHIBITORS. AN ANALYSIS AND EVALUATION OF THE CONVENTIONAL THERAPEUTIC APPROACH

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Objective: Analysis of the different treatment options available today for the management of muscle skeletal pain derived from treatment with IA. Evaluation of the efficacy of their use in each case and the level of evidence from studies that propose them.
Material and methods: Review of the literature on major databases, through the search for articles published in the last 10 years, in Spanish or English. Selection of those articles on clinical trials, reviews or meta-analyses that proposed management strategies or therapeutic interventions for the symptoms induced by IA in women with breast cancer in the early stage; later there will be an assessment of methodological quality.
Results: Studies that obtain highest methodological quality were analyzed. As well, our clinical trials show beneficial effect of duloxetine, fatty acids omega 3, vitamin D2 daily dose of 50000UI and acupuncture respectively, a statistically significant, to be compared with placebo, to demonstrate pain reduction rates higher in the groups receiving the intervention. Systematic reviews and meta-analysis, state that interventions with the greatest effect on the control of symptoms are drug therapy and acupuncture, which show less effect are exercise and supplements nutritional. One of the meta-analysis states that a statistically significant effect of acupuncture on the control of the symptoms caused.
Conclusion: The published studies lack a level of sufficient evidence that supports the creation of therapeutic guidelines for the management of the syndrome that is derived from the IA that allows a unique approach, coordinated and agreed on the issue.

eP073

COMPARING PERSISTENT POST-SURGICAL PAIN POST BREAST CANCER SURGERY AND THEIR RESPONSE TO ANTI-NEUROPATHIC AGENTS IN A SPECIALIST CANCER CENTRE

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Background: Persistent post-surgical pain (PPSP) in cancer survivors represents an increasing unmet need.[1] It contributes to depression, anxiety and poor quality of life.[2] Neuropathic pain mechanisms in PPSP is poorly understood. We performed a descriptive analysis of PPSP in breast cancer surgery at the Royal Marsden Hospital (RMH) who have received treatment with anti-neuropathic agents compared to non-antineuropathic agents.
Method: Patients who attended RMH Pain Clinics from January 2016 to December 2018 who consented to providing data through a bespoke tablet interface (Research Ethics Committee approved) were included. PPSP post-breast cancer surgery patients were divided into two treatment groups; anti-neuropathics (gabapentinoids, duloxetine or amitriptyline plus other analgesics) or non-anti-neuropathic group (other analgesics; e.g. simple analgesics, opioids and/or topical agents). Average change in outcome measures Brief Pain Inventory (Symptom severity; SS and Interference severity; IS) and Hospital Anxiety and Depression Score; HADS before and after treatment were analyzed. Patient Satisfaction Scores were also analyzed.
Results: In PPSP breast group, fourteen (ANeP) and seven (non-ANeP) completed a repeat attendance questionnaire. Table 1 summarizes the results:

	SS before treatment	SS after treatment	Percentage change SS (%)	IS before treatment	IS after treatment	Percentage change IS (%)	HADS before treatment	HADS after treatment	Percentage change HADS (%)
Anti-neuropathic group (ANeP), n = 14	5.3	5.1	3.8	5.9	5.0	15	24.4	19.9	18
Non-antineuropathic group (non-ANeP), n = 7	4.6	4.0	13	3.9	3.0	23	16.3	13.1	20

[Percentage change in mean scores of outcome measures before and after treatment in PPSP after breast cancer surgery]

Conclusion: In PPSP after breast cancer surgery, greater improvement were observed in SS, IS, HAD in the non-anti-neuropathic group compared to the anti-neuropathic group. Overall, despite the relatively small changes, patient satisfaction scores in both groups were high (90% and 77% in anti-neuropathic and non-anti-neuropathic group respectively).

eP074

PREVALENCE AND CHARACTERIZATION OF BREAKTHROUGH PAIN IN PATIENTS WITH CANCER IN SPAIN: THE CARPE-DIO STUDY

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Background: Information on the prevalence and clinical characteristics of breakthrough pain (BTP) in cancer patients is very limited. Primary objective was to evaluate the prevalence of BTP in patients with cancer pain. Secondary objectives included the description of clinical characteristics of the patients with BTP, and evaluate the impact on quality of life.
Methods: Multicenter, observational, cross-sectional, multidisciplinary study. For evaluating the prevalence of BTP all patients seen at the clinic during 1-month were recorded. In characterization study adult patients with oncologic pain adequately controlled with opioids that meet criteria of BTP (Davies' algorithm) and not receiving treatment for BTP were included.
Results: A total of 3765 patients were seen at 32 sites by 43 specialists. Over 1117 patients with cancer-related pain, 539 had BTP (48%, 95%CI, 45 to 51). In characterization study 207 patients were included. The pain was most frequently described as a brief flare-up to baseline pain (53%), of severe intensity (83%) and qualitatively described as stabbing (58%). Between the different types of pain, the pain described as successive pain peaks of gradually decreasing intensity showed greater intensity (median BPI score: 6.6) and interference (median BPI score: 7.9), and worst quality of life (mean 25.9 and 31.0 in the physical and mental components of SF-12).
Conclusions: In the Spanish setting there is a high prevalence of BTP among patients exhibiting cancer-related pain. BTP has an important impact on patient's functionality, which supports the need for an early detection that could help to provide orientation for pain management.

eP075

PAIN AND SYMPTOM MANAGEMENT IN PATIENTS WITH HEAD AND NECK MALIGNANCIES ADMITTED AT TERTIARY CARE CENTRE, INDIA: A RETROSPECTIVE STUDY

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Head and neck cancer (HNC) is one of the most common cancers contributing up to 30% of all cancers in India. Our centre practices integrated model of palliative care with a specialist led palliative care team working in outpatient and inpatient basis.
Aim of investigation: To assess the pain and other symptoms in head and cancer patients.
To know the effect of various interventional technique used in head and neck cancer.
Method: The clinical records of head and neck cancer patients admitted in palliative care unit between march 2017-february, 2018 were analysed to document demography profile, purpose of admission, stage of disease, pain intensity and their pharmacological ,non-pharmacological management, interventional procedures done for pain, their various symptom and supportive care.
Results: 100 patients with head and neck cancer were admitted to our ward. Pain at primary site or during swallowing was the most distressing and common complaint in these patients. This was followed by difficulty in swallowing. Pain was managed using WHO analgesic ladder.Interventions were performed in 69 cases (glossopharyngeal, maxillary, mandibular) while rest of the 31 cases were managed with opioids analgesics like morphine or tramadol with adjuvants and supportive care alone. Apart from physical symptoms, emotional and psychosocial care is also provided to these patients. Patient with xerostomia, halitosis, oral thrush, wounds, drooling of secretions etc were counselled and educated about the oral hygiene, pharmacological and non-pharmacological management.
Conclusion: Comprehensive pain and symptom management is very important.

eP076

USE OF OPIOIDS AND ITS IMPACT ON QUALITY OF LIFE IN CHEMOTHERAPY INDUCED ORAL MUCOSITIS: A PROSPECTIVE OBSERVATIONAL STUDY

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Introduction: Oral mucositis, a progressive, inflammatory, and ulcerative condition of the mucous membranes and it is one of the common side effects of cancer treatment. Primary objective of this study to was to evaluate requirement of opioids for chemotherapy induced oral mucositis.
Method: It was aprospective, non-interventional single -centre observational study. The cancer patients who had developed chemotherapy induced mucositis requiring intravenous opioid requirement for symptom control were included in the study. Oral mucositis with the WHO oral mucositis grading, pain, the performance status, opioid requirement and quality of life using EORTC QOL- C30 questionnaires were assessed. Chemotherapy received were also noted. Patients were followed up for 7 days after initiation of intravenous opioid administration.
Result: Total 100 patients were included in the study. 61% patients were male. Mean performance status of the patients with KPS scale was 57%.. Average gap of development of mucositis and last dose of chemotherapy was 6.7 days. 84% of the patients were managed with IV morphine administration initially. As the time passes eventually total 93% patients required morphine administration for symptom control. Mean intravenous morphine consumption was 26 mg in 1stday of presentation. Median WHO grading of mucositis was 3.Global health status, physical functioning, role functioning, emotional functioning, cognitive functioning and social functioning were improved on day 7 in comparison to day 1.
Conclusion: Chemotherapy induced mucositis often require strong opioids like morphine administration for symptom control.

eP077

EMERGENCY PAIN RELATED TO CANCER: FOR A CLINICAL APPROACH

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Background and aims: Cancer patients are more frequently seen in the emergency department than other patients with chronic non-cancerous conditions. Pain is often the main cause. Our aim is to propose a care procedure in case of emergency pain related to cancer.
Methods: Exhaustive literature review and clinical experience.
Results: Patients experiencing pain are understood and relieved only if they are the subject of an exhaustive interdisciplinary evaluation. This process will allow identification of disruptive elements who can lead to pain chronicization. The way to respond will have a strong impact on their pain memory. The evolution of the cancerous disease requires evaluation not to stigmatize the cancer patient too quickly with an increase of an “usual“ pain but to look for complications, new diagnoses, different psychological states, paroxysmal pain access, or new components of pain, such as neuropatic pain. The adequate response to acute painful accesses takes in account the possibility of a sustainable analgesia by non-invasive or, on the opposite, interventional techniques. Therapeutic education should also be considered to provide self-management tools for further pain emergency situations.
Conclusions: The consultation for pain emergencies related to cancer should not be an impasse but the place of referral and reinsertion in a personalized circuit of care, intended to limit further disruption. It is a new opportunity to build trust and a positive focused approach, in parallel to provide better care pathways.

eP078

FACILITATING ACCESS TI INTRATHECAL ANALGESIA FOR CANCER PATIENTS SUFFERING INTRACTABLE PAIN AND LIVING FAR FROM EXPERT CENTERS

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Background: Intrathecal drug delivery systems (IDDS) are efficient to manage refractory cancer pain but implantation of intrathecal pumps are offered only in expert centers and pumps refills requires regular travels while these cancer patients are increasingly fragile ant tired.
In our hospital, in a rural area, we wished to facilitate access to IDDS for all patients who require, even those who leave far from cancer centers. Therefore, we tried to find solutions to offer IDDS to these patients.
Methods: After validation delivered during a regional multidisciplinary meeting by video conference, patients are implanted in the expert cancer center 140 kms away from our hospital. Few days after, once pain elief is obtained, patients are discharged and pumps and refills are then managed in our hospitalclose to their home.
We perform computerized prescriptions (Anathec° Alma). Mixtures are prepared and controlled by the compounding pharmacy of the expert center and transported in sterile bags, in our hospital.
Then, we proceed to refills with quality level (controlled syringes) and reinforced safety (surgical asepsis protocol).
Results: Since february 2015, we have performed more than 1000 pump refills for 80 patients.
This local management has also saved more than 250,000 euros in sanitary travels.
This kind of organization offer accessibility of such an invasive technique easier to all patients suffering refractory pain. This protocol is completed with the same quality and safety as in an expert center. We also offer an improved quality of life compared to oral analgesic treatments for more patients.

CENTRAL NEUROPATHIC PAIN

eP079

AN INNOVATIVE APPROACH BASED ON THE COMBINATION OF MALDI-TOF MS AND ARTIFICIAL NEURAL NETWORKS TO CLASSIFY CENTRAL NEUROPATHIC PAIN AND WIDESPREAD PAIN IN PRECLINC MODELS

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Background and aims: A huge number of molecules are involved in the physiopathology of both Chronic widespread pain (CWP) and central neuropathic pain (CNP). While determine specific biomarkers for each condition by current biochemical technics may be a complex task, the use of multi-molecular techniques, such as MALDI-TOF (MS), combined with artificial intelligence may allow getting both CWP and NP specific fingerprints. These fingerprints may be useful to diagnose pains of different nature (CWP and CNP), as well as to determine potential specific targets in the future.
Methods: CD1 mice were subjected to either reserpine-induced myalgia (RIM6) or spinal cord injury (SCI) and their pain behaviours assessed weekly. Blood serum samples were obtained and analysed by MALDI TOF MS. The mass spectra were then evaluated by multivariate data analysis and artificial neural networks (ANNs).
Results: Via comparison with the respective control groups, differences in both functional tests and in mass spectra were observed. Hence, the analysis of the mass spectra fingerprints by principal component analysis (PCA), factor analysis (FA), and ANN analysis enables to distinguish animals according to different SCI and RIM pain groups without the need to identify the markers.
Conclusions: An innovative, simple and fast method, based on the analysis of the serum by MALDI TOF MS in combination with ANNs, for the detection and classification of pathological pain has been developed.
Acknowledgments: University of Girona (MPCUdG2016/087) and La MARATÓ de TV3 Foundation (201705.30.31) from Catalonia; and Department of Chemistry, Faculty of Science, Masaryk University, Brno, Czech Republic.

eP080

THE SUCCESSFUL APPLICATION OF THE ERECTOR SPINAE PLANE BLOCK FOR THE MANAGEMENT OF ZOSTER-ASSOCIATED PAIN: A CASE SERIES

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Background and aims: The ultrasound-guided erector spinae plane block(ESPB) is a recently described technique for providing thoracic analgesia and is a relatively simple and safe procedure. we present the successful application of the ESPB for the management of zoster-associated pain.
Methods- Results:
Case 1
A 54-year-old male patient had been diagnosed with herpes zoster in the right T9 to T10 dermatome 3 weeks previously. We performed an ESPB with 20 ml of 0.6% lidocaine for pain control in the right T9 area. A booster injection was performed. The patient's pain remained at NRS 1-2 even after 3 months of follow-up.
Case 2

A 50-year-old male patient visited our pain clinic with pain due to herpes zoster in the left T5 to T6 dermatome. The patient underwent an ult ESPB with 20 ml of 0.6% lidocaine in the left T5 level. Another ESPB was performed as a booster injection. The patient was later seen at the 12-week follow up and reported pain score of 1 out of 10.
Case 3
A 46-year-old female patient was diagnosed with herpes zoster in the T4 dermatome area. We proceeded with an ESPB using 20 ml of 0.6% lidocaine in the right T4 level. One week later, the ESPB was repeated. After 3 months of follow-up, she reported VAS score of 2/10.
Conclusion: The ESPB is a simple and relatively less-invasive procedure compared to the central neuraxial blocks. It could be an effective alternative treatment for the management of zoster-associated pain in the thoracic region.

eP081

TREATMENT OF NEUROPATHIC PAIN AFTER BRACHIAL PLEXUS INJURY BY BODY SCHEMA REORGANIZATION - CASE REPORT OF A NEW THERAPEUTIC APPROACH

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Background and aims: Neuropathic pain (NP) resulting from a nerve injury is often refractory to currently available treatments.
Neurosciences' discoveries bring out body-schema into the focus by providing a fundamental new understanding of NP based on neural plasticity in the cortical areas. Treatments focusing on body-schema reorganization might thus positively influence NP. This report describes one case of NP partial recovery after a neuro-psychomotor treatment.
Methods: The patient is suffering since 2014 from a right traumatic brachial plexus injury (C5-7) with complete loss of motor function and sensory deficits. In 2016 nerve reconstruction and spinal cord stimulation reduced pain temporarily.
The neuro-psychomotor therapy consisted of 25 sessions lasting 1.5 hour spread out over 3 months and focused specifically on sensory-stimulation and body-schema reconstruction. Before therapy, the patient described persistent NP of 6-7/10 with paroxysmal peaks reaching 9 (numeric pain rating scale 0 to 10) in the mostly paralyzed right arm.
Results: Pain was observed to drop dramatically to 1 or even 0 within each session. Yet, pain went back to its regular level 2-4 hours later. Second, body-schema exercises allowed a radical change in the movement: the right hand totally lost its spasticity, movements adjusted in speed and accurate in space. Improvement vanished after a couple of hours.
Conclusions: The dramatic improvement observed within each neuro-psychomotor session tends to indicate that exercises focused on body-schema reorganization may contribute to some extent to motor and pain recovery. In this sense, neuro-psychomotricity may offer a novel non-pharmacological gateway to NP treatment.

eP082

SLEEP IN CENTRAL NEUROPATHIC PAIN BY THALAMIC STROKE

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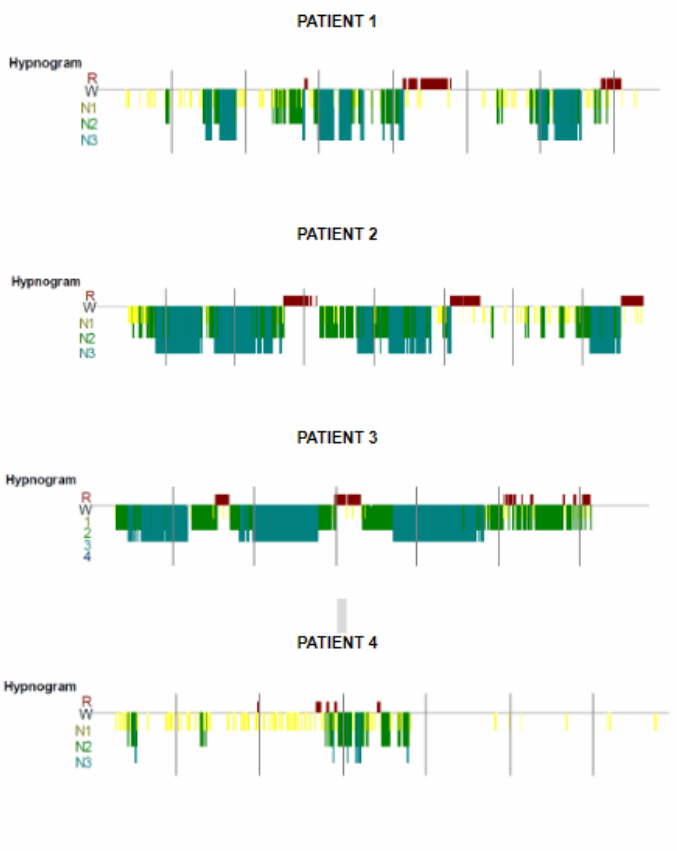
Background and aims: Central Post Stroke Pain (CPSP) is a type of neuropathic pain (NP) due to a lesion or dysfunction of the Central Nervous System. Estimated prevalence of CPSP ranges widely from 8% to 55% of stroke patients. The most common is the development of CPSP within the firsts months after stroke. Sleep has a restorative function and can modulate pain. Several studies have addressed the increased prevalence of Sleep-Disordered Breathing in cerebrovascular patient of up to 50-70%.

Describing sleep quality and its relationship with pain in patients with CPSP due to left thalamic stroke (LTS).
Methods: We recruited 4 patients with CPSP due to LTS using questionnaire DN4 to identify NP and Visual Analogue Scale (VAS) for intensity of pain. No patient was being treated with muscle relaxants. All patients were studied by polysomnography, Epworth scale, anthropometric data and Obstructive Sleep Apnea (OSA) related symptoms in Sleep Unit, Bellvitge University Hospital.
Results: Main results in these preliminary patients so far, show in table 1, although patients have no complaints of night pain they have periods of wakefulness during sleep and low quality of sleep, as well as a high prevalence of OSA that had not been suspected previously.
Conclusions: Polysomnography study can be useful to diagnose subclinical sleep disorders in patients with CPSP, and their treatment could improve sleep quality which could reduce pain.

TABLE 1

PATIENT	AGE	GENDER	IMC	VAS PAIN WAKE-SLEEP	DN4	WAKING DURING SLEEP (MINUTS)	EPWORTH SCALE	OSA RELATED SYMPTOMS	INDEX APNEA HYPOPNEA	TOTAL SLEEP TIME (MINUTS)	SLEEP EFFICIENCY (%)
1	75	W	37	3 - 0	3	167	6	YES	41.3	248.5	54.9
2	60	M	30.6	4 - 0	5	59.5	11	YES	49.0	341.5	85.2
3	54	M	33.1	8 - 0	7	5	8	NO	37.5	347.0	84.4
4	78	M	29.3	6 - 0	7	243	2	YES	20.4	141.5	34.2
AVERAGE	66.75	1W/3M	32.5	5.25 - 0	5.5	118.6	6.75	3/1	37.05	269.6	64.7

[TABLE 1]



[Hypnogram]

COMPLEX REGIONAL PAIN SYNDROME

eP083

NEUROPATHIC PAIN-USE THERMOGRAPHY AS DIAGONOSTIC OF CHOICE

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Background and aims: Thermography is a test that uses an infrared camera to detect heat patterns and blood flow in body tissues.
Thermography provides the only imaging technique that can detect physiologic changes associated with pain. It can improve diagnostic accuracy in patients with persistent neuropathic pain, post-traumatic pain or other residual symptoms in which initial physical signs have diminished or disappeared, and thus disprove cases of suspected malingering.
Methods: The examined case histories of 70 patients (age range, 11 to 67) who had been evaluated for pain following spinal and extremity trauma. The duration of symptoms ranged from 3 weeks to 5 years; most common sites included hands, feet. shoulders, and lumbar and cervical spine. Plain radiographs and other evaluations had been part of initial, extensive work-ups in all patients.
Results: Of the 70 patients examined, thermography demonstrated definite abnormalities 49 (70%) consist-tent with trauma-induced nociceptive nerve fiber irritation. In each case, roentgenograms had been normal and had indicated no evidence of acute injury, but findings of neuropathic pain. Reports from the literature verify that thermography can dramatically depict idiopathic or post-traumatic pain syndromes, known also as causalgia or reflex sympathetic dystrophy. Early elucidation of post-traumatic pain may allow more rapid treatment using sympathetic block, physiotherapy, or other modalities. The likelihood of preserving function is associated with such rapid treatment, Reflex sympathetic dystrophy caused by immobilization of ex-termites in casts can also be detected effectively by thermographic imaging of the fingers or toes. Thermography can also detect abnormal changes

eP084

INTEROCEPTIVE AWARENESS IN CRPS ´ALIKE´ PATIENTS WHO HAVE DISCONNECTED WITH THEIR LIMBS

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We have a significant population of patients who present with CRPS alike painful symptoms in their hands and feet who become disconnected with their limb. They avoid looking at and using their limb to a point where they may stop using it all in their daily lives. They often present with mal-adaptive behavioural responses and have often failed at community level / single discipline treatments. The Chelsea & Westminster now offers a multidiscipline ´connection clinic´ that offers both a specialist physiotherapist and psychologist in the session together with the patient and is the first known to try and offer a true bio-psychosocial intervention aimed at reconnecting the patient with their body, to offer psychological strategies to enable these patients to tolerate their sensations and to offer them an understanding of making the best choice in each moment they notice their sensations. We will collect data from these patients about their level of interoceptive awareness using the Multidimensional Assessment of Interoceptive Awareness (MAIA) and mood at assessment (using the PHQ-9 to assess depression & GAD-7 to assess anxiety) to see if there is any statistical relationship between these factors. We will also capture data from a matched number of patients from a routine pain clinic to see if these connection clinic patients differ from general pain clinic patients. We suggest from clinical observation that the connection clinic patients will may have significantly less interoceptive awareness and will discuss how this may impact possible treatment pathways in pain clinics.

eP085

QUALITY OF LIFE AFTER AMPUTATION IN PATIENTS WITH ADVANCED COMPLEX REGIONAL PAIN SYNDROME-A SYSTEMATIC REVIEW

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Aims: To assess the impact of amputation on quality of life in patients with advanced stage of Complex Regional Pain Syndrome (CRPS), resistant to multiple conservative measures.
Methodology: Literature review was done on databases including EMBASE, CINAHIL, MEDLINE, PUBMED, AMED, and grey literature. No randomized control trial related to the topic was found. Case-control, observational studies, case series and case reports meeting the eligibility criteria were included. Two researchers independently reviewed literature and carried out data extraction.
Results: Eleven studies reporting ninety-six patients were included. Sixty-six (68%) of patients who underwent amputation due to resistant CRPS had improvement in quality of life (QOL) while deterioration in pain and symptoms were noticed in twenty-eight percentages of patients. In more recent and good-quality studies, amputation proved to be more beneficial (81% of cases had improvement) than older poor-quality studies (11% of patients improved). Post amputation complications included phantom limb pain (65%), stump pain (30%) and recurrence of CRPS (43%). Two thirds of patients were satisfied, only 7 were not pleased with their choice and no information was available for rest of amputees.
Conclusion: In selected cases with advanced, unresponsive CRPS, amputations can be considered as an option for amelioration of QOL, however, there are risks of further deterioration and complications predominantly phantom pain and recurrence of CRPS. Results are better if amputation is carried out at specialised centres and after multidisciplinary assessment for suitability.

eP086

IMPLICATION OF LOCAL MUSCLE RESPONSE TO PRECISE DRY NEEDLING IN CLINICAL OUTCOMES OF TREATMENT MYOFASCIAL PAIN

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Background and aims: Ultrasound revolutionized myofascial pain treatment, precise muscle dry needling (DN) under ultrasound (US) guidance can multiply clinical effect. Local muscle response (a.k.a. local twitch response, LTR) associated with inactivation myofascial trigger points (MTrP), however, controversies remain in the issue.
The aim was to test hypothesis that local muscle response is associated with clinical effect of precise DN.
Methods: We included 38 patients (23 females, 36±7 years old) with chronic low back pain. The protocol by Bubnov [https://doi.org/10.1186/1878-5085-3-13] was applied: MTrP were identified according to clinical examination, reffered pain pattern, US identification; single fine (28G) steel needle DN under US guidance was applied to elicit LTR and/or `needle grasp`. We evaluated both phenomena, did M-mode to detect fasciculations during DN. Visual analogue scale data (VAS0-10) were measured before and after procedures.
Results: Main active MTrPs were detected in paravertebral ("central") muscles, latent ("peripheral") MTrP in limb muscles; all were effectively needled evoking muscle response; pain decreased by 90% VAS. We conducted 1-2 sessions per patient, 2-5 needles per session. During active MTrPs DN deeper 30 mm we detected fasciculations on M-mode during first 30-60 sec and `needle grasp` over 20 min; in larger muscles (complex architecture) we observed both effects; in small and deeper located muscles - `needle grasp` only; in superficial and latents MTrPs - LTR only.

Retention of needles correlated with LTR duration and clinical effect.
Conclusion: Muscle response to DN is crucial for effective treatment myofascialpain, depends on MTrPs acitivity, needling depth and muscle architecture.

eP087

EFFECT OF INTRAVENOUS S-KETAMINE ON PAIN IN PATIENTS WITH COMPLEX REGIONAL PAIN SYNDROME

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Background and aim: Studies suggest S-ketamine is an effective analgesic in Complex Regional Pain Syndrome (CRPS). We assessed the effects of our intravenous S-ketamine treatment on refractory pain of CRPS patients.
Methods: In this retrospective study, CRPS patients aged ≥18 years who received intravenous S-ketamine in the last 10 years were included. According to our inpatient clinical protocol, S-ketamine dose is increased until pain-reduction is achieved or side-effects are observed. Maximum dose is 14mg/hour. Average treatment duration is 7 days. Primary endpoints were pain scores (Numeric Rating Scale/Visual Analogue Scale) at baseline (T0), end of infusion (T1) and approximately 4 weeks post-infusion (T2). Patients were categorized as responder/non-responder at T1 and T2. Patients were considered a responder if there was a ≥2 points drop in pain score or if treatment was defined successful in electronic medical records.
Results: Fifty-seven patients were included. Mean disease duration was 6.2 (sd±0.8) years. Mean duration of s-ketamine infusion was 6.8 (sd±2.6) days. Median pain score significantly decreased from 8.0 (IQR=9.0-7.0) at T0 to 6.0 (IQR=7.0-3.3) at T1 (P< 0.001). At T1, 64.9% of patients were responders. At T2, 40.4% of patients remained a responder. A significant proportion of responders at T1 turned into non-responders at T2 (P=0.016).
Conclusions: In a group of CRPS patients with refractory pain, low-dose intravenous S-ketamine treatment resulted in significant and effective pain relief during infusion. However, a significant proportion of initial responders change to non-responders at follow-up. Further research is needed to ascertain possible predictors of response to S-ketamine.

eP088

IMMUNOLOGICAL MARKERS DURING A LONG-STANDING AND GENERALIZED COMPLEX REGIONAL PAIN SYNDROME: A CASE REPORT

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The case report describes a 17-year-old woman who has been suffering from a long-standing and generalized Complex Regional Pain Syndrome (CRPS), since a minor right knee injury in 2012. CRPS is a chronic pain condition that most often affects one limb usually after a corporal trauma.
In the case reported, first-time physical examination revealed swelling of the knee, erythema as well as elevated temperature. In posterior months, the patient presented an intensification of hyperesthesia, hyperalgesia and allodynia of that area; and a spread of the symptoms to her entire body, turning into a generalized CRPS. In a period of seven years, a clinical deterioration such as dystonia of the lower right limb is witnessed despite pharmacological and physical therapies. Since then, a decrease until absence of Immunoglobulin IgA and a detection of antinuclear antibodies (ANA) are evincied in blood tests. This report suggests that a deterioration and an expansion of CRPS might be influenced or tested by immunological markers.

eP089

FOUR - LIMB COMPLEX REGIONAL PAIN SYNDROME: CASE REPORT

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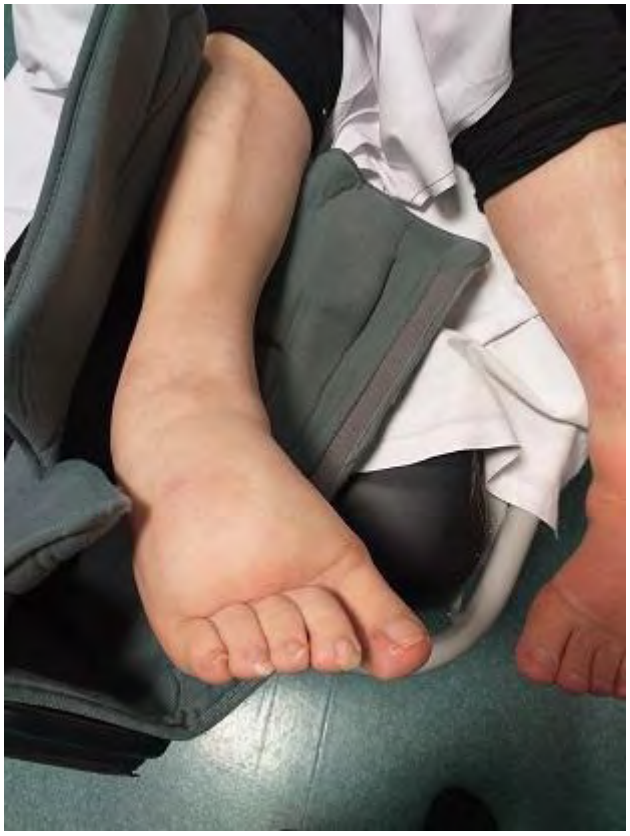
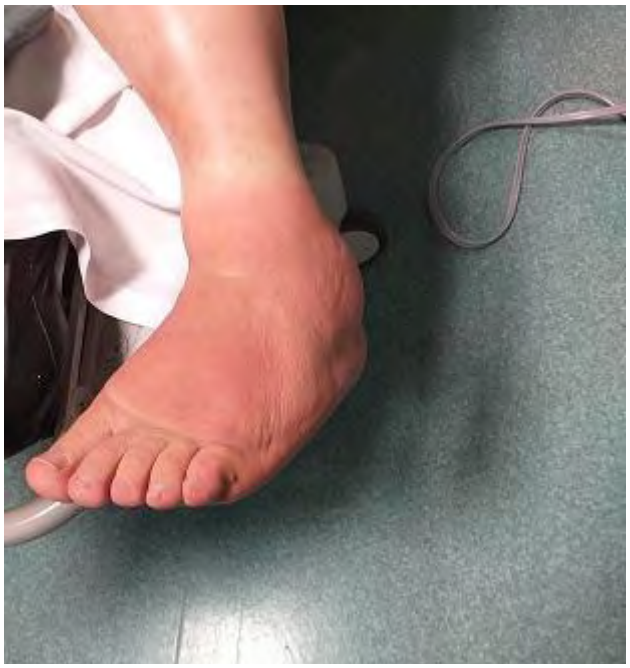
Background : CRPS is known to resolve spontaneously if treated early however can progress and some individuals continue to experience severe pain and disability despite treatment.
Case Report : A 34 year old woman presented with right lower limb CRPS features following an ankle fracture that was treated conservatively in 2011. The condition then appeared in the opposite arm due to an erroneously placed subcutaneous cannula. She went on to develop left lower limb and right upper limb features of CRPS spontaneously. She had early physiotherapy and was very motivated to get better however despite antineuropathics and opiates the CRPS did not resolve. She had a neurostimulator for the left limb and subsequently a lead inserted for the R hand. As the disease progressed she had a baclofen pump inserted to help with muscle spasm. She is currently being treated with weekly infusions of intravenous ketamine/LA which provide some relief.
This case illustrates: CRPS is progressive and can spread to other limbs without any signs of trauma
A multimodal approach is needed to manage symptoms.
Despite treatment patients with CRPS often fail to restore a normal quality of life.



[CRPS 1]



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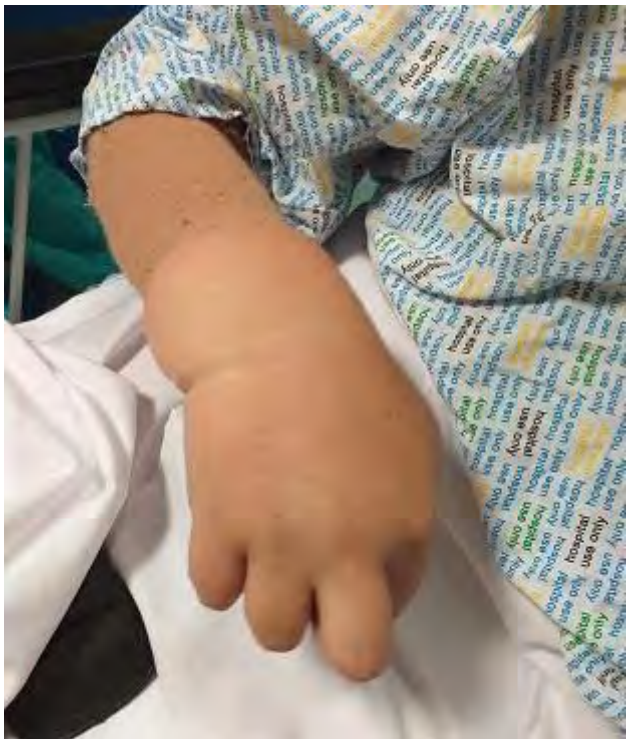

[CRPS 3]

eP090

COMPLEX REGIONAL PAIN SYNDROME: A COLOMBIAN EXPERIENCE

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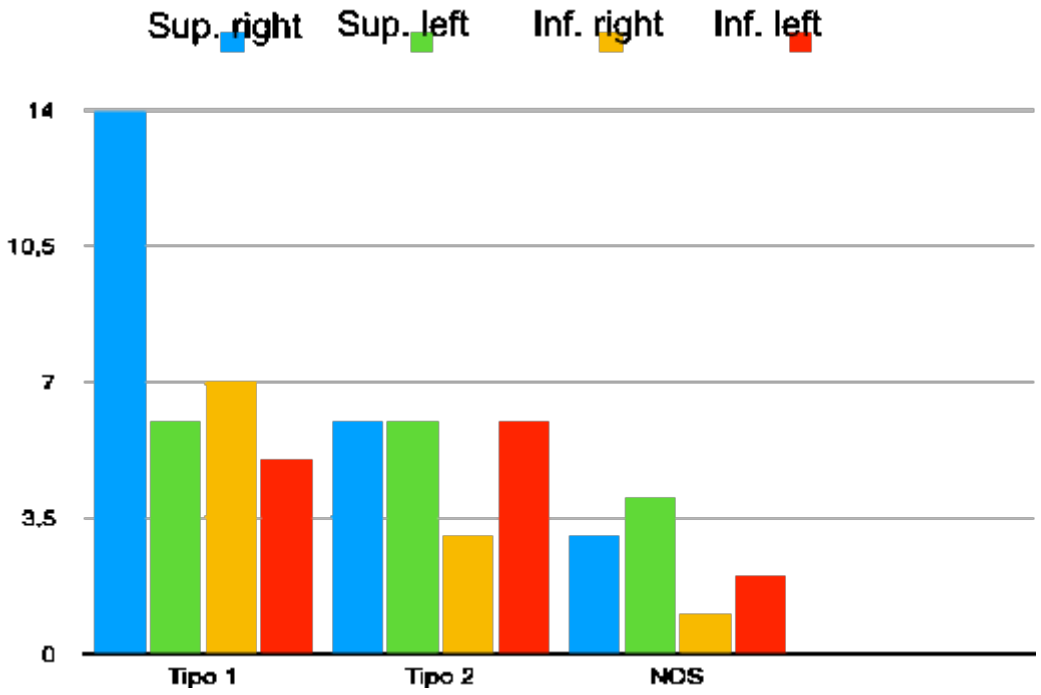
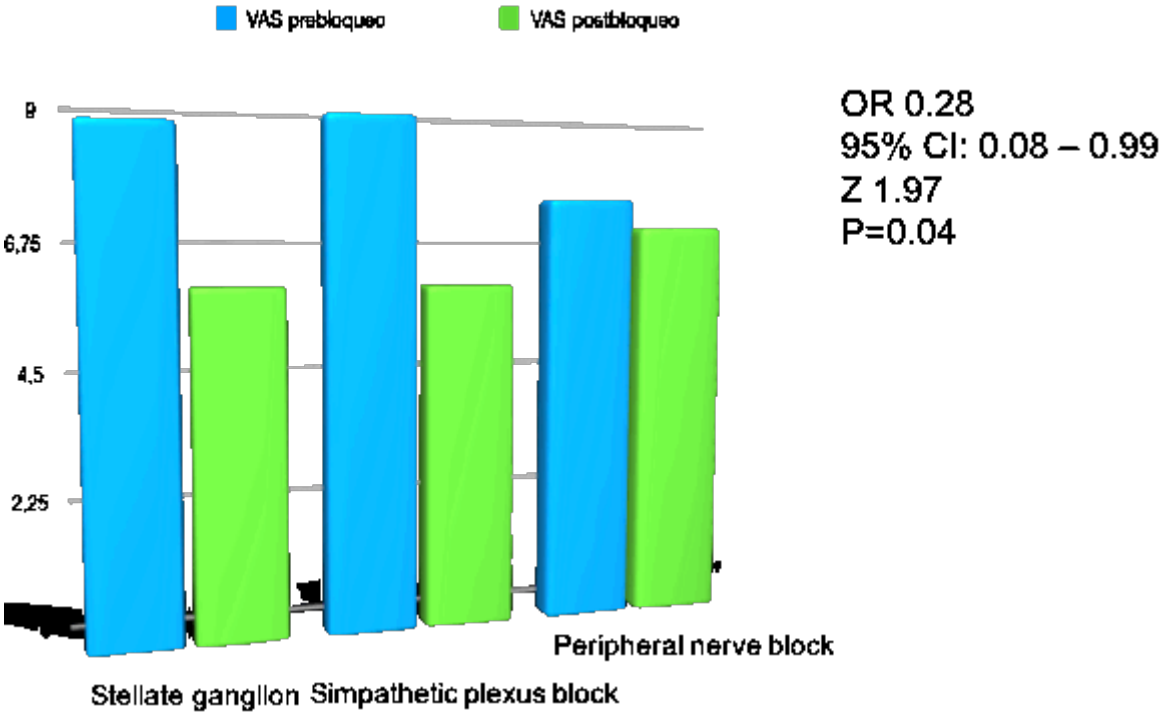
Complex regional pain syndrome (CPRS) is a chronic heterogeneous disease with sympathetic neuropathic and inflammatory characteristics, highly disabling, that makes its diagnostic coding and optimal therapeutic approach difficult. Then we present the diagnostic and therapeutic approach in a Colombian retrospective descriptive cohort study.
Results: 63 clinical records were reviewed, in a period between January 2016 and December 2018 at Instituto Colombiano del Dolor (Incodol) in Medellin, Colombia. Demographic data is presented in table 1. Mean follow-up in years was 2 (1-6 years)
The mean pain intensity score at diagnostic time was 8,4. Only 7 patients (11%) receive bisphosphonates. The most frequent opioid was hydrocodone (52,4%) mean dose 17,5 mg/dia (10-35 mg/dia). 51 patients receive pregabalin and 8 patients gabapentin.
Interventional pain management favors sympathetic plexus block over other nerve blocks.
6 patients completed spinal cord stimulation trial with a significant clinical improvement.
Conclusion: The diagnostic and management of patients with CPRS are challenging and requieres a multidisciplinary approach.

	Female	Male
No. Patients	45	18
Age (years)	47 (27-87)	42 (27-67)
CPRS type 1 (n)	27	5
CPRS type 2 (n)	11	10
NOS	7	3

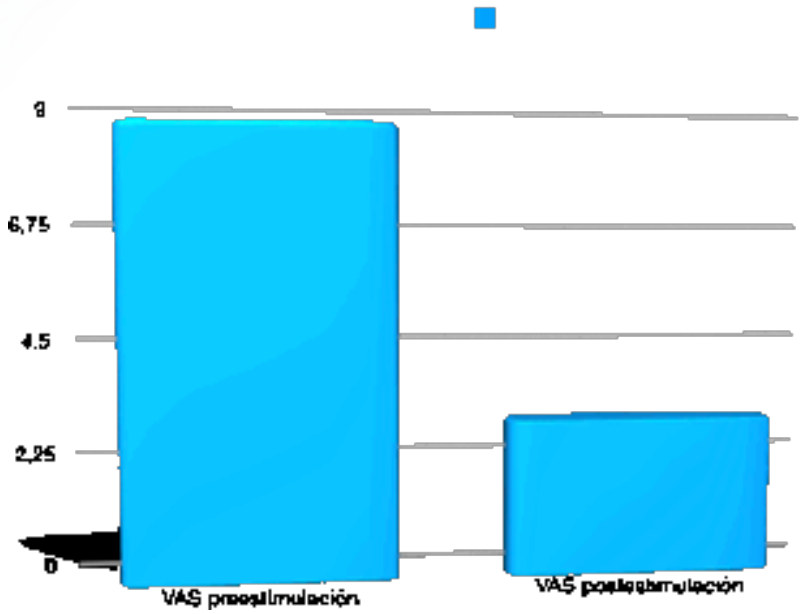
[Cohort description]



[Anatomic distribution and CPRS type]



[Interventional pain management]



[Pain intensity and spinal cord stimulation]

eP091

A CASE OF ALLERGIC CUTANEOUS REACTION TO SPINAL CORD STIMULATOR DEVICE

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Introduction: Spinal cord stimulation has been used since the 1960s to treat chronic consistent refractory pain such as failed back surgery syndrome and complex regional pain syndromes. The purpose of this paper is to describe a rare case of cutaneous reaction to spinal cord stimulator device component.
Case: A 42-year-old man diagnosed of complex regional pain syndrome affecting the right upper extremity underwent implantation of spinal cord stimulator device. The patient developed erythematous plaque and pruritis on right flank area on postoperative day 21. The erythematous rash was localized along the lead, and the anchoring site and the implantable pulse generator site were not involved. Dexamethasone was intravenously administered, and topical steroid was applied. Dexamethasone was changed to oral steroid and was stopped after tapering for 14 days.
Conclusion: Some cases of allergic reaction of spinal cord stimulator devices could be controlled by medical treatment like corticosteroid.

eP092

DIGITAL SCHEMATIC DRAW-A-PERSON TEST FOR ASSESSMENT OF BODY SCHEME DISTORTIONS: PROOF-OF-CONCEPT TRIAL IN PATIENTS WITH COMPLEX REGIONAL PAIN SYNDROME (CRPS)

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Background and aims: Body scheme disturbances are recognized as a central factor limiting the functioning of CRPS patients. Assessing the body scheme distortions in CRPS may be of critical importance for choosing an optimal treatment protocol. We utilized a digitalized schematic draw-a-person task (sDAP) for discriminant diagnosis of CRPS, based on the analysis of kinematic, temporal and spatial characteristics.
Methods: sDAP performances of 22 CRPS (>6 months) patients, 19-61 y., diagnosed according to the Clinical Budapest criteria in the upper or lower limb, and 21 healthy subjects matched in age and gender, were tested. Participants were instructed to draw a figure from a set of simple geometric elements (circle, ellipses and rectangles), using an inking electronic pen on a regular paper, attached to Wacom “Intous Pro” tablet. The data was collected using the Neuroscript Movalyzer and analyzed using a custom Matlab-written software.
Results: In the CRPS group the total drawing area was significantly smaller (t(39)=-3.076,p=0.004), the mean segment length shorter (t(39)=-2.979, p=0.005) and the drawing speed slower (t(39)=-3.583,p=0.001). Brief Pain Inventory (r=-0.646,p=0.003) and CRPS Severity Score (r=-0.488,p=0.034) were correlated with the drawing area and speed of drawing. Additional correlations were found between the sDAP performance measures and the Left/Right computerized judgment mean recognition time and the Trail Making Test B completion time.
Conclusions: Micrographia, movement execution and planning deficits are characteristic features of the sDAP drawings made by CRPS patients. Our findings can be seen as a proof-of-concept for development of a novel bedside clinical assessment tool for CRPS.

eP093

COMPLEX REGIONAL PAIN SYNDROME AFTER MATRICECTOMY OF THE FIRST TOE

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Background and aims: CRPS is a painful and incapacitating pathology, whose symptomatology exceeds the initial lesion in magnitude and duration, and can produce an important functional deterioration. In 60-75% of the cases there is a history of a previous traumatic injury in members.
Methods: A 36-year-old patient who, after a matricectomy of the first toe of the right foot, presented hyperalgesia, temperature changes, edema, reticular livedo in episodes of paroxysmal pain, and decreased degree of movement of the right foot. For walking, he needs the help of a cane.
At first, it is treated in rehabilitation with physiotherapy and pharmacological treatment, improving mobility, hyperalgesia and edema but without achieving lesional stability, which is why it is referred to the unit of pain.
When the patient arrives at our surgery, the patient presents a stabbing and disabling pain on the outer surface of the first toe with hyperalgesia. We performed infiltration with local anesthetic and corticosteroids of the medial dorsal cutaneous nerve, pulsed radiofrequency of said nerve and 8% capsaicin patch.
Results: The patient can walk without a cane and the intensity of the seizures has diminished, as well as the frequency.
Conclusions: The lack of knowledge of the etiopathogenesis of this syndrome, the complexity and temporal variation of the signs and symptoms that constitute it, make it necessary an early diagnosis suspicion. From the beginning, a multidisciplinary treatment should be established to control pain, treat psychological alterations, improve vasomotor alterations, avoid stiffness and osteoarticular sequelae.

HEADACHE

eP094

IDIOPATHIC INTRACRANIAL HYPOTENSION SYNDROME (IIHS) IN A 10 YEAR-OLD PATIENT

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Background: Idiopathic intracranial hypotension syndrome (SHII) is one of the most infrequent causes of headache in the general population. Associated with systemic connective tissue diseases, being extraordinarily infrequent in childhood age.
Methods: We present a clinical case of a female patient 10 years of age with spontaneous intracranial hypotension syndrome, in which a complete response to a blood patch was observed. Clinical signs and symptoms such as a migraine-like headache. The headache was of the holocranial kind, worsening during standing and sitting and improving and disappearing with decubitus.
NMR showed: Cerebellar tonsillar descent one centimetre below McRae's line. Besides an enlargement in the thickness of the meningeal coverings and especially of the anterior epidural space in the spine. Given the resistance to conventional treatment it was decided to undertake an epidural blood patch.
The epidural punchure of blood under aseptic conditions was at L2-L3 with a 18G Tuohy needle
Results: One month later She reported a single headache with a VAS 2.
Six months after the patient reported a relapse with migraine crises , VAS 4, therefore it was decided to repeat the epidural blood patch. In subsequent follow-ups after the second blood patch the patient was asymptomatic. During the 2-year follow-up period the patient continued asymptomatic.
Conclusions: IIHS, It is a clinical entity that is probably under-diagnosed and more frequent than we think.
Complementary test confirmation is done using MR with contrast.
Treatment of idiopathic cases is the same as those with a known cause.

eP095

STUDY PROTOCOL FOR A SINGLE BLIND PLACEBO-CONTROLLED CROSS OVER STUDY TO INVESTIGATE THE EFFICACY OF GREATER OCCIPITAL NERVE BLOCK WITH PLACEBO IN CHRONIC MIGRAINE PATIENTS

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Background and aims: Greater occipital nerve (GON) blockade have been used as a preventative strategy for a range of headaches including migraine (Anthony 2000; Bovin and Sand 1992). Although GON block is a common treatment for managing chronic migraine, the evidence still remains ambiguous. The National Institute for Clinical Excellence in the UK are yet to include GON blocks in their guidance and protocols on the treatment of both chronic headache and migraine.
The aim of this study is to assess the efficacy, safety, and tolerability of greater occipital nerve block in patients with chronic migraine.
Methods: Patients with chronic migraine for at least 3 months or more referred to specialist headache clinics will be recruited to the study. We anticipate enrolling 30 patients who will be randomised to receive either the GON block or placebo injections.
The study is a randomised, single-blinded, placebo-controlled cross-over study. Patients will be followed up for 24 weeks. After 12 weeks, if a patient has received no benefit, the allocated treatment is crossed over to receive the other treatment arm.
Results: Outcome measures will be collected at each time point in the form of questionnaires to assess the efficacy

and tolerability of greater occipital nerve block, headache severity, functioning, anxiety and depression, and health-related quality of life.
Conclusions: The results from this on-going pilot study will demonstrate any improvements in disability associated with chronic migraine disorder. We also intend to identify any economic outcomes for the management of chronic migraine.

eP096

THORACIC EPIDURAL BLOOD PATCH FOR A PATIENT WITH A DISTURBED CONSCIOUSNESS AND BEHAVIORAL CHANGES DUE TO SEVERE SPONTANEOUS INTRACRANIAL HYPOTENSION: A CASE REPORT

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Spontaneous intracranial hypotension is characterized by occult cerebrospinal fluid (CSF) leak and subsequent CSF hypovolemia, resulting in brain sag and downward traction of neural structures, which in turn leads to orthostatic headache. Less frequent symptoms are taste alterations, limb paresthesia, behavioral changes, Parkinsonian-like symptoms, and even coma. Treatments include conservative therapy such as bed rest, oral and intravenous hydration, caffeine, steroids, analgesics, and an epidural blood patch (EBP). Here, we describe a case of excellent relief of symptoms after thoracic epidural blood patch in a patient with a disturbed consciousness and behavioral changes due to severe spontaneous intracranial hypotension.
Methods: Diagnosis was based on the patient‘s symptoms and neuroimaging findings, which included brain magnetic resonance imagingand computerized tomography (CT) myelography.
All procedures were performed under fluoroscopic guidance. Thoracic Epidural space was identified by the loss of resistance technique with air. Contrast media was injected into the epidural space for confirmation. At this time, autologous blood was collected under sterile condition and slowly infused into the epidural space. After the procedure, patient was monitored for any adverse effects.
Results: The brain stem symptoms such as 3rd nerve palsy and mental change developed rapidly and we thought that were posterior sagging symptom because of CSF leakage.EBP was performed to prevent CSF leakage, and then the brain sagging was reversed.
Conclusion: We describe a case of excellent relief of symptoms after thoracic epidural blood patch in a patient with a disturbed consciousness and behavioral changes due to severe spontaneous intracranial hypotension.

eP097

DRY NEEDLING UNDER ULTRASOUND GUIDANCE TRIGGER POINTS IN NECK AND SHOULDER EFFECTIVE OR DIFFERENT TYPES OF HEADACHE

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Background and aims: Myofascial Trigger Points (MTrPs) treatment of the head and neck muscles can reduce frequency, intensity, and duration of attack in patients with tension-type headache (TTH) and migraine. Recently we proposed a new approach of trigger point therapy, performing precise muscle dry needling (DN) under ultrasound (US) guidance.
The aim was to evaluate efficacy of deep DN of myofascial trigger points (MTrPs) in neck and shoulder muscles to treat chronic headaches.
Methods: We included 24 patients (15 females, 38±6 years old) with intensive chronic persistent or recurrent one- or

two-sided pain in temporal and/or occipital areas. Treatment approach by Bubnov [https://doi.org/10.1186/1878-5085-3-13] was applied that included ultrasound identification of MTrPs with following DN under US guidance using steel 28G needles to elicit local muscle response (LTR, `needle grasp`). Visual analogue scale data (VAS0-10) were measured before and after the interventions.
Results: Main active MTrPs were diagnosed in rectus and obliquus capitis inferior muscles, the additional (latent) MTrPs were defined and effectively needled in the ipsilateral shoulder rotator muscles. In one session 1-3 needles were inserted, 1-2 sessions applied to each patient. Retention of needles corelated with LTR and clinical effects. In seventeen patients pain decreased by a VAS of 90% ($p< 0.01$) pain relief wassustainable during one month after procedure; seven patient received another session after 2-3 weeks after first session. Preliminary data shows decreasing levels of migraine type attacks in 6 patients.
Conclusions: MTrPs DN under ultrasound guidance is effective to treat headaches, evoced by myofascial disorders.

ePO98

SLEEP QUALITY IS ASSOCIATED WITH THE BURDEN OF HEADACHE IN MEN, BUT NOT IN WOMEN, WITH TENSION TYPE HEADACHE

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Background and aims: Tension type headache (TTH) is most prevalent in women than in men (ratio about 3:1). Our aim was to assess gender differences in those variables associated with headache burden in TTH.
Methods: Individuals diagnosed with TTH according to the International Headache Classification (ICHD-III) participated. Primary headaches, medication overuse headache, whiplash or fibromyalgia were the exclusion criteria. The burden of headache was assessed with the Headache Disability Inventory. Headache features were collected with a 4-weeks diary. Sleep quality was assessed with the Pittsburgh Sleep Quality Index. The Hospital Anxiety and Depression Scale assessed anxiety/depressive symptoms. Finally, trait and state anxiety levels were evaluated with the State-Trait Anxiety Inventory. Hierarchical regression analyses were conducted to determine the associations between the burden of headache with the remaining variables in men and women.
Results: Fifty-nine men and 153 women (n=212) participated. The regression analyses reported that sleep quality explained 31.1% of the physical burden and 36.7% of emotional burden (both, $P< 0.001$) in men. The regression analyses found that headache intensity and depression explained 21.8% of the physical burden, whereas depression, headache intensity, frequency, duration and trait levels of anxiety explained 46.6% of the emotional burden of headache (both, $P< 0.001$) in women.
Conclusions: We observed some gender differences in the variables associated with headache burden in TTH. Sleep quality was the variable associated with the burden of headache in men with TTH; whereas headache features, depression and anxiety were associated with the headache burden in women with TTH.

ePO99

CORRELATION BETWEEN SENSITIZATION OF TRIGEMINAL NUCLEUS AND FUNCTIONALITY OF DEEP CERVICAL FLEXOR MUSCLES

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Background and aims: Despite Migraine is characterized by increase sensitization of trigeminal nucleus and impairment of deep cervical-flexor muscles, their relationship has never been studied. Our aim is to assess if these dysfunctions are present interictally and if they are correlated.
Methods: Patients with Episodic Migraine (EM) and healthy control were included. Exclusion criteria included other headaches type, whiplash and fibromyalgia. We assess interictally wind-up and pressure pain threshold over temporalis and pressure pain threshold in the neck. Functionality of deep neck muscles was assessed with cranio-cervical flexion test.
Results: We included 10 EM (9 women, 1 man), mean age 35,30 ± 13,82 and 10 control (9 women; 1 man), mean age 36,10 ± 13,29. Subjects with EM have a lower pressure pain threshold over temporalis (144,50 ± 52,70 vs 233,08 ± 95,83; t(18)= 2,5 p< 0,05), neck (305,97 ± 95,22 vs 461,26 ± 157,19; t(18)=2,67 p< 0,05) and increase wind up ratio (2,70 ± 2,45 vs 0,10 ± 2,07; t(18)= -2,55 p< 0,05. Activation pressure score was lower in EM than control (21,60 ± 2,06 vs 28,20 ± 2,90; t(18)=5,86 p< 0,001. There was a moderate correlation between activation pressure score and pressure pain threshold over temporalis (r= 0,40), cervical spine (r=0,38) and wind-up ratio (r=-0,39) with p(one tailed)< 0,05.
Conclusion: Subjects with EM have an increase sensitization, perhaps at the level of the trigeminal nucleus, and dysfunction of the deep cervical flexor muscles. An increase level of sensitization is correlated with a lower functionality of cervical muscles.

eP100

TRIPTAN PRESCRIBING IN A SOUTH AFRICAN PATIENT POPULATION: HOW GENERIC SUBSTITUTION IMPACTS ON THE AFFORDABILITY OF ANTIMIGRAINE PREPARATIONS

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Background and aims: Migraine can be treated pharmacologically and/or non-pharmacologically by a range of options. The 5-HT1B/1D receptor agonists (triptans) have become a preferred abortive treatment option for migraine despite their high cost. The aim was to analyse the prescribing cost of triptans in a South African private sector patient population.
Methods: A retrospective pharmacoepidemiological study was conducted on 2018 data. All antimigraine preparations (Anatomical Therapeutic Chemical (ATC) classification N02C) were extracted from a private healthcare administrative database.
Results: A total of 901 antimigraine preparations were prescribed to 503 patients (70.78% females). The average age of patients was 40.89 (SD=14.21) years. Patients received on average 2 antimigraine products over the year. Clonidine was the most often prescribed (40.84% of products), followed by the triptans (30.08%) and ergotamine (21.82%). Rizatriptan prescriptions accounted for 26.64% of antimigraine products, and for 43.38% of cost, indicating that they were proportionally more expensive than the other antimigraine preparations. Rizatriptan was the most popular triptan (88.56% of all triptan prescriptions). Three different rizatriptan trade name products were prescribed. The originator product was available as both a tablet and wafer, while the generic products were available as orally disintegrating tablets. Compared to the results of previous studies, generic triptans have changed antimigraine prescribing patterns.
Conclusions: The triptans are preferred agents to abort migraine attacks despite their cost. Rizatriptan wafers was the clear triptan of choice in this study. The introduction of generic equivalents for rizatriptan may have contributed to its higher prescribing rate compared to other triptans.

eP101

SPINAL CORD STIMULATION AT 10 KHZ FOR TREATMENT OF CHRONIC HEAD PAIN

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Background: Chronic, refractory head pain presents a treatment challenge. Case series show occipital nerve stimulation (ONS) to be efficacious, however, high surgical revision rates and lead migration have prove troublesome (1). The alternative, traditional spinal cord stimulation (SCS) in the cervical region can cause variability in the distribution and intensity of the induced paresthesias, often resulting in inadequate coverage (2,3). Paresthesia-independent high frequency SCS (HF-SCS) at 10 kHz presents an interesting option for these patients.
Methods: Twenty-seven patients received a cervical HF-SCS implant for the treatment of their predominant head or head and upper body pain, following a successful trial of the system. Each patient was implanted with epidural leads spanning C2-C7 vertebral bodies. Programming amplitudes varied between 0.1-2.1mA, depending on the patients. Patients were followed up at an average of 32.1±21.3 (range: 9-65) months.
Results: Patients implanted with a permanent HF-SCS at 10 kHz system reported a significant reduction in their baseline recorded pain when followed up post implant (7.3±1.4 vs.2.7±2.4 on the numerical pain rating scale [NRS]). All but 2 of the 27 patients reported an improvement in their condition. Improved function was observed in 81% of the patients and improved quality of sleep reported by 69% of the patients. Two patients underwent a revision to their leads with good outcomes. No further complications were noted.
Conclusion: Preliminary results from a single clinic using HF-SCS to treat head pain are promising.
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eP102

EEG-CHANGES IN MIGRAINE PATIENTS

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Migraine is a neurological disease characterized by episodic or regular headaches in one half of a head. A few and controversial data regarding changes of bioelectric brain activity in patients suffering from migraine are available. Purpose of the study is to reveal changes on computer electroencephalography (EEG) in patients with migraine. Data of 40 people aged from 16 to 45 years with a diagnosis of migraine, established according to the criteria of the International headache associationswere examined. Patients with epilepsy and chronic headache, head injury and other headaches brain, the study was not included. All patients underwent EEG according to the standard method with functional tests (rhythmic photostimulation, test with hyperventilation for 3 minutes, test with opening the eyes) in the interictal period.
The results. EEG changes were detected in 23 (9.2%) patients out of 40.
Changes on the EEG were detected in occipital region in 35% of patients, in frontal areas - 28% and in temporal areas - 37%. It is revealed that EEG-changes in occipital areas were more common in migraine with aura. Changes in the frontal areas correlated with the presence of migraine as with aura, and without it. Changes in temporal areas were observed only in migraine without aura. Slow and sharp waves were observed in migraines with aura, while spikes were detected only in patients with migraine without auras.

LOW BACK PAIN AND LUMBORADICULAR PAIN

eP103

FUNCTIONALITY IN PATIENTS WITH CHRONIC LOW BACK PAIN AND SCIATICA

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Background and aims: The objective of this study was to examine differences in functionality between patients with localized chronic low back pain and those with sciatica.
Methods: This cross-sectional study included 110 patients, average age of 53,22±15,28 years, with chronic low back pain who were divided into two groups. The first group comprised patients with low back pain and sciatica, and the second, patients with localized low back pain. Data about pain duration (months), gender, pain intensities (current, average and maximum in the last 4 weeks) were collected. The 6-minute walk test (6MWT) and Oswestry Disability Index (ODI) were used for functional assessment.
Results: There were 68 (61,8%) females in our sample. The majority of subjects had low back pain and sciatica - 87 subjects (79,1%). Average pain duration was 69,80±102,19 months. Current pain intensity (5,98±2,42 vs 4,21±2,39, t=3,108, p=0,002), average (6,63±2,11 vs 5,22±1,91, t=2,917, p=0,004) and maximum pain intensity (8,10±2,06 vs 6,91±1,91, t=2,499, p=0,014) in last 4 weeks were significantly higher in the sciatica group. The scores of the 6MWT and ODI correlated significantly (r=-0,689, p< 0,001). Subjects from the first group walked significantly shorter distances on 6MWT (305,41m±104,32m vs 389,04m±113,06m, t=-3,360, p=0,001) and achieved higher scores on ODI (43,61±15,27 vs 31,67±17,09, t=-3,252, p=0,002).
Conclusion: Functionality of the patients with low back pain and sciatica was significantly more deprived compared to the patients with localized low back pain, according to the 6MWT and ODI. 6MWT can be a very useful tool for functional assessment in patients with chronic pain.

eP104

THE INFLUENCE CENTRAL SENSITIZATION LEVEL ON REPORTED OUTCOMES OF FUNCTIONING IN PATIENTS WITH CHRONIC LOW BACK PAIN: A LONGITUDINAL STUDY

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Background and aims: Functioning, participation, and overall well-being of patients with Chronic Low Back Pain (CLBP) are decreased; reasons for which patients attend rehabilitation. Central Sensitization (CS) can be present in CLBP. But CS has not yet been linked to functioning.
Aim: To analyze the relationship between CS and functioning of patients with CLBP.
Methods: Observational longitudinal. Adult patients with CLBP measured before and after interdisciplinary pain rehabilitation treatment.
Measurements:

- CS: Central Sensitization Inventory part-A.
- Functioning: Pain Disability Index, Work Ability Score, Rand-36 Physical Functioning subscale.

Statistical analyses:

- Pairwise T-test for functioning scores.
- Simple regression: difference between baseline and discharge of functioning scores (dependent) and CS scores (independent).

Results: Data collection is ongoing. Preliminary results are based on 25 patients; n>40 are anticipated for September.
Baseline and discharge means differ for CS and functioning measurements, but only significantly for functioning. The strength of the relation between CS and functioning measurements range from r=0.05 to r=0.22 at baseline, and from r=0.26 to r=0.60 at discharge. There is a trend of decreased CS related to improved functioning: decreased pain disability, increased physical functioning, and increased work ability.
Conclusions: Baseline and discharge means differ for CS and functioning measurements. With the current preliminary data, a trend of decreased CS related to improved functioning is observed.
Acknowledgements: Authors thank the Pain Rehabilitation Team for their collaboration in the study.
Disclosure: Nothing to declare.

eP105

ANXIETY LEVEL IN MIDDLE AGE PATIENTS WITH CHRONIC LOW BACK PAIN

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Background and aims: The objective of this study was to assess difference in the anxiety level in middle age chronic low back pain patients versus sex and age-matched healthy subjects.
Methods: The study sample consisted of 59 patients who had chronic low back pain (LBP) for more than 6 months with pain intensity >3 on a 0-10 Numerical Rating Scale (NRS) and 63 healthy subjects in control group. Participants were given self-assessment State-Trait Anxiety inventory questioners (STAI), which made possible to determine the degree of participants‘ anxiety.
Results: In the study were included middle age participants (49.56±14.46 years in LBP group vs. 45.14±10.66 years in control group , t=1.909, p=0.059). There were 33 (55.9%) females and 26 (44.1%) males in LBP group and 35 (55.55%) females and 28 (44.45%) males in control group, with no difference in gender distribution between groups (χ^2=0.002, p=0.967). Average pain intensity in the last four weeks was 5.95±1.80 on NRS in the LBP group. Results on STAI state anxiety questioner were significantly higher in the LBP group (40.48±13.41 vs. 32.62±9.62, t=3.678, p< 0.001). Significantly higher anxiety scores in LBP group compared to controls were also present in STAI trait anxiety questioner (40.76±12.48 vs. 34.47±10.94, t=2.954, p=0.004).
Conclusions: Both “state” and “trait” anxiety levels are significantly higher in patients with low back pain compared to healthy individuals. Chronic low back pain influences all aspects of peoples life, including anxiety levels and further studies with LBP patients should assess the therapeutic effect of reducing anxiety.

eP106

TOPICAL NICOBOXIL/NONIVAMIDE, NICOBOXIL, NONIVAMIDE AND PLACEBO FOR TREATING ACUTE LOW BACK PAIN (ALBP): CUMULATIVE PROPORTION OF RESPONDERS ANALYSIS (CPRA) FROM A RANDOMIZED, CONTROLLED TRIAL

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Background and aims: A multicenter, active and placebo-controlled, double-blind, randomized trial in 805 patients has demonstrated pronounced analgesic efficacy of nicoboxil/nonivamide ointment for treating ALBP. Pain intensity was assessed with a numerical rating (range 0-10) scale. Efficacy of the FDC versus placebo, expressed as pain intensity difference (PID) versus baseline, was shown as early as 4h after onset of treatment and for the entire treatment period (up to 4 days; Eur J Pain 20 (2016) 263). Here we present a detailed CPRA.

Methods: At 8h after treatment, and at the last individual treatment day (LID) the percentages of patients with ‚minimum-/moderate-/substantial-/clinical benefit; almost complete pain relief' (i.e. 15/30/50/90% PID), and corresponding numbers needed to treat (NNT) for the FDC compared to placebo (PLA) were calculated.
Results: At 8h, the FDC[PLA] provided 15% PID for 77.5% [43.5%], 30% PID for 56.9% [25.1%], 50% PID for 29.9% [9.9%], and 90% PID for 4.9% [1.1%] of patients, resulting in NNT of 2.9, 3.1, 5.0, and 26.1 compared to PLA ($p \leq 0.0234$).
On LID, the FDC[PLA] provided 15% PID for 86.8% [56.9%], 30% PID for 73.7% [42.3%], 50% PID for 55.8% [29.0%], and 90% PID for 16.1% [5.9%] of patients, with NNT of 3.3, 3.2, 3.7, and 9.8 compared to PLA ($p \leq 0.001$).
Conclusion: The FDC provided higher percentages for different levels of response in patients suffering from ALBP, when compared to placebo, at 8 hours after start of treatment and at the last treatment day.
Sponsor: Boehringer Ingelheim; EudraCT No.: 2011-003890-27

eP107

THE OUTCOME OF PULSED RADIOFREQUENCY TREATMENT OF THE DORSAL ROOT VS LUMBAR NERVE ROOT INJECTION IN PATIENT AFFECTED BY LUMBAR RADICULOPATHY

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Introduction: Pulsed radiofrequency (PRF) treatment of the dorsal root ganglion (DRG) has been used as a minimally invasive treatment of lumbar radicular pain (1, 2) as an alternative treatment to lumbar nerve root injection (LNRI) with steroids (4)
Method: We treated a total of 28 patients affected by unilateral lumbar radiculopathy due to degenerative disc disease with pulsed radiofrequency treatment (PRF) of the dorsal ganglia (15 patients) or lumbar nerve root injection (NLRI) with methylprednisolone (13 patients). Patients completed a VAS and McGill questionnaire at baseline and at 12 weeks follow up.
Results: Both groups showed a statistically significant improvement at 12 weeks compared to baseline. There was not statistical difference in VAS and McGill scores between the two groups. The mean VAS baseline was 5.99 ± 0.95 in the PRF group and 6.18 ± 0.84 in the N LRI group. The mean McGill baseline score was 28.07 ± 8.65 in the PRF group and 29.08 ± 5.42 in the NLRI group. At 12 weeks the mean VAS was 4.73 ±1.61 (p value: < 0.001) in the PRF group and 4.95 ± 1.33 (p value: p < 0.01) in the NLRI group. The mean McGill score at 12 weeks was 20.,53 ± 8.77 (p value: < 0.01) in the PRF group and 24.62 ± 7.56 (p value: < 0.05) in the NLRI group. The data was expressed in mean ± SD; t-Student test was employed to calculate statistical significance.

eP108

VALIDATION OF THE Q-SAP BACK (QUESTIONNAIRE FOR SYMPTOM ASSESSMENT IN PAIN DISORDERS FOR BACK PAIN PATIENTS)

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Background and aims: We have recently demonstrated that the consideration of impairment of QoL (Quality of Life) and functionality in addition to symptom intensity are important for treatment evaluation of chronic LBP (Low-back pain) and might enhance efficacy in clinical pain trials and patient-centered treatment (Gierthmühlen et al., CMRO 2017). Based on these results, the aim of this study was to establish a new questionnaire (Q-SAP Back) and investigate its validity and reliability.

Methods: 150 Patients ≥ 18 years with chronic low back pain with or without radiculopathy, lasting for at least 3 months, NRS ≥ 3 were included. After informed consent and clinical examination a subset of parameters of the QST (Quantitative Sensory Testing) following the DFNS protocol were performed. Afterwards the patients were asked to fill out the QSAP-Back and a set of PRO (patient reported outcomes). This assortment of questionnaires was filled out at three different points of time (1st visit, 3h after 1st visit, and 4 weeks after 1st visit). Analysis was made for test-retest reliability, determination of the factorial structure, and construct validity.

eP109

A PROSPECTIVE, COMPARATIVE, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY ON THE EFFICACY OF RADIAL SHOCKWAVES IN THE TREATMENT OF MYOFASCIAL PAIN SYNDROME OF THE LUMBAR/GLUTEAL REGIONS

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Background and aims: Extracorporeal shockwave therapy (ESWT) has been used successfully in different musculoskeletal conditions, including pseudarthrosis and tendinopathies. The aim of the study was to evaluate the efficacy of ESWT in the treatment of myofascial pain syndrome (MPS) in the lumbar and gluteal regions.
Methods: The study was prospective, randomized, double-blind and placebo-controlled. 121 patients with low back pain without neuropathic component (DN4< 4), presenting MPS lasting more than six months, VAS ≥ 4, were enrolled; a total of 46 patients were considered eligible. Patients were treated with a standard multidisciplinary protocol during six weeks. Seven patients had clinical improvement (VAS< 4) and eight dropped out the study. 31 patients were randomized, 14 underwent active ESWT and 17 underwent placebo ESWT. The evaluations were based on the VAS, Roland-Morris Disability Questionnaire (RDQ), Oswestry Disability Index (ODI), Short-Form of the McGill Pain Questionnaire (SF-MPQ).
Results: Patients treated with active ESWT presented a significant reduction of pain severity (VAS) from the third until the 12ndmonth of follow-up (p< 0,001). At the 12ndmonth of follow-up, patients treated with active ESWT had more than 50% improvement of the functional disability of the low back pain according to the RDQ and ODI (p< 0,05).
Conclusions: The active ESWT provided a significant and lasting reduction in pain intensity from the third until the 12thmonth of follow-up, finding that suggests that its analgesic effect settles late and has long duration. Additionally, ESWT provided improvement of the functionality according to the RDQ and ODI at the 12thmonth of follow-up.

eP110

VIRTUAL REALITY AS PART OF A MULTIMODAL THERAPY FOR INPATIENT CHRONIC LOW BACK PAIN PATIENTS

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Background: Within the VIREP (Virtual Reality for Chronic Backpain) - project, a Virtual Reality (VR) tool was developed including elements of movement training, distraction and body awareness. This study aimed to investigate if (i) VR training causes any side effects, (ii) VR influences pain intensity, and (iii) how patients perceive the VR

training.
Methods: As part of an inpatient multimodal pain management program, patients with chronic low back pain participated in seven training sessions.
Activities of daily living were practiced in an explorative, domestic VR environment.
Pain intensity was measured before, during and after each session, using a numeric rating scale (NRS; 0-10). VR training acceptance was measured with structured interviews.
Results: 23 patients (age 51 +/-12, 11 women) participated; five patients had to be excluded. No side effects were observed. Pain intensity improved slightly from the beginning to the end of the therapy program (5.2/10 vs. 4.9/10, p=0,083). In 54% of sessions, pain intensity remained unchanged before and after the sessions, in 35% of sessions pain reduced by at least two NRS points. In 16% of sessions that resulted in pain relief, patients claimed to be pain free after the treatment. A non-clinically significant pain increase of 1.3/10 was observed in 11% of sessions. Most patients (83%) enjoyed the VR activities. All patients perceived the treatment as pleasant.
Conclusion: Findings suggest that the VR environment is a safe treatment method and was well accepted. A pain increase occurred in only a small percentage of training sessions.

eP111

LONG-TERM PHYSICAL EXERCISE TRAINING PROGRAM SUCCESSFULLY REDUCES PAIN INTENSITY AND BENEFITS PSYCHOLOGICAL FACTORS IN INDIVIDUALS EXPERIENCING CHRONIC LOW BACK PAIN

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Introduction/Aim: The Global Burden of Disease study (2015) reported that chronic low back pain (CLBP) is the most prevalent and disabling condition amongst numerous chronic illnesses. According to the guidelines provided by Airaksinen and colleagues (2006), supervised physical exercise intervention is an important first-step treatment of nonspecific chronic low back pain. Here, we investigated the impact of a 14-week long personalized physical exercise training on pain intensity, perceived disability and several psychological factors in people suffering from CLBP.
Methods: Twenty-three participants (female - 16, male - 7, age range 22-72 years old) suffering from chronic low back pain were recruited to complete 14 weeks of cardiovascular training and muscle strengthening program. At the beginning and at the end of this intervention, we assessed their pain intensity following NIH (2017) guidelines and asked participants to complete several psychosocial questionnaires (Beck Depression Inventory, Pain Catastrophizing Scale, and Oswestry Disability Index).
Results: Following a long-term physical exercise intervention, perceived pain intensity decreased significantly (p=0.001). Pain catastrophizing score (p=0.004), Oswestry disability index(p=0.005) and Beck depression index(p=0.022) showed a significant decrease.
Discussion/Conclusions: Our findings suggest that a long-term physical exercise training substantially contributes in reducing pain and improves psychological factors in patients with chronic low back pain. In order to support our hypothesis further, we are looking forward to including results of a wait-list control group in our future analysis.

eP112

EXPLORING THE PRE-MORBID CONTEXTS IN WHICH NOCIPLASTIC PAIN DEVELOPED IN INDIVIDUALS WITH NON-SPECIFIC CHRONIC LOW BACK PAIN: A QUALITATIVE STUDY

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Background and aims: Nociplastic pain (NP) is a predominant mechanism in a proportion of individuals with non-specific chronic low back pain (NSCLBP) and is associated with poor outcomes. It is proposed that the pre-morbid experiences and contexts may be related to the development of NP. The objective of this study was to explore the pre-morbid experiences and personal characteristics of participants with NP from a NSCLBP population.
Methods: This was a qualitative, exploratory study, using a concurrent nested design within a mixed methods protocol. N=9 participants were recruited purposively based on sensory profiles and trait anxiety-related personality types. Data were collected through semi structured interviews, managed using QSR NVivo 10 software and analysed using theoretical thematic analysis.
Findings: Four themes emerged: developmental learning experiences, personal characteristics, sensitivity and trauma. Reported was lack of confidence, low esteem and a need to please others, physical hyper-sensitivities (smell, light, sound) and emotional sensitivity (anxiety) as well as physical hypo-sensitivity. Participants had also suffered emotional and/or physical trauma. Learning difficulties, sensory sensitivities and trauma are associated with autonomic stress responses, which in turn have been linked to physiological changes seen in NP.
Conclusions: NP developed in the context of sensory processing differences related to learning difficulties, sensitivities and trauma, and personal characteristics of low confidence and control, in a group of participants with NSCLBP. The role of pre-existing sensory processing differences, as a component of altered CNS function, in relation to NP warrants further investigation.

eP113

THE EFFECT OF SPINAL CORD STIMULATION TO THE QUALITY OF SEXUAL LIFE ON FEMALE FBTS PATIENTS

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Background: The aim was to evaluate effect of spinal cord stimulation (SCS) to the quality of sexual life on failed back therapy syndrome (FBTS) patients.
Methods: We analyzed consecutive female patients with FBTS from prospectively-acquired data between January 1, 2015 and January 31, 2019. The quality of sexual life was evaluated using Sexual Quality of Life questionnaire for females (SQOL-F) pre-operatively and 6- and 12-month after implantation. Disability, pain intensity and depressive symptoms were evaluated by using Oswestry Disability index (ODI), Numerical Rating Scale for pain and Becks Depression Inventory (BDI).
Results: During study period, 65 female FBTS patients underwent SCS. Mean age was 51 years, mean ODI was 47% and mean BDI score was 12. The permanent pulse generator was implanted for 53 patients after one-week trial. Complete follow up was achieved on 17 patients. Mean SQOL-F for all FBTS patients was 80 pre-operatively, 79 after 6-month and 82 after 12-month follow-up (p=0.07; repeated measure ANOVA). In the younger age group (≤45 years) SQOL-F score was 74 pre-operatively, 83 after 6-month and 88 after 12-month follow-up (p=ns). In the older age group (>45 years), SQOL-F scores were 83, 77 and 79, respectively (p=ns). Poor quality of sexual life correlated with increased disability and depression (Spearman Rho-test). Pre-operatively low SQOL-F score correlated with leg pain, but correlation disappeared after relief of leg pain.
Conclusions: The quality of the sexual life improves in younger FBTS patients after SCS treatment. Relief of leg pain improves the quality of sexual life.

eP114

LOW BACK PAIN SYNDROME AND ABUSE OF DRUGS

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Introduction: The abuse of tobacco and drugs can worsen chronic low back pain.
Clinical case: 56-year-old patient, operated on in 2006 for foraminal stenosis L5-S1. Decompression and bilateral foraminotomy were performed. Since then the evolution has not been favorable since it continues with lumbar pain and rigidity. Medical treatment and rehabilitation were prescribed with sporadic improvements. A new Lumbar Magnetic Resonance was performed, appreciating a disc collapse L5-S1. The patient is told that if they do not improve, a new surgical intervention is necessary to perform the L5-S1 arthrodesis. I n current treatment with Tramadol 50 mg every 24 hours and Lorazepam 5 mg for sleep. Cannabis consumer, rolling tobacco, and occasional alcohol. He goes to the emergency room for an increase in low back pain and insomnia. Since admission, he has been prescribed lormetazepam 1 mg and diazepam 5 mg for sleep, which is being effective.
Diagnosis: Pain poorly controlled. Harmful use of cannabis and alcohol substances currently in remission, without abstinence.
Plan: Maintain psychopharmacological treatment as it is, and control analgesia. Tapentadol 50 mg is prescribed every 8 hours.
Recommendations: Correct habits of tobacco, alcohol and drug use to improve pain control of low back pain
Bibliography:
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eP115

LOW BACK PAIN AND RAPIDLY PROGRESSIVE COGNITIVE DECLINE AS A MANIFESTATION OF LYME NEUROBORELIOSIS: A CASE REPORT

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Background and aims: Lyme borreliosis is a tick-borne infection with the spirochete Borrelia burgdorferi. Nervous system involvement is found in less than 15% of cases. We describe a case of disabling low back pain and rapidly progressive cognitive decline in a patient with neuroboreliosis.
Methods: Case report
Results: A 57 year old male patient was admitted to Neurology department due to severe low back pain and gradual cognitive decline which had started 6 months earlier. Patient had a rapidly progressive impairment of learning and memory of recent events, reduced language fluency and apathy. Neurological examination revealed postural instability and mild bradykinesia. Cognitive screening showed a severe cognitive impairment (MMSE 9/30; ACE-R18/30). Oswestry Disability Index (ODI) was 58%. MRI of the lumbar spine was unremarkable. Brain MRI revealed mild cortical atrophy (MTA1-1, GCA10/39). Serum Vitamin B12, fT4 and TSH were in normal range. TPHA test was negative. ELISA and Western Blot showed serum IgM and IgG positivity for Borrelia burgdorferi, while Western Blot for Borrelia burgdorferi in CSF showed IgG positivity. Electroneurography revealed presence of mild peripheral neuropathy. Somatosensory evoked potentials showed prolonged central conduction time. The patient was treated with ceftiaxone 2g/day and symptomatic therapy, for three weeks. Reduced pain (ODI 22%) and significant improvement in cognitive functioning (MMSE 15/30) was observed at the 30-day follow-up. A serological follow-up testing was required.
Conclusion: We have presented a case of a patient with neuroboreliosis and rare combination of severe low back pain and cognitive impairment which was reversible after antibiotic treatment.

eP116

EFFICACY AND SAFETY OF CHEMONUCLEOLYSIS WITH RADIOPAQUE GELIFIED ETHANOL (RGE) WITH CENTERING COMPUTED TOMOGRAPHY (CT) FOR CERVICAL AND LOMBAR DISC HERNIATION

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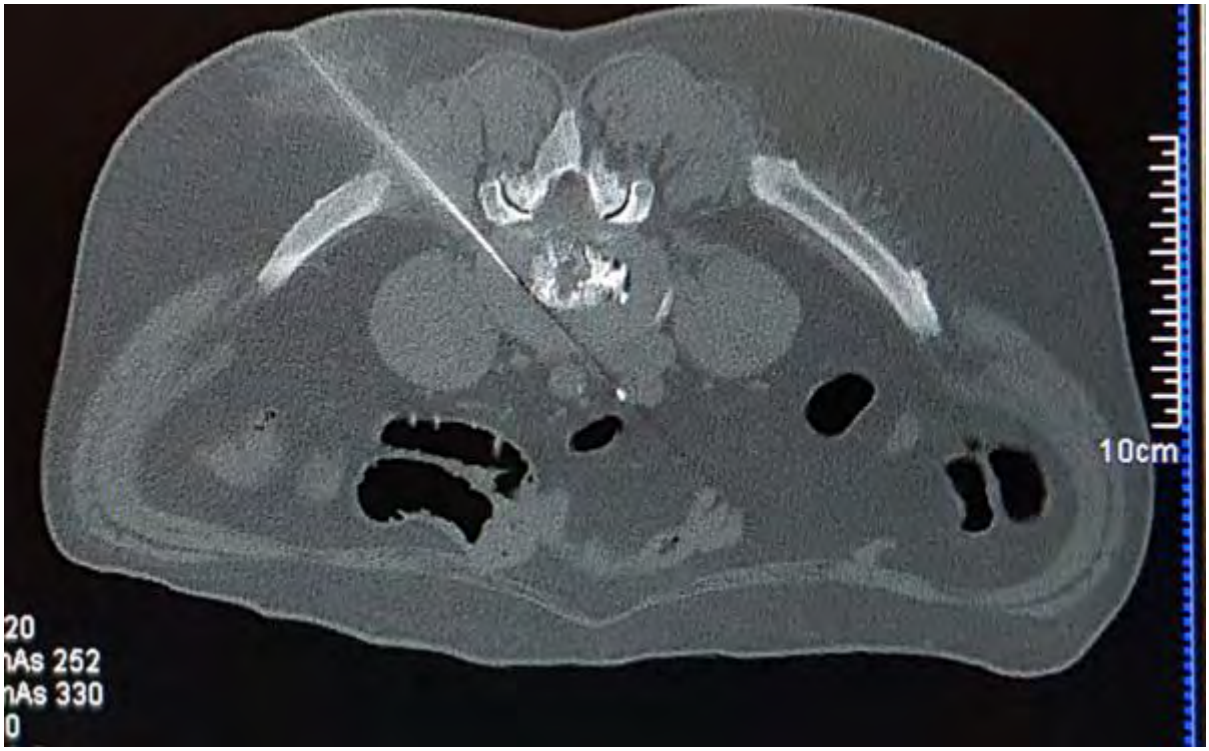
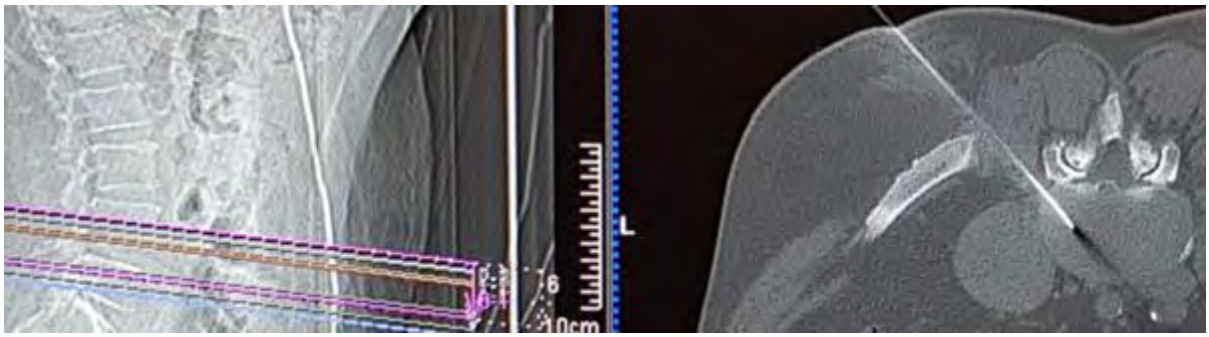
Background and aims: the disc herniation is one of the most common spine diseases. If the pain persists after the conservative therapy more invasive treatment is considered. The chemonucleolisis with RGE is a percutaneosus treatment that reduces the intradiscal pressure with intradiscal injection of chemical substances that generates the dehydration of the nucleus pulposus. The aim of this study is to investigate the long term efficacy and safety of chemonucleolisis.
Methods: The observation was conducted from september to november 2018 on patients that usually had cervical or lombar discogenic pain or radicular pain resistent to appropriate conservative treatment and confirmed by a CT or magnetic resonance imaging of a herniated disc. A sample of 37 patients (41% males and 51% fameles, 25-89 years), with radicular pain with a duration >3 months, intensity > 7/10 Visual Analogue Scale VAS, neuropathic pain 4 questions DN4 > 6/10), Oswestry disability Index ODI>40. Exclusion criteria included: coagulopathy or infection, imaging results that did not support clinical results, disc calcified on imaging.
Results: treatment was technically successful in 37 patients without complications. We evalueted treatment at 15 days, 30 days, 3 months, 6 months, Pic_02
Conclusions: Chemonuleolisis is a minimally invasive procedure safe and effective that can be used as a substitute for invasive surgery in unsuccessful medical treatments.



[CT imaging that demonstrating chemonucleolysis with percutaneosus intradiscal injection. The centering CT makes the technique more safe and precise]

	t0 (Mean)	t1 (Mean)	t2 (Mean)	t3 (Mean)	t4 (Mean)
VAS	7,89	2,92	2,54	2,19	1,84
ODI	49,73	22,97	16,49	11,35	10,27
DN4	7,05	2,78	2,08	1,70	1,30

[results]



[Pic. 3 Centering CT]

eP117

CLINICAL EVALUATION OF THE EFFECTIVENESS OF A NEW FLEXIBLE ORTHOTIC DEVICE FOR THE NON-OPERATIVE TREATMENT OF SCOLIOSIS

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Background: Bracing is one of oldest non-operative treatments for patients with scoliosis. However, a wide variety of braces are being used, and some show no effect, while others show conflicting results.
Objective. Evaluation of the effectiveness of a new orthotic device for the treatment of adult scoliosis.
Methods: Twenty adult patients who were diagnosed with scoliosis and qualified for the study were selected and all participants were treated for 12 hours/day for 12 weeks using a new orthotic device. Various efficacy assessments (Cobb's angle, spine length, pelvic angle, shoulder angle, thoracic angle, lumbar angle, pelvic sacral angle) were performed before and after the 12-week treatment. The values at each time point were compared.
Results: There were significant treatment effects in a time-dependent manner on every efficacy assessment ($p < .05$) after 12 weeks of bracing.
Conclusions: In this clinical study, it was demonstrated that a new brace that is more comfortable for the wearer reduced scoliosis and may be a useful option for non-operative treatment of scoliosis.

eP118

PATTERNS AND PREDICTIONS OF PAIN INTENSITY IN PATIENTS WITH SPINAL PATHOLOGY

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Background and aims: Most people experiencing pain as a result of a spinal pathology will be fully healed, still, in a small percentage of patients pain becomes chronic. The study is aimed to identificate pain predictors and to prevent pain chronification.
Methods: Prospective observational study. Patients were distributed across 9 groups, average VAS score was obtained 1 day before the operation,1,7 and 30 days after the operation. All patients/By sex/Smoking habits/ Employment/Age/Use of psychoactive substances/Alcohol consumption/Physical disability/Type of surgery. All patients throughout the post-op period received opioid painkillers.
Results: Patient count (n=59). Smokers experienced a decrease in pain rates on the 1st day by 54,5% [p< 0.05], on the 30th day by 49,5% [p< 0.05] when compared to non-smokers. Comparing working and unemployed/retired patients the working group experienced lower pain levels by 53%,49% and 40% on the 1 day [p< 0.001],7 day[p< 0.001] and 30 day [p< 0.005] respectively. The average pain level throughout the study was higher among the elderly patients (60-89 y/o) by 53% [p< 000.1] on the 1st day, by 48%[p< 0.005] on the 7th day and by 40%[p< 0.05] on the 30th day. Patients using psychoactive substances encountered 28% higher pain rates before surgery [p< 0.05]. Alcohol use, physical disabilities or the type of surgery did not impact pain scores, also there was no difference in pain rates comparing both genders.
Conclusions: Older age and certain drugs can contribute to higher pain rates and cause chronification. In contrast employed patients and smokers have considerably lower pain rates.

eP119

THE INFLUENCE OF A WEB-BASED BIOPSYCHOSOCIAL PAIN EDUCATION INTERVENTION ON PAIN, DISABILITY, AND PAIN COGNITION IN PATIENTS WITH CHRONIC LOW BACK PAIN IN PRIMARY CARE

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Background and aim: There is evidence that web-based educational interventions can change and improve the knowledge of patients with chronic pain and have a positive impact on their attitudes and behaviors. The aim of this study was to evaluate the effect of a web-based biopsychosocial pain education intervention for chronic low back pain compared to conventional care on pain intensity, fear-avoidance beliefs, kinesiophobia, and disability.
Methods: Double-blind randomized control trial with a parallel group design including 48 patients with chronic low back pain. The intervention group (n = 26) had access to a website. The educational material was based on a

previous qualitative study. The control group (n = 22) followed conventional care provided by their family physician.
Results: A per-protocol analysis was carried out (n = 44) using a two-way mixed factorial analysis of variance. There was no statistically significant interaction between treatment and time for pain intensity (p = 0.36). In the short term, there was a statistically significant difference on disability favoring the experimental group (p = 0.02), representing a medium effect size. No statistically significant differences were found in pain intensity, fear-avoidance beliefs and kinesiophobia between groups.
Conclusions: A web-based biopsychosocial pain education intervention for patients with chronic low back pain proved to be more beneficial than conventional care provided by family physicians in primary care on disability, although this result could be more related to the greater disability scores post-test in the control group rather than with the improvement obtained in the experimental group.

eP120

EFFECTIVENESS OF NEUROSCIENCES EDUCATION IN PATIENTS WITH CHRONIC LOW BACK PAIN: SYSTEMATIC REVIEW WITH META-ANALYSIS

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Background: Chronic low back pain syndrome (CLBPS) is a pathology characterised by functional impotence, pain, and psychological alterations.
Design: Systematic review with meta-analysis of randomized clinical trials (RCTs).
Objective: To determine if the education based on neurosciences is effective in the pain relief, function improvement, fear of movement and catastrophization in subjects with CLBPS.
Data sources: The databases Medline, Central, Lilacs, Cinahl, PEDro, SPORTDiscus, and Scopus were searched from inception up to June 2018.
Elegibility criteria for selecting studies: RCTs that compared neurosciences education versus other interventions, with pain intensity, function, fear of movement and catastrophization outcomes in subjects older than 18 years of age with CLBPS.
Results: Thirteen RCTs met the eligibility criteria, and for the quantitative synthesis, five studies were included. Standard mean difference for pain relief was -0,55 cm 95% CI = -0.77 to -0.32 (p= 0.00001), mean difference -2.02 points , 95% CI = -3.43 to -0.61 (p= 0.005) for function with RMDQ, mean difference -3.98 points , 95% CI = -5.34 to -2.61 (p= 0.00001) for fear of movement with FAB-Q, mean difference -8.37 points , 95% CI = -9.68 to -7.06 (p= 0.00001) for catastrophization with PCS.
Conclusion: It is concluded that there is some evidence in favour of neuroscience education in the pain relief , function improvement, and decrease the fear of movement and catastrophization in subjects with CLBPS, in the medium term.

eP121

ELECTROMYOGRAPHIC ACTIVITY OF THE LATISSIMUS DORSI MUSCLE IN PERSONS WITH SACROILIAC JOINT DYSFUNCTION (SIJD) DURING A FUNCTIONAL ACTIVITY

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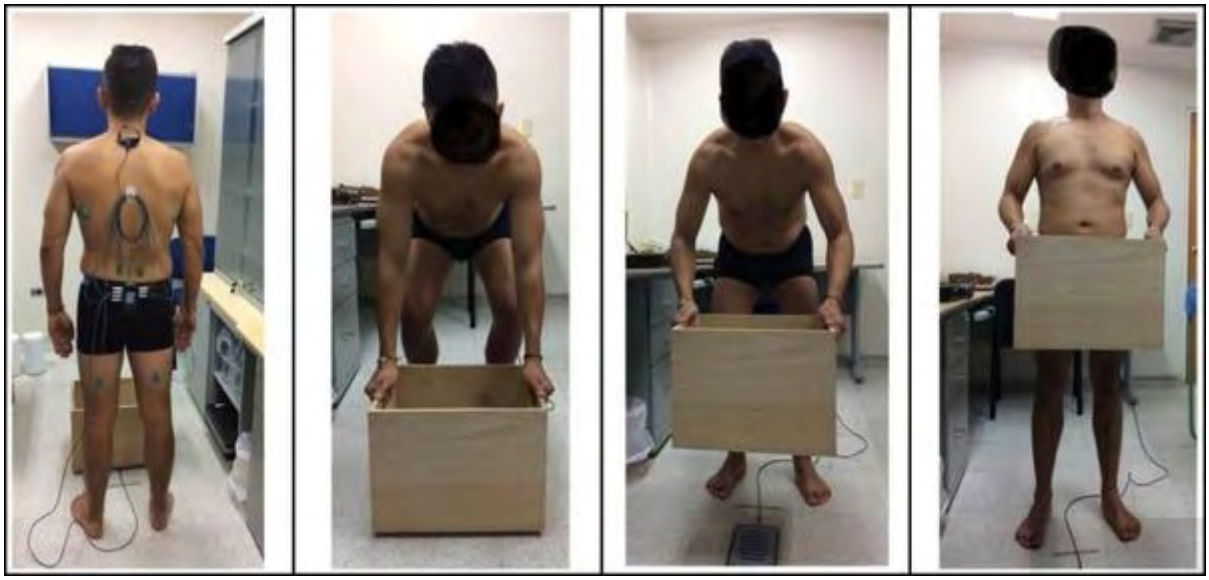
Background and aim: SIJD is a mechanical alteration of the sacroiliac joint (SIJ) present in 13% to 30% of patients

with idiopathic low back pain (LBP). The latissimus dorsi (LD) muscle through its connections with the thoracolumbar fascia contributes to the SIJ force closure. The aim of this study was to evaluate EMG activity of LD during a functional activity in people with LBP, SIJD and without LBP.
Methods: One hundred and fourteen participants (76 men, 38 women) between 18-40 years (Me 24 IQR 20-35) were distributed in the groups: LBP, SIJD, Control (without LBP). The EMG activity of LD was evaluated during a load lifting in symmetrical bipodal position (figure 1), the Rood Mean Square Amplitude (RMS) and the latency were calculated. To compare the groups the Kruskal Wallis test followed by the Dunn test were applied
Results: There was an increase in RMS amplitude of left LD and the onset of activity in the right LD was delayed in SIJD group.
Conclusion: Increase of RMS amplitude in LD occurs as a compensatory mechanism to improve the stability of the SIJ during the task, improving SIJ force closure on the affected side. Delay in LD latency shows alterations in the motor control due to pain which alter the synergism of this muscle with the contralateral gluteus maximus, disturbing the SIJ force closure, perpetuating pain and joint dysfunction.



[Figure 1. Functional activity. Lift a load from the ground to the anterior superior iliac spine.]

eP122

THE RELATION BETWEEN PAIN INTENSITY AND DEPRESSION IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Background and aims: The impact of chronic pain on psychological symptoms such as depression, anxiety, sleep disturbance and quality of life has been the subject of interest of many researchers. However, the relationship between the intensity and duration of pain and depression is still unclear. The aim of this study was to examine the relationship between the intensity and duration of pain and depression in patients with chronic low back pain.
Methods: In this cross-sectional study 25 patients with low back pain were treated at the Clinic for Rehabilitation Dr M. Zotovic in Belgrade. For evaluation of pain intensity, depression and neuropathic component of pain Visual

Analog Scale (VAS), Beck Depression Inventory (BDI) and DN4 questionnaire (DN4 Questionnaire) was used. Statistical hypotheses were tested at the 0.05 level of statistical significance.
Results: The average age of the respondent was 58.7±11.3. There were 8 males (32%) and 17 women (68%). Median VAS score is 5.5. The median duration of pain was 7 months. The average value of BDI score is 12.4 ± 8.9. Of the total number of respondents 7 (28%) had neuropathic pain component. Median DN4 questionnaire is 6.5. The results of our study showed that there is a statistically significant correlation between BDI and VAS and BDI i intensity of pain ($p < 0.001$).
Conclusion: The results of our data establish that CLBP is associated with depression. Screening for depression in CLBP patients should be an essential part of CLBP patient care.

eP123

CONTRAST VOLUME NEEDED TO REACH ANTERIOR EPIDURAL SPACE VIA KAMBIN'S TRIANGLE OR SUB-PEDICULAR APPROACH FOR TRANSFORAMINAL EPIDURAL INJECTION

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Background: TF epidural injection can be performed through several approaches namely Sub-pedicular (SB), Kambins triangle (KB) or retrodiscal and retroneural.
Aim: To compare contrast volume needed to reach anterior epidural space (AES) and other landmarks in KB triangle and SB approach of TF injection in patients having lumbosacral radicular pain.
Methods: 75 patients were randomized to receive TF epidural injection either by Sub-pedicular (SB) (N=38) or Kambin's triangle (KB) (N=37). Contrast agent was injected at 0.5 ml increment up to 2 ml under intermittent fluoroscopy.Contrast volumes needed to reach specific landmarks, AES, medial to superior pedicle (MSP) medial to inferior pedicle (MIP) were recorded.
Results: Average volume of contrast needed to reach AES was 1.10 ±0.46mlin KB approach and 1.10±0.38 mlin SB approach.Average contrast volume needed to reach other landmarks (MIP, MSP and neural spread) were comparable. At 1.0 ml contrast, AES was seen in 56.76% patients in group KB (21/37) and 77.7% (28/36) in group SB (p=0.03). After 0.5 ml of contrast, neural spread was seen in 100% of patient in KB triangle group but in 89.4% (n=34) patients in SB group (p=0.03). Pain relief and functional improvement (MODQ) was comparable in both groups at 2 months.
Conclusion: Contrast volume needed to reach AES, MIP and MSP in KB and SB approach was comparable. Significantly greater number of patients showed neural spread at 0.5ml contrast in KB group compared to SB group, however at 1 ml, AES was noticed in greater number of patients in SB group.

eP124

TEN REASONS WHY SYMPTOMATIC TARLOV CYSTS ARE OVERLOOKED

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Background and aims: Tarlov cysts (TCs) are dilations of nerve roots arising from pathologically increased hydrostatic pressure (HP) in the spinal canal. 25% of TCs are symptomatic at the time of discovery. TCs are a common cause of unexplained chronic pain with an estimated prevalence of 1% of the population.
The aim was to identify the reasons that symptomatic TCs (STCs) are easily overlooked.
Methods: The literature was searched for data regarding pathogenesis and symptomatology.
Results: TCs may be overlooked for the following reasons:
1. STCs are considered clinically irrelevant;
2. It is assumed that it is clinically difficult to ascertain that TCs are the cause of pain;
3. MRI or electromyography do not focus on the sacral nerves;
4. TCs are usually not reported by radiologists;
5. Degenerative alterations of the spine are almost always identified as the cause of pain;
6. It is not generally known that small TCs can be symptomatic;
7. Examinations and treatments usually focus on the cysts; however, essentially, increased hydrostatic pressure is the main underlying mechanism for producing symptoms. Consequently, STCs may relapse after surgery;
8. Bladder, bowel, sphincter and sexual dysfunction are not inquired about during history taking.
9. Unexplained pain is often attributed to depression, whereas depression is more likely the consequence of debilitating, refractory neuropathic pain.
10. The recognition of STCs is subject to gender bias, confirmation bias, cognitive dissonance, and unconscious bias in publishing.
Conclusion: There are several reasons STCs are underdiagnosed, mostly due to persistent misconceptions and biases.

eP125

COMPARISON OF TWO DIFFERENT ELECTROTHERAPY TECNIQUES IN LOW BACK PAIN

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Background and aims: Low back pain (LBP) is a significant issue of health. Lumbar disc herniation (LDH) is a common cause of LBP. High-intensity laser therapy (HILT) is a treatment method that is gaining popularity in the recent years. The aim of the study is to investigate the efficacy of HILT instead of Transcutaneous Electrical Nerve Stimulation (TENS) in LBP.
Methods: Forty patients aged between 18 to 60 were included. The patients were randomized into two groups. All patients received treatment 20 times a day for 5 days per week. Group I received ultrasound, hot pack, and HILT; while the patients in the Group II received ultrasound, hot pack, and TENS. Both groups were given home exercises. Patients were evuluated with Visual Analog Scale (VAS), goniometer for range of motion (ROM), Oswestry Disability Questionnaire (ODQ) and Beck Depression Inventory (BDI) pre and post treatment.
Results: There was statistically significant difference in VAS, ODQ and ROM values after treatment in both groups. Significant results were obtained in Group II after treatment with BDI scores but there was no significant difference in Group I ($p > 0,05$). Among all parameters only VAS score had a significant difference in favor of HILT group.
Conclusions: HILT application in patients with low back pain due to lumbar disc hernia achieved significant improvement in pain, daily living activities, range of motion. It was determined that HILT is more effective than TENS in terms of pain reduction and HILT can be used as an alternative to TENS.

eP126

COMPARISON OF BODY MASS INDEX, EDUCATION YEAR AND SLEEP QUALITY IN SUBJECTS WITH AND WITHOUT LOW BACK PAIN

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Background and aims: The results of studies investigating the relationship between low back pain (LBP) and demographic factors and sleep quality are contradictory. The aim of this study was to compare body mass index, education year and sleep quality in subjects with and without low back pain.
Methods: Twenty subjects with chronic LBP (mean age: 47.70±9.87 years) and 20 subjects without LBP (mean age: 49.85±7.38 years) were included in this study. Demographic data (Body Mass Index and education years) were recorded. Pain intensity was assessed Visual Analog Scale for individuals with low back pain. Sleep quality was assessed by Pittsburgh Sleep Quality Index (PSQI) in all subjects.
Results: The mean pain intensity was 7.3±1.8 cm in individuals with low back pain. There were no differences in body mass index, education year and sleep quality between the two groups (p>0.05). PSQI scores were 7.50±3.45 and 6.20±3.00 for subjects with LBP and without LBP subjects, respectively. There was a strong positive correlation between pain intensity and sleep quality in patients with LBP (p=0.0001, r=0.678).
Conclusions: According to our results, sleep quality was poor in both groups. There was no difference in sleep quality between the groups although the relationship between pain intensity and level of sleep quality in patients with LBP was found. The pain may not be the only factor that affects the sleep quality so that we suggest further studies are required to investigate the other factors which effects sleep quality such as emotional status.

eP127

PIRIFORMIS SYNDROME: WHEN CONSERVATIVE TREATMENT FAILS

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Background and aims: The piriformis syndrome (PS) is a poorly characterised painful condition attributed to dysfunction of piriformis muscle, causing buttock pain of somatic and neuropathic origin. In refractory cases, validated alternative approaches to conservative treatment are lacking. The aim of this work is to highlight a possible role of the interventional ultrasound-guided techniques integrated in a multimodal therapy in the refractory PS.
Methods: 36-year-old female diagnosed with a 2-year evolution right PS. Scaling of pharmacological treatment with pregabalin (50mg+0+150mg/day), cyclobenzaprine 10mg id and tramadol LP 100mg id was unsatisfactory and with considerable adverse effects. High intensity pain scores and disability were reported in Numeric Pain Rating Scale and Brief Pain Inventory consecutive assessments.
Results: An ultrasound-guided intervention block and needling was performed with 2ml lidocaine 2%, 2ml ropivacaine 0.2% and 0.5 ml methylprednisolone (40mg/ml). Enrolment in a complementary rehabilitation program was assured. Despite total resolution of pain, it resumed after 24 hours. A similar trial conducted with 100U of incobotulinum toxin A (BoNT-A) resulted in a prolonged reduction of pain and improvement at 4-week pain inventory scores, namely pain intensity (9.25 to 6.0) , interference in general activity (8.67 to 7.0), affective dimension (6.0 to 5.0) and global pain interference (7.71 to 6.14).
Conclusions: PS is a debilitating chronic pain condition with physical, pharmacological and surgical treatment methodologies. BoNT-A ultrasound-guided injection is a valuable alternative as part of a multimodal approach. This case suggests superior results over steroid injections in respect to both intensity and duration of pain relief.

eP128

THE EFFECT OF TREATMENT ON PAIN AND QUALITY OF LIFE IN PSORIATIC ARTHRITIS

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Background and aims: Psoriatic arthritis (PsA) is a chronic systemic autoimmune disorder affecting the joints and the skin. It develops in patients of all age groups, causes pain and has significant adverse effects on quality of life. Currently, various biologic agents are administered in PsA patients, improving significantly the musculoskeletal and skin manifestations of the disease as well as quality of life. The aim was to follow-up a group of PsA patients as far as pain, disease activity, musculoskeletal manifestations, skin manifestations and to evaluate comorbidities and the effect of treatment with biologic agents on these parameters.
Methods: Disease activity and pain was estimated using the DAPSA score before and after treatment over the course of 9 months, at 3-month intervals. The 10-year cardiovascular risk was evaluated using the Heart Score Greece, at baseline and after 3, 6 and 9 months on treatment with biologic agents.
Results: Disease activity decreased very significantly after treatment with biologic agents in PsA patients, the DAPSA score decreasing from 27.56±0.65 (mean±SEM) before treatment to 12.56±0.40, 5.76±0.38 and 4.43±0.57 at 3, 6, and 9 months after treatment, respectively ($p < 0.001$, Student's t test). Musculoskeletal manifestations and pain improved significantly after treatment in PsA patients. The Heart Score Greece decreased from 4.35±0.006% before treatment, to 3.71±0.005%, 3.5±0.004% and 2.8±0.005% after treatment, at 3, 6 and 9 months, respectively ($p < 0.001$).
Conclusions: It appears that in PsA pain improves and disease activity decreases very significantly after treatment with biologic agents, whereas the heart disease risk is significantly improved.

eP129

THE INFLUENCE OF CATASTROPHIZING AND FEAR ON MOVEMENT PERFORMANCE IN LOW BACK PAIN: A SYSTEMATIC REVIEW

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Background and aims: There is abundant evidence for compromised movement performance in low back pain (LBP). It has been proposed that not only pain severity, but also cognitive-affective factors such as fear and catastrophizing might influence movement, but no overview exists regarding the specific influence of such factors on movement performance in LBP.
Methods: A systematic review was performed and reported following the PRISMA-guidelines. A comprehensive search strategy was used in Pubmed, Web of Science, Embase, CINAHL and PsycArticles to identify all relevant studies. Possible risk-of-bias (ROB), levels of evidence and conclusion were determined of the included studies.
Results: Fifty-two studies were included (ROB 40-90%), the majority performed in chronic LBP. Catastrophizing and fear were respectively studied in 18 and 46 studies. Studied movement performance parameters included trunk muscle timing, activity, endurance and strength, range of motion, general endurance and deconditioning, balance, proprioception and coordination. Limited evidence indicates that in LBP the presence of a motor control strategy with tight control/guarding is mediated through catastrophizing and fear, rather than by pain severity. Furthermore, altered proprioception in LBP appears to be mediated through fear. However, these inferences need further exploration as most are based upon single studies.

Conclusions: This systematic review is the first to summarize and specify the influence of catastrophizing and fear on movement performance in LBP, as assumed in current theoretical models of pain-related disability and suffering. Implementation of bio-psychosocial assessment and treatment seems valuable for patients with disturbed motor control, trunk muscle endurance, mobility, and lifting performance.

eP130

EFFECTS OF GLUCOSE CONCENTRATION AND PH ON DORSAL ROOT GANGLION NEURITE OUTGROWTH

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Background and aims: Discogenic low back pain has been associated with intervertebral disc degeneration and neoinnervation. We studied the effect of two degenerative disc microenvironmental factors (i.e. decreased pH and [Glucose]) on DRG-derived cells.
Methods: DRG-derived cell-line ND7/23 was pre-differentiated (DMEM HG, 2.0% serum, 1µM cAMP, 1000 cells/cm^2, 3 days), then cultured (3 days) in different pH (6.8, 7.4, 7.8) and [Glucose] (1.0, 4.5 g/L). Calcein-AM, EthD-1-stained samples were evaluated for outgrowth (OG) (by HCA-Vision© software), viability and cell density. Statistics were done with GraphPad Prism 6 ($p < 0.05$ as significant).
Results: [Glucose] had a strong influence on the proportion of differentiated cells maintaining OGs and mono-/bi-/multi-polar neural morphology, and on average OG length. Specifically, low glucose (LG) increased the proportion of differentiated cells (Fig. 1A). The average OG (of these differentiated cells) was also increased at LG (Fig. 1B). Cell viability was >90% for all groups except at LG and high pH, indicating that this was the most stressful culture condition for the cells (Fig. 1C). Higher [Glucose] induced a stronger cell proliferation at all pHs compared to LG cultures (Fig. 1D), as evidenced in Fig. 2.
Conclusions: Decreased glucose found in the degenerative disc (i.e. resulting from decreased endplate permeability) may be a key factor involved in neurite OG extension. Change from neutral to acidic pH had only a minimal effect on neurite OG.

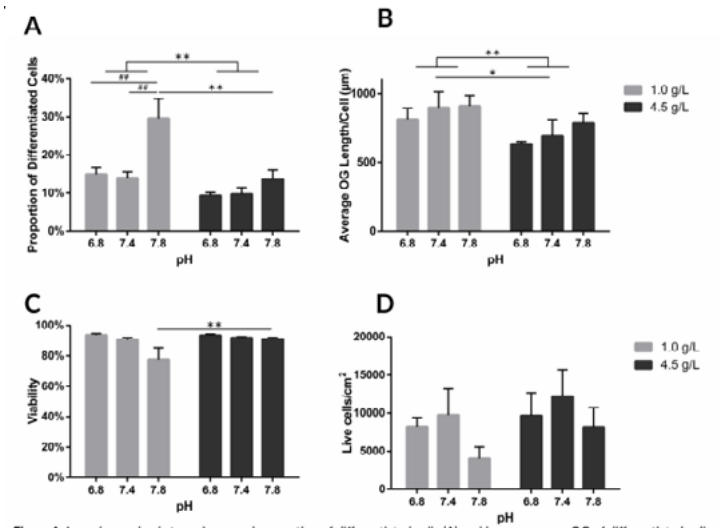

Figure 1: Low glucose leads to an increased proportion of differentiated cells (A) and longer average OG of differentiated cells at all pH conditions (B). Low glucose shows trends for maintained or lower viability (C) and decreased cell density (D), together indicating decreased cell proliferation.
*=p<0.05, **=p<0.01 between [Glucose]; p<0.05, ##=p<0.01 between pH; data represents the mean of 3 independent experiments, with n=8 technical replicates per experiment. Error bars = SEM. All cultures were maintained in 2% oxygen.

[Figure 1 - Low glucose increases proportion of differentiated cells, increases average OG, and lowers cell density]

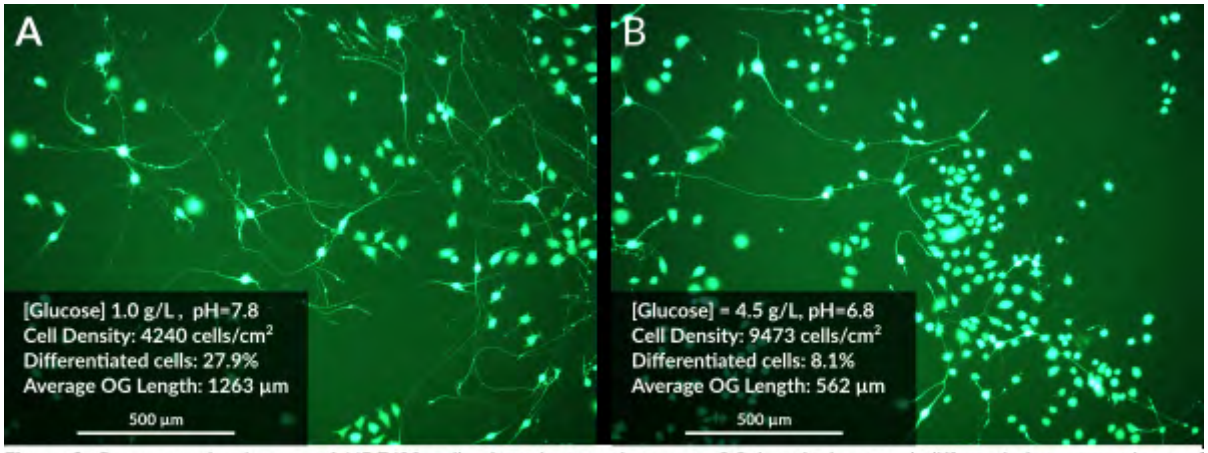

Figure 2: Representative images of ND7/23 cells show increased average OG length, increased differentiation proportion and decreased cell density in low glucose and high pH (A) as opposed to high glucose and low pH conditions (B).
All cultures maintained in 2% oxygen. Staining: Calcein-AM.

[Figure 2 - Representative Images]

eP131

CHRONIC PELVIC PAIN: BIOMECHANICAL ASPECTS

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Background and aims: In the pathogenesis of chronic pelvic pain (CPP) the factor of disorders of biomechanics of musculoskeletal system (MSS) is involved. The purpose of the study was to reveal the peculiarities of biomechanical disorders in patients with chronic pelvic pain (CPP).
Methods: The study included 60 people ranging aged from 20 to 32 years. 30 participants with CPP, 30 participants without any complains. All participants had no degenerative, inflammatory and traumatic lesions of the spine. Complex of tests: neurological examination, manual muscle testing (MMT), visual analysis (VA).
Results: MMT in participants with CPP: hypotension of lumbar-iliac (40%), gluteus medius (35%), the obturator muscles (22%) and of the adductors of the hip (20%). In participants without CPP: hypotension of lumbar-iliac (20%), gluteus medius (12%), the obturator muscle (8%) and of the adductors of the hip (2%). VA: the average deviation for biauricular line was 2.1°($p< 0.05$) in individuals with CPP and 1.2°($p< 0.05$) in individuals without CPP, bicristoiliacal line 2.1°($p< 0.05$) in individuals with CPP and 1.2°($p< 0.05$) in individuals without CPP.
Conclusion: A significant deviation of the parameters of biomechanics in individuals with CPP compared with persons without CPP is revealed in the study. Most commonly seen two ways of disorders of the biomechanics of the pelvic region due to disorders in the tonus of the lumbar-iliac muscles: anterior and posterior tilt of the pelvis. The study showed that the indicators of biomechanical disorders should be included in diagnostic algorithms and treatment of CPP.

eP132

TRUNK CONTROL IN PEOPLE WITH LOW BACK PAIN: THE IMPORTANCE OF MUSCLE SPINDLES INPUT ORIGINATING FROM THE LUMBAR PORTION OF THE ERECTOR SPINAE

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Background and aim: Adaptations in lumbar sensory-motor control relate to the evolution of low back pain (LBP) (Ebenbichler et al. 2001), and compromised lumbar proprioceptive input can contribute to a loss of trunk control and LBP chronification (Meier et al. 2018). Muscle spindles represent the main proprioceptive receptors generating illusion of limb movement if vibrated (Proske and Gandevia, 2012).
This study examined the contribution of the lumbar muscle spindles on trunk control in LBP versus asymptomatic control (AC), measuring the trunk repositioning error with and without vibration of the lumbar portion of the erector spinae.
Methods: Fifteen AC (age: 29.8±4.1 years) and fifteen LBP (age: 34.7±5.9 years, average pain: 5.6±2.1/10) participated. An inertial motion sensor attached to the 3rd thoracic spinous process measured the accuracy in adopting and returning to a trunk neutral position after a sagittal movement (50 deg flexion). Lumbar vibration was randomly applied during trials. Three trials were executed for each condition (Vib, No-Vib). The mean trunk repositioning error (TRE) was calculated and statistically evaluated using a repeated-measure analysis of variance (ANOVA) within the two vibration conditions.
Results: The mean TRE increased significantly in the LBP group ($p=0.021$) under the Vib condition (1.7±3.4 deg) compared to the No-Vib (3.9±3.2 deg), no significant differences were found for the Control group ($p>0.05$).
Conclusions: People with LBP are unable to compensate, as for AC, the vibration-induced proprioceptive illusion exploiting other available sensory information. This study highlights the pivotal importance of lumbar muscle spindles in controlling trunk motion accuracy in LBP.

eP133

BIG FIVE PERSONALITY TRAITS AND CHRONIC LOW BACK PAIN: ASSOCIATION WITH FEAR-AVOIDANCE, ANXIOUS AND DEPRESSIVE MOODS

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Purpose: Emotional and physical dysfunction in chronic back pain patients is mediated by psychological variables rather than by the severity of pain. Assessing personality traits may help clinicians address the complexity of patients' experiences, and design treatments that target these vulnerabilities. This study aimed to identify the distinguishing personality traits of persons seeking treatment for chronic back pain, and to determine associations between those traits and fear avoidance beliefs, depressive, and anxious moods.
Methods: A total of 102 chronic back pain patients (57% males) completed the NEO Personality Inventory-Revised, the Tampa Scale for Kinesiophobia (TSK), and the Hospital Anxiety and Depression Scale (HADS). One Sample t-test was used to compare sample personality means with average population norms. Association between the five personality domains with TSK and HADS scores was assessed using Pearson's correlation. Linear regression was used to estimate associations adjusted for covariates.
Results: Both men and women had significantly lower scores in the Openness to experience domain and significantly higher scores in the Conscientiousness domain than the general population norms. After adjusting for covariates, Neuroticism was associated with higher fear avoidance, depression and anxiety scores. Conversely, Extraversion and Openness negatively correlated with depression scores. Extraversion also inversely correlated with

fear avoidance. Conscientiousness negatively correlated with depression and anxiety after adjustment.
Conclusion: Neuroticism, Extraversion, Openness to experience and Conscientiousness significantly correlate with fear avoidance and/or depressive and anxious moods. Clinicians will benefit from assessing patients‘ personality traits to address protective and risk factors for psychological distress in back pain patients.

ePP134

EFFECTS OF INFRARED RADIATION (TERA HERTZ RANGE) AND SHORTWAVE DIATHERMY ON THE PATIENTS WITH CHRONIC LOW BACK PAIN

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Background and aims: Chronic low back pain (CLBP) is very common. Many patients become disable due to CLBP. To find out the effects of Infrared Radiation (IRR) and Shortwave Diathermy (SWD) on CLBP the study was advocated.
Methods: A randomized clinical trial was performed from March 01, 2010 to July 31, 2015. A total of 266 patients were selected for the study. They were divided into three groups. Group -A was treated with NSAID + Activities of daily living (ADL) + SWD, Group-B was treated with NSAID + ADL + IRR and Group-C was treated with NSAID +ADL only. They were followed up weekly for six weeks. Student´s ´t´ test was done to observe the level of significance.
Results: We found all modalities are effective (P< 0.001). But more improvement was found in SWD and IRR receiving groups (P< 0.001). And in comparison between SWD and IRR, it was found that SWD has some better effect than IRR .But IRR is also effective to reduce CLBP.
Conclusions: So, SWD is more effective than IRR but IRR (having this frequency) can be used effectively to reduce CLBP. As IRR instrument is handy and low costly, it can be used to reduce disability of the patient at home.

ePP135

TRUNK COORDINATION IN PEOPLE WITH LOW BACK PAIN DURING GOAL-DIRECTED REPETITIVE SAGITTAL TRUNK MOVEMENTS

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Background and aim: Repetitive sagittal trunk movements represent an occupational risk factor leading to cumulative trunk loading which can be associated with the development of low back pain (LBP) (Coenen et al., 2014). A possible mechanism causing an increased loading effect in LBP relates to impaired adaptation of speed control during goal-directed trunk movements (Zhou et al., 2016).
This study explored trunk temporal coordination pattern during repetitive goal-directed sagittal trunk movements in LBP people compared to asymptomatic control.
Methods: Seventeen healthy (control, 29.8±4 years), and sixteen LBP participants (LBP, 37.2±9 years, average LBP intensity: 5.2±2.7/10) were enrolled. All participants executed series of twelve continuous sagittal trunk movements, from a neutral position between 50 deg flexion and 20 deg extension, at a constant speed of 50 deg/s. Trunk motion was acquired using an inertial sensor attached to the 6th thoracic spinous process, while temporal coordination between the trunk and the goal movement was extracted using time delay cross-correlation analysis. Real-time visual feedback of the trunk motion together with the goal movement was provided. The average time delay of the central ten cycles of the trunk motion was extracted and statistically analysed using a one-way analysis of variance (ANOVA) between the two groups.

Results: The average time delay was significantly higher ($P < 0.05$) for the LBP (67.5±101 ms) compared to the control group (5.9±58 ms).
Conclusion: People with LBP were not able to generate in-phase coordinated repetitive trunk motion, at constant speed, showing a lagged trunk control compared to the asymptomatic group.

eP136

HIGH FREQUENCY SPINAL CORD STIMULATION AT 10 KHZ DELIVERED THROUGH A VENTRAL LEAD IN A FAILED BACK SURGERY SYNDROME (FBSS) PATIENT: A CASE REPORT

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Background and aims: A randomized clinical trial investigating high frequency spinal cord stimulation (HF-SCS) delivered at 10kHz has shown that this paresthesia-independent therapy is effective and safe in an FBSS population with both back and leg pain [1, 2] for up to 24 months.
Percutaneous leads for SCS are routinely placed in the dorsal epidural space. In this case report, we describe a patient with a percutaneous lead placed unintentionally in the ventral epidural space that elicited good pain relief.
Methods: The patient was provided HF-SCS@10kHz after unsuccessful trial with low frequency SCS. An additional lead was inserted to create the standard staggered leads orientation used with HF-SCS10kHz programming.
Results: Patient had good pain relief but started presenting with motor responses after one-year post-implant. Lateral x-ray confirmed that the second lead was in the ventral epidural space. Thresholds for paresthesia and motor response were tested at 60, 500, 1000, and 10,000Hz (with reduced pulse width at higher frequencies) using dorsal, ventral, and cross-lead bi-poles. As expected, the highest and the lowest thresholds were observed using the dorsal and ventral leads, respectively, while cross-lead stimulation resulted in intermediate thresholds. For all three lead bi-ole positions, HF-SCS@10kHz had the highest threshold to elicit paresthesia and motor response.
Conclusions: Delivering HF-SCS@10kHz through a ventral epidural lead provided pain relief without eliciting a motor response for 12 months. While the high 10kHz thresholds may explain the lack of motor side-effects for this long period, it remains unclear why ventral stimulation may provide pain relief.

OROFACIAL PAIN

eP137

PURPLE CORN EXTRACT AS ADJUVANT THERAPY FOR THE PREVENTION AND TREATMENT OF TRIGEMINAL PAIN: ROLE OF MICROGLIA AND OF THE GUT MICROBIOTA

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Background and aims: Trigeminal pain is a highly debilitating condition whose pharmacological treatment represents an unmet medical need. Anthocyanins are known to protect against a number of degenerative diseases, and they significantly accumulate in the brain. Additionally, the concept of “gut-brain axis” is emerging as a bidirectional signaling between the gut microbiota and the CNS. Therefore, we aimed at studying the role of an anthocyanin-rich dietary supplement in preventing trigeminal pain and in modulating the composition of the gut

microbiota.
Methods: Male rats received a purple corn extract with increased anthocyanins content or yellow corn without anthocyanins or water as controls for 10 days. Trigeminal sensitization was then induced by unilateral injection of Complete Freund's Adjuvant in the temporomandibular joint, followed by evaluation of mechanical allodynia. Microglia/macrophages activation was analyzed by immunohistochemistry. The bacterial taxonomic profile was reconstructed from fecal samples by 16S rRNA profiling protocol.
Results: Purple corn administration prevented the development of orofacial allodynia and the trigeminal infiltration of macrophages, with an effect comparable to the anti-allodynic action exerted by acetylsalicylic acid. No effect was seen in animals drinking either water or yellow corn. Purple corn also reduced microglial activation in vitro and in vivo, and modified the gut microbiota composition toward an anti-inflammatory taxonomic profile.
Conclusions: Purple corn extract prevents inflammatory pain through different cellular/molecular mechanisms that could also involve the gut-brain axis. Therefore, we foresee a possible application of anthocyanin-rich dietary supplements as co-adjuvant to pharmacological treatments or as new preventive strategy against trigeminal pain.

eP138

CENTRAL SENSITIZATION INVENTORY IN PATIENTS WITH CHRONIC TEMPOROMANDIBULAR JOINT PAIN

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Background and aims: The main goal of this study was to investigate central sensitization symptoms severity between patients with chronic temporomandibular joint (TMJ) pain and control healthy subjects.
Methods: This study included 32 subjects (mean age 42,31±16,54 years) with chronic TMJ pain and their age and gender matched 30 healthy controls (mean age 44,53±10,23 years). Type of the temporomandibular disorders were identified according to the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). The central sensitization symptoms severity was established according to the scores of the Central Sensitization Inventory (CSI). Subjects with chronic TMD pain scored their current, average and maximum pain in the last four weeks on the Numerical Rating Scale (NRS).
Results: Majority of the subjects were women in both groups and there was no difference between groups (25 (78,1%) vs 20 (66,7%) women, X^2=1,022, p=0,397). There was no difference in age between groups (t=-0,640, p=0,525). Subjects with TMJ chronic pain reported that current pain was 3,89±2,58, for maximum pain in the last four weeks 7,11±3,27, and for the average pain intensity in the last four weeks 5,08±1,66 on the NRS. Subjects with chronic TMJ pain scored significantly higher on CSI (29,44±13,16 vs 17,13±11,36, t=3,929, p< 0,001).
Conclusion: Subjects with chronic TMJ pain had significantly higher scores on the CSI indicating more severe central sensitization symptoms in this group compared to healthy controls.

eP139

TREATMENT WITH BOTULINUM TOXIN IN A PATIENT WITH OROPHARYNGEAL CARCINOMA AND TRIGEMINAL NEURALGIA

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Backgrounds and aims: Trigeminal neuralgia is one of the most disabling facial pain syndromes, with a significant impact on patients' quality of life. Pharmacotherapy is the first choice for treatment but cases of drug resistance or adverse effects often require new strategies. In recent years a new therapeutic strategy consisting of botulinum toxin has emerged, with promising results.
Methods: 70-year-old patient, allergic to all NSAIDs with epidermoid cancer of the oropharynx in 2015 treated with chemotherapy and radical radiotherapy. Recurrence intervened in May 2017 due to metastasis of right laterocervical squamous cell cancer with radical emptying.
The patient presented secondary neuralgia of the upper alveolar branch of the second right trigeminal branch with food stimuli, of short duration and high intensity.
Treatment with gabapentin 300 mg is started every 8 hours with excessive sedation. Likewise, the patient does not tolerate any opioid. Post-treatment with carbamazepine 200 mg is started every 8 hours without adverse effects but with little analgesic response. Due to the tumor infiltration, any approach of the Gasser ganglion is rejected, opting for infiltration with botulinum toxin.
25 units of supracigomatic botulinum toxin are infiltrated, 25 infracigomatic units and 5 units in 9 trigger points in total in territory of I, II and III branch of V par.
Results: There were no adverse effects and the patient´s pain on the visual analog scale was 1/10.
Conclusions: botulinum toxin is a good analgesic alternative in trigeminal neuralgia resistant to oral treatment in a patient with significant comorbidity.

eP140

A QUESTIONNAIRE STUDY ON SLEEP-WAKE PATTERN AND SLEEP QUALITY IN TMJ & OROFACIAL PAIN CLINIC

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Background and aims: Patients with temporomandibular disorder(TMD) also complain about sleep disturbances frequently. The sleep-wake pattern and sleep quality could effect on orofacial pain condition. Therefore, this study investigated the sleep-wake pattern and sleep quality in TMD & orofacial pain patients and evaluate the association between the sleep-wake pattern and sleep quality and pain condition via questionnaire.
Methods: We examined 3,276 patients with TMD, who visited the Orofacial Pain Clinic at Yonsei University College of Dentistry during January 1, 2015 to August 31, 2016. We conducted a survey using the Pittsburgh Sleep Quality Index questionnaire and classified TMD patients into two groups based on Diagnostic Criteria for Temporomandibular Disorders. For statistical analysis, we calculated the correlations between pain intensity and various factors such as sex, age, total sleep time, sleep efficiency, sleep latency, the number of awakening episodes and hypnotic medication use.
Results: The result from statistical analysis showed correlations between pain intensity and several factors including age and sleep efficiency. No significant correlation was shown for other factors such as sex, total sleep time, the number of awakening episodes and hypnotic medication use.
Conclusions: The sleep-wake pattern and sleep quality are highly associated with TMD & orofacial pain. Therefore, a sleep deprivation can cause chronic pain in the orofacial area. We found statistically significant associations between sleep deprivation and orofacial pain. These results imply that clinicians treating patients with orofacial pain should also examine the patients´ sleep-wake pattern and sleep quality.

eP141

COMORBID CONDITIONS IN TEMPOROMANDIBULAR DISORDER MYALGIA AND MYOFASCIAL PAIN WITH REFERRAL

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Background and aims: Temporomandibular disorders myalgia (TMDM) is sub-diagnosed into myalgia and myofascial pain with referral (MFP), but if this is relevant from a mechanistic point is not clear The aim of this study was to investigate the presence of comorbidities in TMDM and its sub-diagnoses.
Methods: Sixty-eight patients with TMDM (47.6±14.8 yr), 39 with myalgia and 29 with MFP, and 63 TMDM-free controls (37.0±14.0 yr) completed an extended DC/TMD axis II questionnaire. This contained validated scales for pain and functional limitation (GCPS), depression (PHQ-9), anxiety (GAD-7), somatization (PHQ-15), pain catastrophizing (PCS), stress (PSS-10), insomnia (ISI), irritable bowel syndrome (IBS, Rome IV), widespread pain index (WPI), symptom severity scale (SSS) and quality of life (OHIP-5).
Results: Compared with controls, the TMDM group had higher scores on all scales (Mann-Whitney U-test ($p < 0.001$). MFP patients had higher levels on WPI (Mann-Whitney U-test, $p = 0.022$), PHQ-9 ($p=0.022$) and OHIP-5 ($p=0.007$) than myalgia patients. More patients in the MFP group were diagnosed with headache attributed to TMD (chi-square test ($p=0.009$) and fibromyalgia according to ACR 2016 criteria ($p=0.033$). The total number of comorbidities ($n=9$) was higher in MFP than myalgia (Mann-Whitney U-test, $p=0.032$). The number of comorbidities correlated weakly to the pain intensity (Spearman test, $rs=0.358$, $p=0.003$).
Conclusion: Patients with TMDM have higher levels of comorbidities than TMD pain-free controls and patients with MFP have more comorbidities compared to patients with myalgia. More comorbidities were associated with higher pain intensity. The results indicate that MFP is a more severe condition than myalgia.

eP142

GLOSSOPHARYNGEAL NERVE NEURALGIA TREATED WITH TRANSMUCOSAL TOPICAL 2% LIDOCAINE IN ADHESIVE ORAL EXCIPIENT: A CASE REPORT

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Background and aims: To explore new treatment for atypical orofacial pain when other treatments have failed.
Methods: 44yo female referred for treatment for glossopharyngeal neuralgia. Before referal the following treatment had already failed: Gabapentinoids, duloxetine, tapenadol, buprenorphine, estelate ganglon blocks, iv lidocaine&ketamine, carbamazepine, biofeedback, cognitive-behavioral therapy and hypnosis.
A positive glossopharyngeal ganglion test block was perfomed under CT. But patient denied new interventional techniques due to her bad experience. Topical intranasal lidocaine for treating the glossopharyngeal ganglion was accepted by the patient as palliative out-of-order treatment.
First, a cold 2% viscous lidocaine was introduced through the right nose hole. Up to 3-4cc could be administered before she reported swallowing. Then a thicker excipient was changed by the pharmacy department to 2% lidocaine in adhesive oral excipient (AOE) leading to a density similar to pharyngeal mucus. Numerical Pain Rating Score before and after treatment and hours of analgesia were recorded.
Results: Are shown on table 1.

Week	Type of Lidocaine	Volume (cc)	NPRS before	NPRS after	Hours of analgesia
1	2% viscous	5	9	3	6
2	2% viscous	3	8.5	4	7
3	2% AOE	3	9	0	48
4	2% AOE	7	8	0	72
5	2% AOE	5	9	0	50

[NPRS: Numerical Pain Rating Score]

Conclusions: Transnasal transmucosal topical 2% lidocaine in AOE may be an alternative for the treatment of atypical facial neuralgia. Different concentrations must be explored for greater effectiveness and safety.

eP143

A NEW BIOFEEDBACK APPROACH FOR THE CONTROL OF THE MASSETER AND TEMPORAL MYALGIA: UTILIZATION OF AN AWAKE POSTERIOR INTEROCCLUSAL DEVICE

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Objective: The Objective of this study was to evaluate the improvement of reducing the pain of patients diagnosed with masticatory myofascial pain and bruxism, when undergoing treatment with a partial posterior interocclusal device (DIVA®) designed for the management and control of awake bruxism through biofeedback.
Methods: One hundred and sixty patients were evaluated during the periods: pre-treatment, seven, thirty, ninety, one hundred and sixty days and one year. The evaluation was carried out by measuring the pain (VAS) and reduction in pain using clinical and numerical scales.
Results: The majority of the patients who complained of masticatory myofascial pain, TMJ and neck pain experienced a significant reduction in pain between t0 and t30 ($p< 0. 0001$). After 30 days of using the device, it was observed that the improvement remained at the same level, without any recurrence of pain up to t90. At t180 and t360 it was observed that even with the device withdrawal (at t90) the improvement remained at the same level suggesting that the patients succedded to control their awake bruxism.
Conclusion: The utilization of a posterior interocclusal device designed for the management and control of awake bruxism through biofeedback contributed to the reduction of pain in the majority of patients and that even with the device withdrawal (at t90) the improvement remained at the same level suggesting that the patients succedded to control their awake bruxism.

eP144

PLATELET-RICH PLASMA AS A NOVEL TREATMENT OF PAINFUL TRAUMATIC TRIGEMINAL NEUROPATHY (PTTN)-SIX MONTH RESULTS

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Background and aims: This study was designed to evaluate the pain response in painful traumatic trigeminal neuropathy after injection of the platelet-rich plasma into the sphenopalatine ganglion.
Methods: Ten patients with diagnosed painful traumatic trigeminal neuropathy were initially treated with a sphenopalatine ganglion block with 1% lidocaine and dexamethasone. Eight of the ten patients reported more than 60% improvement, and were then given a sphenopalatine ganglion injection with autologous platelet-rich plasma one month later. Pain results were recorded at 6 months postoperatively.
Results: Five of the eight patients injected with platelet-rich plasma had more than 60% improvement at 6 month follow up. There were no complications. All patients stated they would recommend the procedure to other patients. Patients with a favorable response to platelet-rich plasma had duration of symptoms of 5 years on average prior to the procedure, versus 10 years for those patients who did not respond.
Conclusions: Patients with painful traumatic trigeminal neuropathy have a favorable outcome to platelet-rich plasma injection of the sphenopalatine ganglion at 6 months.

eP145

SPHENOPALATINE SYNDROME AND TRIGEMINAL NEURALGIA AFTER MEDULLARY -BULB UNION TUMOR SURGERY. LESSONS FROM CASE REPORT

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Background and Aim: Sphenopalatine ganglion (SPG) is an extracranial parasympathetic ganglion that provides innervation to lacrimal glands, nasal mucosa, soft paladar, tonsils, uvula, buccal cavity mucosa, upper lip and gums and upper part of the pharynx. SPG establishes very closed relations with the maxillary nerve, facial nerve and cervical sympathetic chain.
Sphenopalatine syndrome is uncommon and could appear masked in facial pain, its diagnostic is a challenge.
We discuss a case report where, after medullary-bulb union tumor surgery, appeared a complex facial pain.
Case report: The patient describes burn sensation from preauricular and suborbital area towards wins nose with erythema, scabs and signs of bleeding in nasal mucosa associated with runny nose and tearing.
Trigeminal pain were described in first and second branch area and it were under control with amitriptyline 10 mg/d and pregabalin 75 mg/12h.
All symptoms concerning nasal area and tearing disappeared for three months after trans nasal instillation of topic gel Lidocaine 2% plus Triamcinolone with Allevio catheter. The nasal symptoms reappeared in lower intensity.
Patient was proposed to pulse radiofrequency of SPG which was effective following one year.
Discussion: Trigeminal neuralgia and the sphenopalatine syndrome could coexist because of the anatomic relationship between them.
Symptoms from Sphenopalatine syndrome appear unilaterally without the typical presentation in cluster. It must be differentiated from autonomic trigeminal headaches (HD) especially Cluster HD, so the differential diagnosis is crucial.
Conclusion: Sphenopalatine syndrome could be an independent entity. Anamnesis , explorations and diagnostic block are important procedures for a posterior management.

eP146

DOES THE ENVIRONMENT INTERFERE WITH THE OROFACIAL NOCICEPTIVE RESPONSE OF THE ADULT ZEBRAFISH?

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Background and aims: Adult zebrafish (*Danio rerio*) has been proposed as a low-cost and simple alternative to the use of higher vertebrates in laboratory research on novel compounds with antinociceptive potential. This study aimed to investigate the orofacial nociceptive response induced by cinnamaldehyde in adult zebrafish, observing environmental changes.
Methods: Cinnamaldehyde (0.33 µM, 5.0 µL) was applied to the lips of the animals (n=8/group) 30 min after pre-treated (20 µL;i.p) with vehicle (saline) or morphine (5.0 mg/mL). Naive groups (n=8/each) were included. After the applications of the cinnamaldehyde, the animals were transferred to the Petri dishes (10x15cm) or beaker (250mL) and the orofacial nociception was quantified in terms of locomotor activity (0-5min). In another set of experiments, it was evaluated whether acclimatization of animals 24h before the experiments would alter the nociceptive response to cinnamaldehyde. The influence of experiment period (morning or afternoon) was also analyzed. All experimental procedures were approved by the Ethics Committee for the Use of Animals of the State University of Ceará (#7210149/2016).
Results: The fact that the experiment was carried out on the Petri dish or the beaker did not alter the response to cinnamaldehyde. When the animals were previously acclimatizeted, cinnamaldehyde didn´t produce nociceptive behavior. This not occurred with non-acclimatizeted zebrafish (**p< 0.01). Regarding the period, animals were more sensitive to cinnamaldehyde at morning (**p< 0.01) than afternoon (*p< 0.05).
Conclusion: The results suggest that orofacial nociceptive tests should be performed using adult non-acclimatizeted zebrafish on Petri dishes or beakers and in the morning.

eP147

CHRONIC POSTSURGICAL PAIN AND NEUROPATHIC COMPONENTS PAIN IN PATIENTS 7 YEARS AFTER CRANIOFACIAL SURGERY: A PROSPECTIVE COHORT PILOT STUDY

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Background and aims: Chronic post-surgical pain (CPSP) develops after surgery lasting at least 3 months, with exclusion of other causes and pre-existing problems. The International Association for the Study of Pain (IASP) defines neuropathic pain as pain caused by injury or illness of the somatosensory part of the nervous system. The study was aimed as a pilot prospective assessment of the incidence of chronic post-surgical pain with neuropathic components in patients after craniofacial surgery.
Methods: In 2009, 195 people were enrolled in the study (88.7% men, 34.8 ± 14.6) - 98.0% of the operated on due to traumatic craniofacial injuries within 12 months. The majority of the respondents were aged 21-30 (33.8%). The smallest subpopulation was the elderly, aged 81 or more (0.5%). PainDETECT questionnaire (PD-Q), a symptom-based assessment tool developed to assist identification of neuropathic pain, was sent to 195 people in 2016.
Results: 15.4% of 195 patients responded after 7 years (n = 30). NRS during the study 2.28 ± 1.34, Min -0, Max-5, 20.0%> 3, the strongest pain level that appeared in the last year 4,66±2,62, Min -0, Max-10, 70,0% >3. PD-Q score amounted to 0-12(26,7%), 13-18(40,0%), 19-38(33,3%).
Conclusions: More than half of the patients undergoing craniofacial surgery can develop CPSP, while in one third of them the pain is likely to have a neuropathic component (> 90%). The result is ambiguous, although the possible

occurrence of neuropathic pain component concerned 40.0% of the respondents. Continuous and regular monitoring of patients after craniofacial injuries is necessary.

eP148

ANXIETY, DEPRESSION AND PAIN CATASTROPHIZING ON AWAKE BRUXISM PATIENTS

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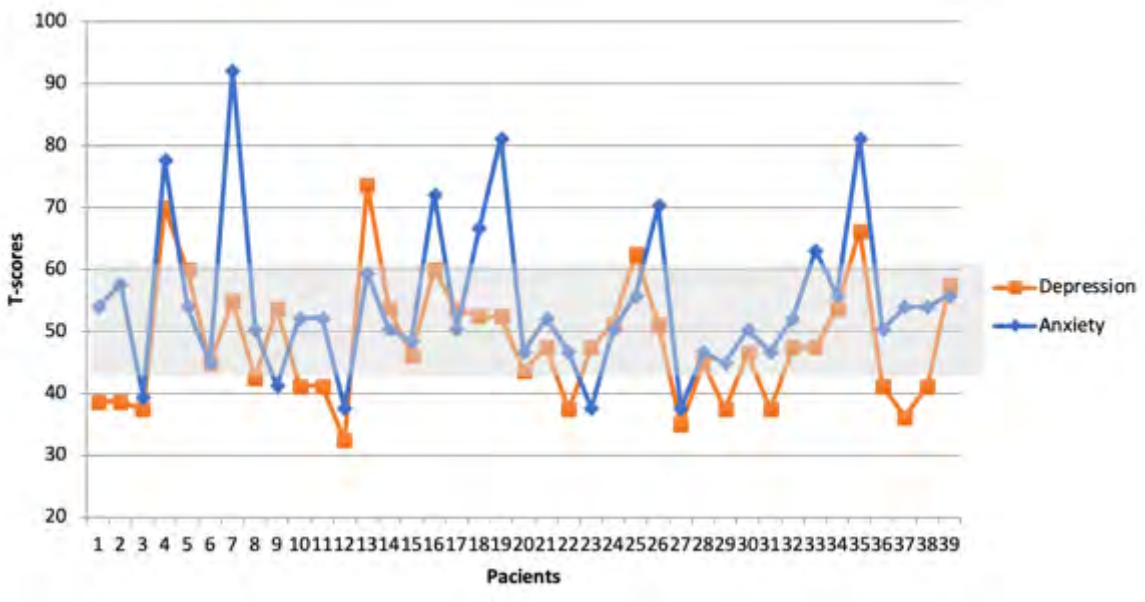
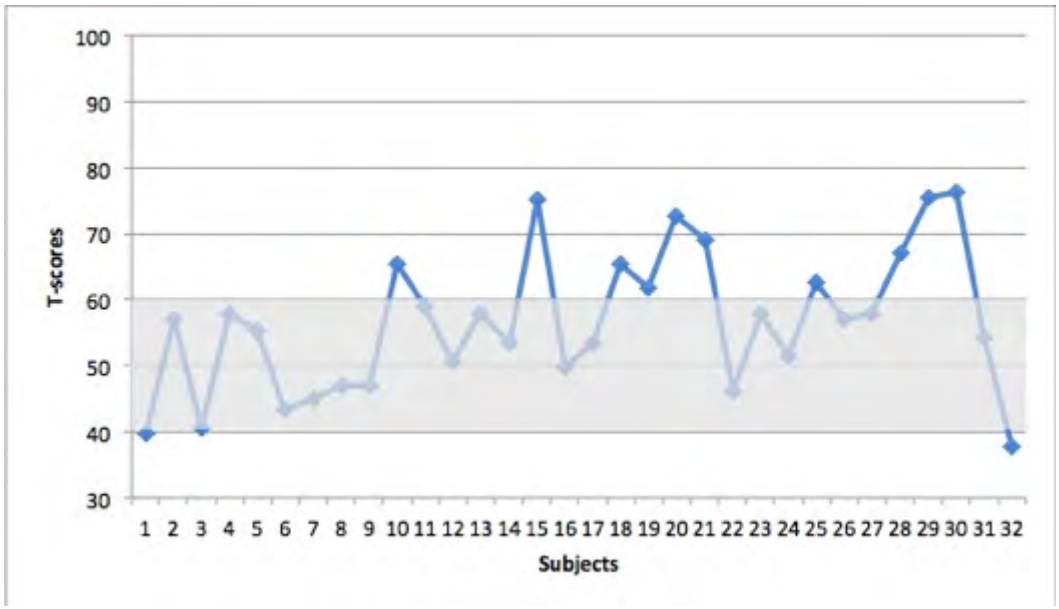
Background and Aim: Psychosocial factors may play a key role in the maintenance of Awake Bruxism (AB). The aim of this study was to investigate the influence of anxiety, depression and pain catastrophizing on AB.
Methods: This study was performed with 57 subjects, divided into test group (AB; n=39, 75.6% women, mean age: 21.1±1.5) and control one (CG; n=18, 50% women, mean age: 22.5±2.2). AB was detected by a free available smartphone app for real-time data collection. Possible AB was defined based on 15% of positive clenching from the evaluated period. Beck inventories were applied to evaluate the degree of depression (DBI) and anxiety (BAI); and Pain Catastrophizing Scale (PCS) evaluated catastrophic thoughts.Data were analyzed using T-score to individual patient's data for each questionnaire. T-scores between 40 and 60 were considered normal range, and above 60 was considered of higher impact.
Results: Twenty-three percent of AB patients were influenced by traces of anxiety, 10.2% by depression (Figure 1), and 31.2% present some catastrophic thoughts about pain (Figure 2).
Conclusions: It can be concluded that one of four patients with AB may be influenced by anxiety; and one in three AB patients reported significantly more pain-related catastrophic thoughts than healthy individuals.



[Figure 1- Individual T-scores of anxiety and depression traces of subjects with Awake Bruxism.]



[Figure 2- Individual T-scores of catastrophizing profiles of subjects with Awake Bruxism.]

eP149

REVIEW OF THE TECHNIQUES PERFORMED IN TRIGEMINAL NEURALGIA: PERIOD 2016-2018

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Introduction: Trigeminal neuralgia is a unilateral pain similar to a discharge electrical,brief, sudden onset and disappearance,limited to distribution of one or more branches of the division of the trigeminal nerve and triggered by inocuous stimuli.
Material and method: Retrospective study period 2016-2018, we included 500 consultations, 48 patients underwent peripheral or surgical techniques. 56% women, 44 % men, between 30-80 years , average age of 59 y. It was decided to perform invasive techniques to those patients who did not find improvement with the initial treatment :anticonvulsivants,antidepressants and opiates, baclofen, botox,qutenza, PENS, acupunture;or that could not maintain treatment by intolerance. 75% of patients take multiple drugs.Techniques performed were 28% thermal radiofrequency of gasserian ganglion , 25% glycerol ablation , 2 % SRS, 44% vascular descompressive microsurgery, < 1%cortical medullary neurostimulation.Around 45% of patients underwent several tecniques to control pain.
Results: We found up to 30% of the patients suffered organic pathology objectified by MRI. After the treatment ,69% of the patients reported an improvement of pain, 62% undergoing microdescompression , 73 % radiofrequency and glycerol. The average of this improvement was of 2 years . Into two periods 40-60 years , an improvement of 38%,compared to period of 60-80 y. with improvement of 82%.
complications : 23% presented some type of complication ,being the hypoesthesia 14%, wound infection 11%, 2% venous sinus thrombosis ,7% ophtalmological.
Discussion: The techniques described offer a safe and effective treatment for patients suffering trigeminal neuralgia

OSTEOARTHRITIS, RHEUMATOID ARTHRITIS

eP150

PLATELET RICH PLASMA INJECTIONS PERFORMED IN OUR PAIN UNIT DURING THREE MONTHS

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Platelet-rich plasma (PRP) is defined as an autologous biological product, derived from the patient´s blood, obtained after a centrifugation process
There are multiple marketed systems to obtain it.
Objective: To evaluate the analgesic efficacy of PRP using visual analogue scale (VAS), patient satisfaction and side effects.
Methods: A retrospective observational study took place from october to december 2018.
The technique consisted in sterile extraction of 20ml of peripheral venous blood from the patient. 2ml of sodium citrate was added and introduced inside a centrifuge for 8 minutes at 1800 rpm. Subsequently, it was collected and activated before being used with calcium chloride.
Results: From October to December 2018 the data of 26 patients who have undergone PRP infiltration in our pain unit have been collected.
The average age was 58,5 years (25-85), 14 men and 12 women.
The improvement of pain was assessed one month after infiltration by visual analogue scale (VAS). The average of VAS improvement was 4,5 (0-10).
The site of infiltration was: 65% in knee osteoarthritis (17 patients), 15% in hip osteoarthritis (4), 7% in De Quervain (2), 3% in peroneal tendinopathy (1) and 7% (2) in Achilles tendinopathy.
The patient satisfaction was collected through satisfaction questionnaire.
We did not find complications associated with infiltration.
Conclusions: There is still a huge diversity between methods of obtaining and applying PRP, that makes difficult to take decisive conclusions. It is essential research both the types of PRP growth factors as well as dosage protocols and application instructions.

eP151

EFFICACY AND SAFETY OF AMTOLMETIN GUACYL (AMG) IN THE MANAGEMENT OF KNEE OSTEOARTHRITIS AND ASSOCIATED DYSPEPSIA IN ROUTINE CLINIC SETTING

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Objectives: To evaluate the efficacy and safety of AMG in the management of osteoarthritis (OA) of knee and associated dyspepsia in routine clinic setting.
Methods: In the observation study 219 (M-37, F-182) patients (pts) were enrolled with a median age of 55.2±6.9 years, knee joint (KJ) pain ≥40 mm on visual scale (VAS) and dyspepsia. Pts were switched from NSAIDs to AMG without wash out period. AMG 600 mg tablets twice daily was administered for up to 28 days. Patients were evaluated at baseline, Day 14±3, and at Day 28±3 for severity of pain in “target” knee (VAS), WOMAC (pain, rigidity and function scales), and Severity of Dyspepsia Assessment (SODA).
Results: Of the 219 OA pts, approximately 72.5% pts reported decrease in pain in the target KJ by ≥40% at the end of the study. Main pain reduced from 65 mm at baseline to 27 mm at the end of the study. A significant decrease in WOMAC pain score (from 239 to 120), morning stiffness (from 100 to 58), decrease in functional limitations in all the measured scales - I to IV and total WOMAC score (from 1187 to 643). This decrease in all the domains of WOMAC questionnaire was statistically significant ($p< 0.001$). A significant decrease in SODA score and increase in

satisfaction was observed. AMG tolerability was comparatively better than previously used NSAIDs.
Conclusion: AMG is effective and safe in OA pts with associated dyspepsia and has comparatively better tolerability than other NSAIDs.

eP152

THE EFFICACY OF BALANCE FOAM PAD AS ADJUNCT THERAPEUTIC EXERCISE AMONG KNEE OSTEOARTHRITIS PATIENTS OF A TERTIARY HOSPITAL: A RANDOMIZED CONTROLLED TRIAL

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General Objective: To determine the efficacy of balance foam pad as adjunct to therapeutic exercise versus therapeutic exercises alone in controlling pain and improving balance among knee osteoarthritis patients.
Participants: A total of 40 patients diagnosed with knee osteoarthritis with radiographic evidence of grades 0-2 Kellgren and Lawrence Scale.
Method: The participants were randomly assigned into two groups: Intervention group wherein they performed the balance foam pad exercises plus therapeutic exercises and the Control group performed therapeutic exercises alone. Baseline outcome measures were assessed prior to initiation of the program. Both groups received physical modalities before the exercises. The two groups underwent 3 times sessions per week completing 24 physical therapy sessions.
Main Outcome: Study outcome measurements include Visual Analog Score (VAS), Berg Balance Scale (BBS) and Timed up and Go test (TUG).
Results: Forty subjects were able to meet the inclusion criteria and complete the training sessions. Both groups showed significant decrease in VAS after completing the training sessions. Among the participants in control group, their BBS and TUG scores significantly changed. A similar trend was also noted in the intervention group in their BBS and TUG scores. Analysis showed no significant difference comparing the two groups as stated in the outcome measures.
Conclusion: Both groups showed improvement in pain control and balance after performing the exercises. Balance foam pad exercises in combination with therapeutic exericses is as equally effective in pain relief and improving balance and may be used as adjunct to patient's physical therapy program.

eP153

NEUROPATHIC PAIN SYMPTOMS IN KNEE OSTEOARTHRITIS PATIENTS

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Background and aims: The objective of this study was to investigate the frequency of neuropathic pain symptoms in patients with chronic pain due to knee osteoarthritis.
Methods: This study included 250 subjects with chronic pain (pain that lasted more than 3 months) due to knee osteoarthritis (the average age 64,59±12,57 years). Current, maximum and average pain intensity in the last four weeks on numeric rating scale (NRS) were collected. Presence of the neuropathic pain was examined with the Douleur Neuropathique with 4 questions (DN4). The patients were divided into two groups according to the results of the DN4: the first, having the values of DN4< 4 and the second with scores DN4≥4.
Results: There was almost four times more women in our study (194 (77,6%)). The half of patients (126 (50,4%)) scored ≥4 on DN4. There was no difference in gender between groups (93 (75,0%) vs 101 (80,2%) women, X^2=0,957, p=0,364). All three collected pain intensities were significantly higher in group with DN4≥4 (current pain

intensity: 5,80±2,18 vs 7,04±2,12; t=-4,567, p< 0,001; maximum pain intensity in the last 4 weeks: 8,58±1,53 vs 9,24±1,07; t=-3,931, p< 0,001; average pain in the last 4 weeks: 5,69±1,92 vs 6,69±1,87; t=-2,441, p=0,016).
Conclusion: The findings of our study show that neuropathic pain (measured with DN4) was present in one half of the patients with chronic pain due to knee osteoarthritis. Patients in the second group had significantly higher pain intensities. We should consider these facts when planning the treatment for these patients.

eP154

GENICULAR NERVES RADIOFREQUENCY ABLATION FOR CHRONIC KNEE PAIN TREATMENT. EVALUATION OF FIRST YEAR OUTCOMES IN A DISTRICT HOSPITAL

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BACKGROUND: Knee pain is a common pain, most often caused by osteoarthritis. Total knee replacement is generally effective, but for those patients with surgery contraindications or surgery failure other options for pain relief should be provided.
Radiofrequency (RF) ablation of geniculary nerves has become popular as an alternative treatment in such cases. We present the results within the first year of performance of this technique in our hospital.
METHODS: Data review and collection from electronic medical histories of all patients undergoing geniculary RF september 2017- september 2018.
RESULTS: Our analysis involved 19 procedures from 14 patients, 5 of which received bilateral treatment. Average age was 67,8 ±10,9: 81,8% women and 18,2% men. The most frequent diagnosis was osteoarthritis (63,6%), followed by postoperative pain (18,2), non-specific articulary pain and osteoporosis (9,1% each). 81% of the patients complained of moderate to severe pain in other locations. All patients were receiving different types of analgesic therapies at the time of study.
During the follow-up period, 9 patients (64.3%) reported pain relief in one or both knees. The average relief lasting was 3.56±2.6 months. Only 3 patients (21,4%) reduced analgesic doses of their regular medication after genicular RF.
CONCLUSIONS: Genicular RF is an effective alternative for severe chronic knee pain in cases when surgery is not indicated or has failed. Its limited impact on the analgesic consumption might be explained by the high prevalence of pain in other locations.

eP155

TYPE 2 DIABETES, OSTEOARTHRITIS AND PAIN

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Aim: To study the prevalence of chronic arthritic pain (CAP) in patients with type 2 diabetes mellitus(2MD) and arthitic (A) (2DM-A) , controlled in primary care consultation and / or consultation with a specialist in traumatology, to promote interventions of the primary and / or specialized care consultation to improve the symptom control pain.
Method: The authors conducted a descriptive cross-sectional study applied to a selection of patients (n = 104, 52 men (H) and 52 women (M)) selected by consecutive non-probabilistic sampling, among the patients with 2DM who attended our clinic. included in the Service for diabetic patients in Sacyl´s portfolio of primary care services. They answered a survey about the treatment for the control of diabetes and chronic pain due to osteoarthritis.
Results:

1-Prevalence 2DM: total 104PATIENT(52MEN(m), 52WOMEN(w)),
2-PREVALENCE 2DM-CAP:
18PATIENT(6MEN, 12WOMEN)=34.61%
11.53% (DM2-DAC in men) and 23% (DM2-DAC in women).
Distribution by age groups:
80-95 years: 16(2DM)(9m,7w); 5CAP(1m,4w)=31.25%(2DM-CAP);
70-79 years: 29(2DM)(11m,18w); 3CAP (2m,1w)=10.34%(DM2-CAP);
60-69 years:45(2DM)(26m,19w); 7CAP(2m,5w)=15.55%(DM2-CAP);
50-59 ños:14(2DM)(6m,8w); 3CAP(1m,2w)=21.42%(DM2-CAP).
Conclusions: The highest prevalence of CAD is detected in female patients by 23% versus 11.53% in men. From the point of view of age, 31.25% of patients with more than 80 years of age and 21.4% of patients between 50 and 60 years of age present pain. In view of these results, Interventions are proposed to improve therapeutic adherence: 1-Simplify treatment interventions. 2-Informative and educational interventions in Primary and Specialized Care consultations and through group dynamics. 3- Family and social support interventions. 4-Behavioral reinforcement interventions. 5-Combination of interventions.

eP156

NEW APPLY OF BUPRENORPHINE PATCH ON PAIN SITE IN PATIENTS OF KNEE OSTEOARTHRITIS

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Introduction: OA is one of the most disabling diseases in developed countries. Intra-articular (IA) injection of morphine has been widely studied for its simplicity, safety and efficacy. We suggest the method of the combination the merit of systemic opioids and peripheral opioids in knee OA patients. We had applied buprenorphine patch on knee joints in knee OA patients, and they had showed good analgesic effects and low side effects.
Methods: We retrospectively enrolled 213 patients with knee OA who were not responds to conventional therapy. Numeric rating scale (NRS), side effects, compliances of buprenorphine patch were investigated before, and one month after patch start. In chest applied group (n=125) and knee applied group (n=88), NRS, side effects and compliance were checked and compared between two groups.
Results: NRS before, and in one month were 7.00±0.31, 7.06±0.32, and 4.79±0.81, 4.51±0.69 ($p=0.16$, $p=0.00973$*), and total side effects were 64%, 19.3% ($p< 0.001$*), compliances in one month were 37.6%, 83.0% ($p< 0.001$*) in chest applied group, knee applied group, respectively
Conclusion: Buprenorphine patches applied on knee show better analgesic effects, less side effects and better compliances than in patients applied on chest in knee OA patients.

eP157

CONSUMPTION OF NSAIDS IN PATIENTS WITH RHEUMATOID ARTHRITIS AND ANKYLOSING SPONDYLITIS FOR PAIN CONTROL

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Introduction: Non-steroidal anti-inflammatory drugs(NSAIDs) are effective in symptomatic relief of rheumatoid arthritis(RA), ankylosing spondylitis(AS).With the use of NSAIDs, its adverse effects(AE) should be investigated.The pharmacological choice should therefore be personalized, taking into account the efficacy, potential toxicity, AE and cost.

Objectives: Evaluate the consumption of NSAIDs in patients with RA and AS followed at the Rheumatology Unit of Castelo Branco (RU-CB).
Materials and methods: Retrospective study in 135 patients of the RU-CB, from March/2013 to April/2019.DAS28, BASDAI and ASDAS and AVS were the instruments to evaluate the activity of RA, AS and pain, respectively. SPSSv24.0 software was used for statistical analysis.
Results: Patients with RA were mainly women over 60 years, with duration of RA greater than 10 years, whereas patients with AS are mainly men between 40-50 years and duration of AS between 3-5 years.Most RA patients are in remission and have no pain/mild pain.Similarly, for AS, mild activity and no pain/mild pain. In both diseases, NSAIDs are the most consumed drugs.There are more patients who consume NSAIDs than those who do not (RA:p=0,000; AS: p=0,0215) and that pain is associated with RA (DAS28-CRP:p=0,001; DAS28-SR:p=0,000) and AS (ASDAS-CRP:p=0,048 and ASDAS-SR:p=0,009) activity scales.In cardiovascular(CV) and gastroinstestinal(GI) study,5,5%,2,7% and 1,4% patients with RA were submitted to upper digestive endoscopy(UDE), cardiac catheterization and cardiac admission,respectively.In AS, only 22,2% were submitted to UDE.
Conclusion: In RU-CB, RA and AS are well controlled: remission/mild activity,absence of pain/mild pain and few CV and GI effects, with NSAIDs being the most consumed drugs.There are significant associations between pain-DAS28 and pain-ASDAS.

eP158

THE ANTINOCICEPTIVE AND ANTIDEPRESSANT EFFECTS OF SLOW RELEASING HYDROGEN SULFIDE DONORS IN ANIMALS WITH CHRONIC OSTEOARTHRITIC PAIN

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Background and aims: Osteoarthritis and their comorbidities associated, such as depression, is an important clinical problem which have a negative impact in the quality of life of patients. In this study, we investigated if the systemic administration of two slow releasing hydrogen sulfide (H2S) donors, allyl isothiocyanate (A-ITC) and phenyl isothiocyanate (P-ITC), alleviates chronic osteoarthritic pain and the depressive-like behaviors associated. The possible mechanisms implicated were also assessed.
Methods: In C57BL/6 female mice with osteoarthritic pain induced by the knee injection of monosodium iodoacetate (MIA) we evaluated the effects of the repeated administration of A-ITC and P-ITC on: 1) the mechanical allodynia, thermal nociception, grip strength deficit and depressive-like behaviors caused by MIA and 2) the protein levels of heme oxygenase 1 (HO-1) and NAD(P)H quinone oxidoreductase 1 (NQO1) in the spinal cord.
Results: The repeated administration of A-ITC and P-ITC inhibited the mechanical and thermal hypersensitivity and the grip strength deficit produced by MIA. Both treatments also inhibited the depressive-like behaviors and enhanced the expression of HO-1 and NQO1 in the spinal cord of animals with osteoarthritic pain.
Conclusions: This study revealed the antinociceptive, antidepressant and antioxidant effects of A-ITC and P-ITC and suggested that treatment with slow releasing H2S compounds may represent an interesting target for the treatment of chronic osteoarthritic pain and the depressive-like behaviors associated.
This work was supported by Ministerio de Ciencia, Innovación y Universidades, Instituto de Salud Carlos III, Madrid, Spain and Fondo Europeo de Desarrollo Regional (FEDER), Unión Europea [Grant: PI1800645].

eP159

WHOLE BODY VIBRATION IN EXPERIMENTAL OSTEOARTHRITIS IN MALES AND FEMALES - EFFECTS ON PAIN AND CARTILAGE DESTRUCTION

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Background and aims: Pain is a debilitating sign of osteoarthritis (OA) and current pharmacological and surgical treatments are unsatisfactory. Whole body vibration (WBV) is a physical exercise-related therapy, which has been shown to decrease pain in OA patients, but the underlying mechanisms are unknown. This study aims to provide new insights into mechanisms of analgesic actions of WBV in the medial meniscal tear knee OA mouse model.
Methods: Experiments were performed in accordance with IASP guidelines and after approval by the local ethics committee. OA was induced by transection of the medial collateral ligament and medial meniscus in male and female C57BL/6J mice. Sham-operated and naïve mice served as controls. WBV was performed using a custom-made WBV apparatus (15 Hz and 0.3 *g*, 15 min/day, 5 days/week) for 13 weeks. Mechanical sensitivity was assessed by von Frey filaments and the hind limb use by the dynamic weight bearing device. Naloxone methiodide (NLXM) was used to test for the opioid receptor involvement. Knee cartilage destruction was assessed using contrast enhanced µCT.
Results: WBV reduced the OA-triggered mechanical sensitivity and restored the physiological hind limb use in both sexes. These analgesic effects were reversed by NLXM injected intraarticularly, on the spinal cord, or into the brain. µCT analysis revealed less cartilage damage in OA mice following WBV.
Conclusions: WBV alleviated mechanical pain and restored the physiological limb use via endogenous opioids, and attenuated cartilage destruction, offering new perspectives on OA treatment.
Research support: German Federal Ministry of Education and Research (BMBF; 1EC1408L).

eP160

ASSOCIATION BETWEEN PSYCHOLOGICAL FACTORS PRESENT IN PATIENTS OF KNEE OSTEOARTHRITIS

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The identification of psychological and coping components in patients with chronic pain has been demonstrated as a key factor in the prognosis, treatment and evolution of pain and functionality, still more in patients with osteoarthritis of the knee where the proposed first-line treatments place education and exercise before medication. The aim of this study is to identify the degree of catastrophism (PCS), kinesiophobia (TSK-11), self-efficacy (ASE), depression and anxiety (HADS) in these patients as well as the association between them. For this purpose, we provided self-reported questionnaires to 9 patients affected by pain and functional limitation due to knee osteoarthritis. Spearman´s correlation analyzes reveal a statistically significant positive relationship between anxiety and depression (HADS) and catastrophism (PCS) ($p = 0.035$), but not between the other variables. However, these data must be taken with caution because the size of the sample with which we are working, so that it is necessary to continue carrying out studies with larger samples to analyze the possible relationship between these variables. Given the value of catastrophism as a prognostic factor for treatment, the presence of anxiety and depression should be detected at the beginning of the treatment.

eP161

EFFECT OF GINGER ON PAIN AND FUNCTION IN KNEE OSTEOARTHRITIS: SYSTEMATIC REVIEW WITH META-ANALYSIS

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Aim: To determine the effectiveness of the ingestion and / or topical application of ginger in reducing pain and improving functionality in patients with osteoarthritis knee.
Design: A systematic review was performed with meta-analysis of randomized clinical trials.
Search sources: An electronic search was made in the databases; Medline, Cochrane Central, Cinahl, SPORTDiscus, Lilacs. In addition, an electronic search was carried out in Google Scholar.
Selected studies: Seven studies were obtained that met the eligibility criteria and the risk of bias was evaluated according to the tool proposed by the Cochrane collaboration.
Results: In the quantitative synthesis, when comparing the consumption in ginger capsules versus placebo for the pain reduction showed a difference of means of - 7.88 mm IC (-11.92, - 3.85) p = 0.0001 and for the improvement of the function showed a difference of means of -1.61 IC points (-4.30, 1.09) p = 0.24. When comparing the topical use of ginger versus the standard treatment for pain reduction was 0.79 mm CI (-1.97, 0.39) p = 0.19 and for the function it was -0.51 IC points (-1.15, 0.13) p = 0.12.
Conclusions: In the short term, there is some evidence supporting the use of oral ginger compared to placebo in reducing pain in patients with knee OA. For the other comparisons no statistically significant differences were found.

eP162

THE MAJOR RISK FACTORS FOR DEVELOPING INTENSIVE KNEE PAIN IN PATIENTS WITH OSTHEOARTRITIS

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Objective: To study the risk factors for developing intensive knee pain in OA pts
Materials and methods: 185 OA (ACR criteria) females mean age 59 ±8,1 y were examined. Instrumental diagnostic methods included knee X-ray, DEXA, MRI of knee joints. Stage II of knee OA was in 73% and stage III - 27%. Based on pain intensity pts were divided into two groups: Group I - pts with more intensive pain (>70 mm VAS) - 16,8% , and Group II - pts with less intensive knee pain (< 70 mm VAS) - 83,2%
Results: Pts group I had higher body weight 82,7 ± 13,8 vs 74,8±12 kg, *p*=0,002, higher WOMAC - pain 374 (348-382) vs 225 (172-268) mm, p< 0,0001, FI 1102 (970-1238) vs 820 (646-935) mm, p< 0,0001, total WOMAC 1541 (1462-1702) vs 1130 (880-1291) mm, p< 0,0001, varus knee deformity - 80,6% vs 29,2%, *p*< 0,0001, higher MRI-verified bone marrow edema in medial tibia: 51,9% vs 31,1%, *p*=0,03. Most important risk factors for intensive knee pain: functional impairment, knee varus, Heberden‘s nodes, cartilage abnormalities in MTC, familial OA. RF-based high intensive pain development model (area under the ROC-curve 0, 910 (95% CI 0,860-0,961) has been developed.
Conclusion: In a prospective multicenter study, using comprehensive instrumental modalities it has been demonstrated that intensive knee pain is caused by functional impairment, presence of knee varus, Heberden´s nodes, familial OA, cartilage destruction in the MTC.

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PAIN AND QUALITY OF LFE IMPROVEMENT IN RHEUMATOID ARTHRITIS ON TREATMENT WITH TOCILIZUMAB

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Background and aims: Successful management of rheumatoid arthritis (RA) depends on the early administration of DMARDs and biologic DMARDs. Tocilizumab, an interleukin-6 receptor inhibitor, has been used for the management of RA. The aim was to describe a cohort of RA patients treated with tocilizumab and the effect of this treatment on pain and quality of life.
Methods: In a cohort of 80 patients with rheumatoid arthritis tocilizumab was administered in combination with methotrexate sc and 10 mg prednisolone. In all patients DAS 28 and VAS were assessed before treatment initiation and 12 months later, 26 patients being on tocilizumab iv 8 mg/kg/4wks and 54 on tocilizumab sc 162mg/wk. An effort was made to reduce or withdraw corticosteroids and methotrexate. After a year, prednisolone and methotrexate were either significantly reduced or withdrawn. After a period of 52 weeks 42 of 80 patients (52.5%) were on monotherapy with tocilizumab.
Results: In a cohort of 80 patients with RA the administration of tocilizumab proved safe and effective. Pain improvement and remission or low disease activity of RA was achieved. Corticosteroid and methotrexate dosage were reduced. Six months later disease remission was observed and maintained for 12 months with significant improvement of DAS 28 and VAS ($p < 0.001$, Student's t test).
Conclusions: Significant pain improvement and disease remission was observed after 6 months treatment with tocilizumab in RA patients and was maintained for a year. It appears that tocilizumab is safe and effective for the treatment of RA.

eP164

EFFECT OF FOOT AND/OR ANKLE PATOLOGY AND PAIN TO FUNCTIONAL RECOVERY IN UNICOMPARTMENTAL ARTHROPLASTY

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Introduction: Foot and/or ankle pathology is mostly present in these patients undergoing total knee replacement surgery and well documented in the literature. Therefore, we aimed to investigate foot and ankle pathology in preoperative and postoperative period in patients undergoing unicompartmental arthroplasty and to answer whether foot and/or ankle affect the outcome of the surgery and the performance of these patients?
Material and methods: The pain level of the patients at rest, sleep, and walking before and after surgery was evaluated by using visual analog scale. Functional status of patients was determined by The Western Ontario and McMaster Universities Osteoarthritis Index, short physical performance battery and disease-related quality of life.
Results: The mean age of patients was 58.08 ± 8.66 years. There were 7(28%) patients with foot and/or ankle problems. There was a statistically significant decrease ($p = 0.000$) in the pain level of the patients compared to preoperative period. Patients complaints of pain and stiffness were low and their physical functions and physical performances were good, and health-related quality of life was moderate level. When the patients with and without foot and/or ankle problems were compared, it was found that there was no difference in pain, physical function and performance status ($p > 0.05$).
Conclusion: There was a significant decrease in activity and perceived pain level at rest after surgery. The functional status of patients with foot / ankle problems such as pain, swelling and stiffness is not affected.
Keywords: Unıcompartmental arthroplasty, Pain, Foot ankle patology

eP165

ARTICULAR CONSEQUENCES OF A LIFE WITHOUT PAIN AND LESSONS FOR NOVEL ANALGESIA: A LITERATURE REVIEW AND ANALYSIS

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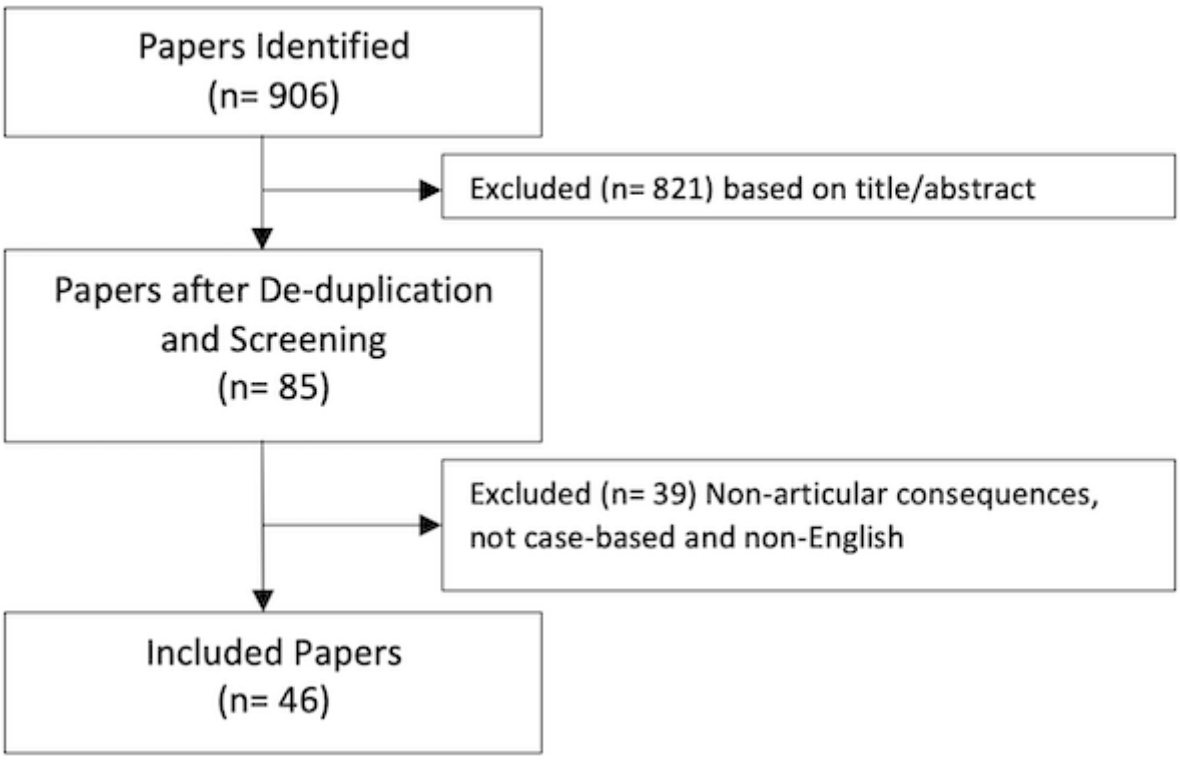
Background and aims: Congenital Insensitivity to Pain (CIP) predisposes to a range of articular problems. Knowledge of CIP's genetic determinants has produced a huge interest in novel analgesics against Nav1.7 and NGFB. However, concerns have been raised due to adverse joint sequelae, such as rapidly progressive osteoarthritis in Tanezumab therapy. I studied the phenotypes of patients with CIP to analyse the pattern of the articular consequences to extrapolate any side effects of long-term novel analgesic treatment.
Methods: I did a comprehensive Medline (via Ovid) search to identify all the relevant case reports since 1970 (Image 1). The papers were screened on Rayyan QCRI. The selected cases were analysed based on sex, age, articular/bone pathology location and mutated genes.
Results: 111 cases were identified (67 Male and 44 Female) with 56 NTRK1, one NGFB, one SCN9A, one SCN11A and one PRDM2 mutation. The mean age was 8.5 years (7.5 SD) for non-spinal articular pathology, while 29.3 years (7.5 SD, n=10) for spinal pathology. Hand and feet (52%), hip (20%), knee (19%) and elbow (6%) were commonly affected.
Conclusions: Articular pathology is common in CIP. Spine vs. non-spine joint pathology shows a bi-modal distribution (spine in older patients). This suggests that long-term novel analgesic therapy based on these targets should trigger consideration of spine injury as a side effect in adults.



[Image 1 - Literature Review Flow Chart]

PAIN IN THE NECK AND CERVICORADICULAR PAIN

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BRAIN NEUROTRANSMISSION, EXERCISE AND COGNITIVE FUNCTIONING IN PEOPLE WITH CHRONIC WHIPLASH-ASSOCIATED DISORDERS: A RANDOMIZED CONTROLLED CROSSOVER STUDY

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Background and aims: Dysregulation in serotonergic and noradrenergic systems may be implicated in the mechanisms underlying pain-related cognitive impairment in people with chronic whiplash-associated disorders (CWAD). This study aimed to unravel the role of serotonergic and noradrenergic descending pathways in cognition and their possible added value in the effect of a submaximal aerobic exercise on cognitive functioning in CWAD.
Methods: In people with CWAD (n=25), endogenous descending serotonergic and noradrenergic inhibitory mechanisms were modulated by using respectively a single dose of a selective serotonin reuptake inhibitor (SSRI = Citalopram) and a selective norepinephrine reuptake inhibitor (NRI = Atomoxetine). Cognitive performance and cognitive symptoms were studied at rest and in response to exercise
(1) without any medication intake,
(2) after the intake of Citalopram, and
(3) after the intake of Atomoxetine.
Results: Choice reaction time improved after Atomoxetine intake and patients reported less severe memory problems after intake of Citalopram or Atomoxetine compared to the no medication day ($p < .05$). When performing pairwise comparisons, improvements in selective attention, and reduced memory problems were found postexercise for the no medication condition ($p < .05$). In contrast, after intake of Citalopram or Atomoxetine, both selective and sustained attention worsened postexercise ($p < .05$).
Conclusions: A single dose of Citalopram or Atomoxetine reduced memory complaints and the intake of Atomoxetine improved selective attention in people with CWAD. However without medication intake, cognitive functioning improved postexercise whereas both centrally-acting medications worsened cognitive performance of people with CWAD in response to a submaximal aerobic exercise.

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THE EFFECTS OF PERCUTANEOUS NUCLEOPLASTY AND ANTERIOR DISCECTOMY IN PATIENTS WITH CERVICAL RADICULOPATHY DUE TO A CONTAINED DISC HERNIATION: A RANDOMIZED CONTROLLED TRIAL

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Background and aims: Cervical radiculopathy (CR) is a common problem in the adult population. When conservative treatment fails surgical treatment is considered. Anterior cervical discectomy with fusion of the adjacent vertebral bodies has widely been accepted as the standard treatment for CR, however it is associated with some serious complications. To reduce these risks, new minimally invasive treatments have been developed, one such technique is percutaneous nucleoplasty. It is claimed that the benefits of surgery could also be achieved using percutaneous nucleoplasty, without accompanying complications of the surgical approach. The aim of this trial was to compare the benefits and harms of Percutaneous Cervical Nucleoplasty (PCN) and Anterior Cervical Discectomy (ACD) in a group of patients with CR.
Methods: 48 patients with CR were randomized to PCN and ACD. Demographic data were collected. Our primary outcome was the visual analogue scale (VAS). Secondary outcomes were Global Perceived Effect (GPE), Neck Disability Index (NDI) and the Short Form of the 36 Health Survey Questionnaire (SF-36). Data will be analyzed with a linear mixed model analyses and according to the intention-to-treat principle.
Results: We are currently working on the statistical analysis of our primary and secondary outcomes.
Conclusion: At the EFIC congress this year, we would like to present our primary results.

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EFFECTS OF A SINGLE DRY NEEDLING SESSION OF THE OBLIQUUS CAPITIS INFERIOR ON THE ALTERED SENSORIMOTOR FUNCTION IN PEOPLE WITH NECK PAIN

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Background and aims: Patients with neck pain (NP) exhibit a set of sensorimotor disturbances [e.g., altered joint position error (JPE)]; which are more pronounced in those with an upper cervical spine dysfunction. It has been suggested that the suboccipital muscles, particularly the obliquus capitis inferior (OCI), play an important role in the sensorimotor function of the cervical spine. The aims of this double blinded RCT were to investigate the effectiveness of a single session of dry needling (DN) in the OCI on the sensorimotor function (1) and the upper cervical mobility (2).
Methods: 40 patients with NP (traumatic or non-traumatic onset) and altered JPE (≥4.5º) were randomly allocated into DN or sham needling groups. JPE and cervical movement sense (CMS) were evaluated as measures of sensorimotor function of the cervical spine. The flexion rotation test (FRT) was used as a measure of C1-C2 mobility. All measures were evaluated pre and post treatment (twice, immediately after and 1-week after).
Results: No effect (immediate or 1-week follow-up) on JPE or CMS was found in any group [$F(2, 70)=1.418$, $p=0.249$ and $F(2, 50)=2.954$, $p=0.06$ respectively]. However, FRT improved immediately and at 1-week follow-up after DN compared to baseline but not after sham needling [$F(2, 66)=10.192$, $p< 0.001$].
Conclusion(s): A single session of DN does not improve the sensorimotor function in NP patients, but it improves mobility of the upper cervical region. Future research should investigate if more DN sessions or the addition of DN to another treatment (i.e. sensorimotor exercises) provide superior gains.

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PAIN SÍNDROME IN NEURALGIC AMYOTROPHY (NA) OR PARSONAGE-TURNER SÍNDROME, DO WE HAVE IT UNDER CONTROL? A CASE REPORT

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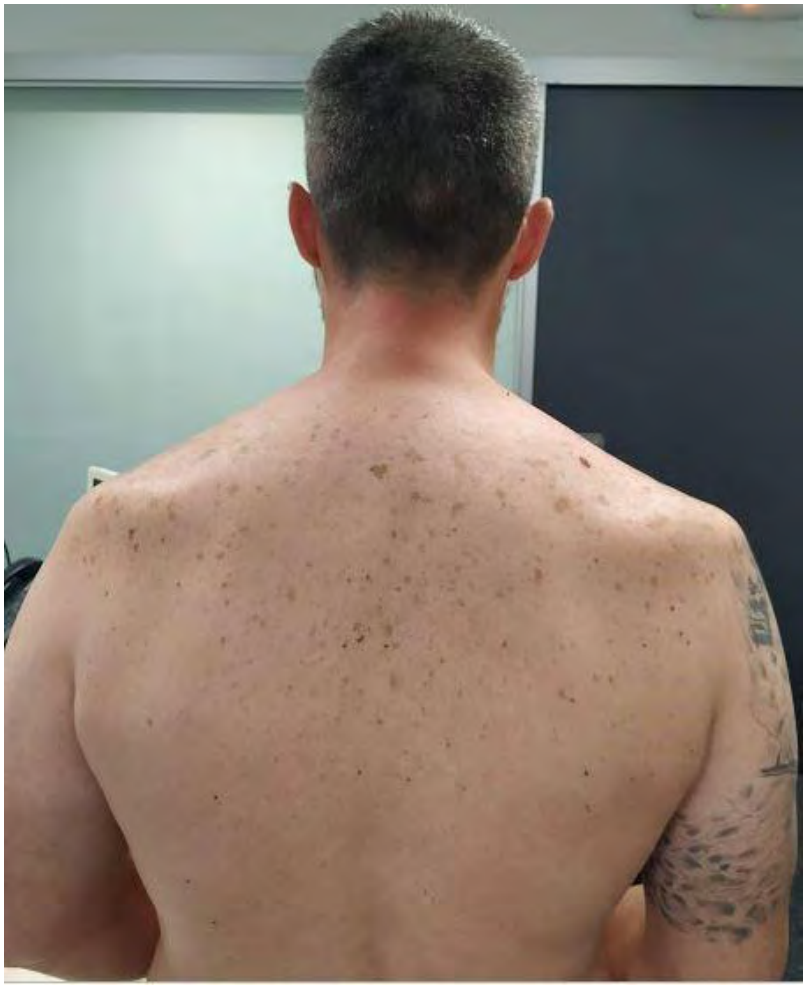
Background and aims: NA is an uncommon and underdiagnosed cause of new-onset pain in the shoulder[1]. It starts with a phase of intense and refractory pain (PP) to conventional analgesics, followed by a phase of neurogenic atrophy (PNA) of specific muscles. Specific treatment doesn´t exist yet. We report a case who responded to intravenous lidocaine (IL) and amitriptyline.
Method: A 40-year-old man reported a shoulder neuropathic pain. A recent parvovirus B19 infection was confirmed. Treatment with prednisone, dexketoprofen, pregabalin and fentanil was initiated but proved ineffective. On day 15 a round of 10 days of lidocaine infusion (LI) was initiated. During that time he reported important relief that was lost after finishing. After 15 days he was discharged and we prescribed amitriptyline 50 mg, on which he showed a 50% improvement. During the following week he started PNA in the right shoulder, while PP persisted in the left one, which made rehabilitation difficult, so we started a new round of LI with improvement that facilitated rehabilitation.



[Graph 1]

Discussion: There is an increasing knowledge about NA but not about its pain treatment. LI has shown efficacy in refractory neuropathic pain[2]. Amitriptyline has proven useful in neuropathic and musculoskeletal pain[3].
Conclusion: Further study is needed to evaluate the best analgesic treatment in NA.
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2. IL for Chronic pain. CADTH. 2018.
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SPINAL CORD STIMULATION AT 10 KHZ FOR CHRONIC UPPER LIMB AND NECK PAIN: AUSTRALIAN EXPERIENCE

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Background: Intractable upper limb and neck pain has traditionally been a challenge to treat, with conventional spinal cord stimulation (SCS) often inducing positional variation in paresthesia[1]. Here we present the results from a prospective, clinical trial, assessing the safety and effectiveness of paresthesia-independent high frequency SCS (HF-SCS) at 10 kHz for upper limb and neck pain.
Methods: Subjects with chronic, intractable neck and/or upper limb pain of ≥5 cm VAS were enrolled in (ACTRN12614000153617) and implanted with two epidural leads spanning C2-C6 vertebral bodies. Subjects with successful trial stimulation (≥40% pain relief) were implanted with a Senza® system (Nevro Corp., Redwood City, CA) and followed for 12-months post-implant.
Results: Of the 38 subjects who underwent a HF-SCS trial, 31 (82.6%) reported a successful trial and proceeded to a permanent implant. Twenty-three out of 30 subjects (76.7%) met the 3-month effectiveness endpoint. Subjects reported a reduction in their neck pain from baseline at the 12-month follow up visit (8.1 ± 1.2 vs. 2.2 ± 2.0). Similar results were observed for upper limb pain (7.3 ± 1.2 vs. 2.8 ± 2.4). Disability, as measured by pain disability index score, decreased from 42.5 ± 14.7 at baseline to 21.2 ± 18.3 at 12 months post-implant. No neurological deficits were reported. None of the subjects reported experiencing paresthesia from HF-SCS.
Conclusions: Stable, long-term results from the study demonstrate that HF-SCS is a promising therapy option for intractable chronic upper limb and neck pain.

References:

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eP171

ADVERSE EFFECTS AS A CONSEQUENCE OF BEING THE SUBJECT OF ORTHOPAEDIC MANUAL THERAPY TRAINING, RESULTS OF A WORLDWIDE RETROSPECTIVE SURVEY

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Background: Physical therapists (PTs) use a range of manual therapy techniques, which are learned at postgraduate orthopaedic manipulative physical therapy (OMPT) programmes. Learning and assessment of practical skills commonly involves students practising manual therapy techniques on healthy peers in an educational setting under both tutor supervision and student organised self-directed practice sessions. Practising, by definition, implies that techniques will not always be performed correctly, as students work to develop expertise within these skills.
Aims: The aim of this study was to describe the adverse effects experienced by students after having techniques performed on them as part of their OMPT training and to evaluate any long-term adverse effects experienced by this population.
Methods: A descriptive online survey of current students and recent graduates (≤5 years) of OMPT programmes across the 22 Member Organisations of International Federation of Orthopaedic Manipulative Physical Therapists (IFOMPT).
Results: The questionnaire was completed by 1640 respondents across 22 countries. A substantial proportion of people without a history of musculoskeletal pain reported to have experienced adverse effects (36% opposed to 48.5 with a history). Neck pain was the most prevalent adverse effect (66.4%), followed by headache (50.9%) and low back pain (32%). A small proportion reported to have longer lasting adverse effects and still experienced these effects to date, regardless of having pre-existing musculoskeletal complaints.
Conclusion: Mild to moderate adverse effects after practising manual therapy techniques are commonly reported even on healthy people without a history of musculoskeletal pain.

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16-WEEK MINDFULNESS THERAPY EFFECTIVENESS COMPARING WITH MUSCLE RELAXATION TECHNIQUES IN PATIENTS WITH NONSPECIFIC NECK PAIN: A RANDOMIZED CONTROLLED TRIAL

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Background and aims: Nonspecific neck pain (NNP) is the commonest cause of neck symptoms and if untreated it may contribute to pain chronicity. This study aims to investigate the effects of 16-week mindfulness therapy in patients with nonspecific neck pain (NNP).
Methods: We enrolled 60 patients that are amateur athletes in our study and divided them into 2 groups (30 patients each) by the sealed envelope method. Both groups were given muscle relaxation techniques (post isometric relaxation (PIR), massaging and stretching). The study group additionally was educated with mindfulness meditation techniques (1-hour group sessions twice a week with following daily outside preparation and individual session for every participant). The treatment effectiveness was evaluated at admission and 16 weeks after treatment by pain attacks frequency and severity with the Visual Analog Scale (VAS).
Results: The control group consisted of 68.8% females and 31.2% males (mean age 31.8±10.1 and mean pain attacks frequency 14.7±4.4 per month). The study group included 75% women and 25% males (mean age 38.3±12.7 and mean pain attacks frequency 15.1±2.6 per month). The VAS score was 4.7±1.6 and 5.1±1.8 points in the study and control groups, respectively. After the 16-week treatment, pain resolved in most of the patients (75%) and was significantly lower in the study group than in control group (0.9±0.3 and 2.3±0.7, respectively; p=0.03). Moreover, pain attacks frequency significantly decreased in the study group (3.7±1.6 per month) comparing with the controls(8.1±2.4 per month).
Conclusions: Patients with NNP can benefit from mindfulness therapy significantly relieving pain conditions.

PERIPHERAL NEUROPATHIC PAIN

eP173

HORMONAL STATUS AND COGNITIVO-EMOTIONAL PROFILE IN REAL-LIFE NEUROPATHIC PAIN PATIENTS: A CASE CONTROL STUDY

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Background and aims: The specific impact of neuropathic pain (NP) and of recommended NP treatments on the hormonal and immune status of patients has been so far poorly explored. This study aims at studying in real life, the hypothalamic-pituitary-adrenal axis and the cytokine profile of NP patients. It also explores their links with cognition, emotion, quality of life and drug treatment.
Methods: This prospective study (clinicaltrial.gov NCT01543425) included 60 patients with NP and 60 age- and gender-matched healthy volunteers after signature of informed consent. A number of parameters were measured: adrenocorticotrophic hormone (ACTH), cortisol, cortisol awakening response (CAR), dehydroepiandrosterone sulphate (DHEAS), sex hormone binding globulin, testosterone, 17-β-oestradiol, progesterone, luteinizing hormone, follicle stimulating hormone, cytokines, brain-derived neurotrophic factor and vitamin D. Psychological parameters were assessed by questionnaires.
Results: NP patients had lower levels of ACTH ($p = 0.009$) and DHEAS ($p < 0.001$) than controls and the CAR was impaired. NP patients were more depressed and anxious ($p < 0.001$) with a diminished quality of life ($p < 0.001$), that was influenced by cytokines ($p = 0.0067$) and testosterone ($p = 0.028$). Antidepressants and antiepileptics appear to interfere with testosterone and cognitivo-emotional domains.
Conclusions: An impairment of the hormonal status and of the immune system was observed in NP patients. It identified testosterone as a potential pivotal mediator between antidepressants/antiepileptics and quality of life. Further studies must address the exact impact of different types of drugs on central effects, of gender differences and of the immune system of NP.

eP174

$P2X_4$ RECEPTOR IN DORSAL ROOT GANGLIA IS INVOLVED IN NEUROPATHIC BUT NOT IN INFLAMMATORY HYPERALGESIA

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Although microglial $P2X_4$ receptors ($P2X_4R$) activation is directly associated with the pathogenesis of neuropathic pain, in dorsal root ganglia (DRG) their role on development of distinct pain states has been scarcely studied. This research investigates $P2X_4R$ signaling in DRG during both acute and chronic hyperalgesia induced either by neuropathic (paclitaxel) or pro-inflammatory mediator (Prostaglandin E_2 - PGE_2). Inflammatory hyperalgesia was induced in male Wistar rats (6-8 weeks-old) after 1 (acute) or 14 (chronic) intraplantar injections of PGE_2 (100 ng/50 µL/paw). Neuropathic hyperalgesia was induced with 1 (acute) or 4 (chronic) intraperitoneal injections of paclitaxel (1 mg/kg). Rats were treated with either ODN antisense (30 µg/10 µL - intrathecal) or selective $P2X_4R$ antagonist,

PSB 12062 (1 mmol/5 µL - ganglionic) and mechanical hyperalgesia was measured with electronic von Frey. DRG were harvested to immunohistochemistry, immunogold and western blot. $P2X_4R$ expression was upregulated in paclitaxel- treated rats and the knockdown, as well as the antagonist treatment, reverted paclitaxel-induced neuropathic hyperalgesia but not PGE_2-induced inflammatory one. A-fibers are the main responsible for paclitaxel-induced pain once that, after desensitization of the C-fibers, neuropathic but not inflammatory pain was sustained. $P2X_4R$ were in neurons of both C- and A-fibers and in satellite cells; positive gold labeling was also detected in cytoplasm and plasma membrane of both neuron and satellite cells. These data suggest that prior $P2X_4R$ pathway activation in DRG contributes to the development and maintenance of neuropathic pain but might not be essential to inflammatory pain.

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EFFICACY AND SAFETY OF A RECOMBINANT SOLUBLE HUMAN THROMBOMODULIN (ART-123) IN REDUCING THE SEVERITY OF OXALIPLATIN INDUCED PERIPHERAL NEUROPATHY (OIPN): A PLACEBO-CONTROLLED, RANDOMIZED DOUBLE-BLIND STUDY

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Background and aims: OIPN is a common side effect in an oxaliplatin-treated patient and characterized by numbness, tingling and shooting/burning pain in the limbs. This was an exploratory trial investigating whether ART-123 reduced the severity of OIPN symptoms.
Methods: Patients with pStage II/III colon cancer planning adjuvant chemotherapy with mFOLFOX6 were randomized to the following 3 groups in a double-blind manner; placebo group (placebo on day1-3), 1day-ART group (ART-123 380U/kg on day1 and placebo on day2-3), and 3day-ART group (ART-123 on day1-3). Study drug was given intravenously for 30 min before oxaliplatin. NRS for hand and foot pain score and FACT/GOG-Ntx-12 (score range 0-48, lower values more severe) for symptoms of OIPN were evaluated at baseline, day1 and 8 of every cycle, and day15 and 43 of Cycle 12. The NRS and FACT/GOG-Ntx-12 scores in the investigational drug group (pooled ART groups (1+3day-ART)) and placebo group were assessed using mixed model repeated measure in a post-hoc manner.
Results: Eighty patients were randomized, and 79 (placebo n=28, 1day-ART n=27, and 3day-ART n=24) patients received study treatment and were analyzed. Ls-Mean NRS pain scores of hands at Cycle 12 in patients in Placebo and 1+3day ART groups were 4.3 and 3.3, respectively. Ls-Mean NRS pain scores of feet were 4.6 and 3.5, respectively, and Ls-Mean FACT/GOG-Ntx-12 scores were 28.8 and 34.2, respectively. Adverse events were consistent with the known safety profile of mFOLFOX6.
Conclusions: ART-123 shows promise in reducing the severity of OIPN without any major safety concerns (ClinicalTrials.gov identifier: NCT02792842).

eP176

PRELIMINARY RESULTS OF COMPARATIVE PROTEOMIC PROFILING OF SCIATIC NERVE, PLASMA AND CSF IN A RAT MODEL OF NEUROPATHIC PAIN

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Background and aims: Proteomics has been proven to support in-depth insight into the function of thousands of proteins and their variation in health and disease. Obtaining nerve tissue from humans is challenging. Therefore, there is a high need to identify pain relevant proteins in surrogate tissue like blood which is easy to obtain from humans. We have identified such proteins in a rat model of neuropathic pain.

Method: The data set has been obtained using an unbiased deep proteome analysis by advanced mass spectrometry. Samples from, Naïve, Sham and CCI animals from sciatic nerve, plasma and CSF have been collected. To identify the regulation between the treatment groups, significant proteins have been analyzed post-hoc using a t-test with the Bonferroni method for multiple-testing correction.
Results: Of the several regulated proteins found in sciatic nerve, plasma and CSF, 178 overlapping proteins have been identified to be regulated in nerve and plasma in the CCI vs. naïve group. In the CCI vs. sham group 256 overlapping proteins have been identified and in the sham vs. naïve group 18 overlapping proteins have been found.
Conclusions: The present study shows several regulated proteins in three different compartments and conditions. The observed protein alterations might be driven by induction of neuropathic pain. Interestingly, a remarkable overlapping panel has been found between sciatic nerve and plasma. Preliminary pathway analysis showed involvement of the complement pathway. The data set represents the basis for further evaluation of pain pathways and identification of new biomarkers and targets for pain.

eP177

THE ROLE OF MITOCHONDRIAL SIRT3 IN NEUROPATHIC PAIN

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Neuropathic pain is one of the chronic painful which affects large population worldwide. It was proven that ROS are implicated in the development and maintenance of chronic pain.
In particular, the enhanced ROS production alters the mitochondrial genome and proteome through a number of mechanisms, including the accumulation of the lipid peroxidation 4-HNE, in pathologic quantities near lipid-rich cellular membranes.
SIRT3 is a mitochondrial protein, its activity can reduce ROS levels by directly modulating key antioxidant enzymes, such as MnSOD. Here, we evaluated the role of SIRT3 in the maintenance of basal levels of reactive oxygen species in a model of chronic constriction injury (CCI) of the sciatic nerve.
Animals exposed to CCI of the sciatic nerve, received continuous infusion of antioxidants by mini-pump for 21 days. Hyperalgesia and allodynia were measured at different time points by specific test. We detected the level of acetylation and activity of SIRT3 of mitochondrial compartment in spinal cord, and we demonstrated the post-translational modulation on cysteine residues of SIRT3 by HNE.
We reported that neuropathic pain induced by CCI is associated to SIRT3 inactivation in the spinal cord of CCI treated rats and this event seems to be related to mitochondrial protein hyperacetylation. Removal of free radicals by antioxidants during neuropathic pain exerts anti-hyperalgesic effect together with inibition to hyperacetylation, lipid peroxidation and enhanced SIRT3 activity.
These findings demonstrate that deactivation of sirtuins is involved in hyperalgesia and allodynia and that activation of SIRT3 by antioxidants is beneficial during oxidative stress.

eP178

COMPARISON OF ANTINOCICEPTIVE EFFECTS PRODUCED BY HALOPERIDOL, BD-1063, GABAPENTIN AND TRAMADOL IN RATS WITH CHRONIC CONSTRICTION OF THE SCIATIC NERVE

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Background: Haloperidol shows a high affinity for sigma-1 receptors, and these receptors have been considered as a therapeutic target for the treatment of neuropathic pain, in this sense, the objective of this study was to compare the anti-hyperalgesic effect of haloperidol, BD-1063, gabapentin and tramadol in a model neuropathic pain.
Methods: Wistar male rats were employed and subjected to chronic constriction injury (CCI), 10 days after surgery the anti-hyperalgesic effect (von Frey test) after single-dose of haloperidol (0.018-0.18 mg/kg s.c.), gabapentin (10-100mg/Kg s.c.), BD-1063 (5.6-56.2 mg/kg s.c.) and tramadol (3.2-31.6 mg/kg p.o.) were tested.
Results: In all cases the anti-hyperalgesic effects increased in a dose-dependent manner. The time-course analysis shows that gabapentin (100 mg/kg) reached its maximum effect at 90 min after the treatment, producing an anti-hyperalgesic effect of 85.0 ± 3.4 %, whereas BD-1063 (56.2 mg/kg) produced their maximum effect at 30 min with 90.8 ± 2.7 %; haloperidol (0.18 mg/kg) at 30 min with 78.3 ± 4.7 %, and tramadol (31.6 mg/kg) at 30 min with 88.5 ± 6.2 %. These anti-hyperalgesic effects remained during 180 min of observation. Analyzing dose-response curves, Haloperidol, tramadol and BD-1063 exhibited similar efficacy to gabapentin. For its part regarding the analysis of pharmacological potency, we compare the ED_{50}: Haloperidol showed higher potency than BD-1063, tramadol and gabapentin.
Conclusion: These results suggest that haloperidol reached similar effects in comparison with gabapentin, BD-1063 and tramadol.

eP179

THE 8% CAPSAICIN PATCH IN THE CRANIOCERVICAL SCAR ALSO RELIEVES PAIN IN THE TRIGEMINAL AREA

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Background and aims: The 8% capsaicin patch is indicated in the treatment of localized Peripheral Neuropathic Pain (PNP).
Woman, 56 years old diagnosed with Neuralgia of Trigeminus nerve V1, V2, referred to the pain unit in 2009. The patient was treated for years for neuralgia with pharmacological and interventionist therapy with little success.
After suboccipital craniotomy, a change in the clinic of their pain was observed. The new pain pattern had the craniocervical scar as a generator focus and seemed to interact with the trigeminal area.
Given this scenario, the DN4 test and the „Diagnostic tool“ that confirmed PNP; we decided to try treatment with 8% capsaicin.
Methods: In April 2018 Qutenza was administered at the scar. The affected area measured 84 cm². Eva maximum 8, medium 4 and minimum 0. DN4: 7/10. Euroqol-5D: 0.2215 (moderate difficulty in mobility, personal care and daily activities, severe pain and anxiety / moderate.
Results:
· On the 7th day Eva: 0. Adverse effects include burning in the area for 24 hours that did not require rescue medication.
· After one month, there was no pain at the scar or trigeminal neuralgia. DN4 0, EVA 0, Euroqol- 5D: 0.5482 (slight difficulty in walking, no pain, no anxiety / depression).
Conclusions:
The 8% capsaicin patch was effective in alleviating the pain and quality of life of this patient without the side effects of conventional medication.

eP180

TOPICAL 5% LIDOCAINE MEDICATED PLASTER IN POST-SURGICAL NEUROPATHIC PAIN (PSNP) AFTER SPINE SURGERY: A RANDOMIZED CLINICAL TRIAL

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Background and aims: Post-surgical neuropathic pain (PSNP) following spine surgery is a common clinical problem. Pain recurs or persists at the site of surgery at least 3 months following surgical procedure.
This study assesses the efficacy of topical 5% lidocaine medicated plaster (LMP) in patients with PSNP after spine surgery,[1] using laser-evoked potentials (LEPs).
Methods: This single-blind, randomized, clinical trial was conducted from June 2017 to May 2018.
Inclusion Criteria:
- Pain after spinal surgery based on history, clinical examination, NRS ≥ 5, and DN4 >4.
- Allodynia.
- Pain lasting ≥ 3 months.
- Patients aged ≥ 18 years.

Exclusion Criteria:
- Neuropathy due to other diseases.
- Pain treatment in the previous 30 days.
- Contraindications to trial medication.

Patients received topical 5% LMP (n=19) or non-medicated placebo plasters (n=17) for 12 hours every day for 12 weeks.
Patients were followed up weekly evaluating NRS, DN4, quality of life (QoL), and LEPs at baseline and week 12.
Results: 36 patients met inclusion criteria. Pain score improved more in topical 5% LMP than in placebo group ($p < 0.05$), with improvement in LEPs and QoL. No serious adverse events were recorded.
Conclusions: Use of topical 5% LMP in patients with PSNP following spine surgery is a safe and effective analgesic therapy.
References:

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eP181

MENTHOL GEL FOR THE MANAGEMENT OF CHEMOTHERAPY-INDUCED NEUROPATHIC PAIN - A CASE REPORT

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Background and aims: Several drugs used in oncology may cause chemotherapy-induced peripheral neuropathy (CIPN). CIPN occurs in 58-78% of patients who receive eg. carboplatin and paclitaxel, and 1/3 of patients have symptoms 6 months after chemotherapy.
Recent interest on menthol in pain management has risen since 2002 when the menthol sensing channel transient

receptor potential melastatin 8 (TRPM8) was identified.
Here we present a case report where menthol-cream was used in the treatment of refractory CIPN pain.
Methods: A 49 years old women underwent debulking surgery for ovarian cancer and peritoneal carcinosis on 7/2017. After surgery, she had chemotherapy with carboplatin and paclitaxel. On 8/2018 she had no sings of recurrence of the cancer, but severe pain in the hands and feet. Ibuprofen, oxycodone-naloxone and venlafaxine provide only 30% pain relief. Her pain on NRS was on average 4/10, least 2/10 and most 6/10. Her pain interfere with several daily functions, mood and normal daily activities most severely affected.
She was prescribed menthol-cream (Ice Power®, Fysioline Ltd., Tampere, Finland) to be used 2-4-times a day.
Results: After 4 weeks use of menthol-cream she was able to stop other analgesics. On 12/2018, after 4 months use of menthol-cream, she had neither pain nor any other symptoms of neuropathy. Her life satisfaction (LS) on the 4-item LS-scale (4-20) had improved, score before menthol-cream was 8/20 and after it 6/20.
Conclusions: In consistent with other reports, in this case topical menthol was highly effective on CIPN.

eP182

ANALGESIC IMPACT OF TREATMENT WITH REPEATED CAPSAICIN PATCHES IN LOCALIZED NEUROPATHIC PAIN

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Background and aims: Localized neuropathic pain (LNP) is associated with an important morbidity and a complex pharmacological management, with multiple adverse effects and poor adherence. The aim of this study was to analyse the evolution of pain and the changes in the number of patches used for analgesia in patients treated with capsaicin 8% patches.
Methods: An observational study was performed in patients with LNP treated with capsaicin 8% patches. The variables analysed were analgesic effectiveness, improvement in the neuropathic component of pain and changes in the number of patches used. Adverse effects and patients‘ degree of satisfaction were also evaluated.
Results: Forty patients (65% women) were included in the study. The mean age was 47±12.2 years, with an average pain evolution of 88±65 months. The mean baseline of continuous pain significantly improved from the beginning (VAS 6.3±1.7) to the end of the treatment (VAS 4.1±1.9), and a clear improvement in the neuropathic component of pain was observed ($p< 0.001$). Significant differences ($p< 0.01$) were also found in the number of patches used at the beginning (1.2±0.8) and at the end of the therapy (1±0.7). The adverse effects observed were erythema (82%), burning (72%), stinging (15%) and pruritus (7.5%), generally of mild intensity. Over 72% of patients were satisfied with the treatment.
Conclusions: In patients with LNP, treatment with repeated capsaicin 8% patches was associated with adequate pain relief, decrease of the neuropathic component and progressive reduction in the number of patches used.

eP183

ACUPUNCTURE THERAPY FOR NEUROPATHIC PAIN IN AXONAL SENSORIMOTOR POLYNEUROPATHY: A CASE REPORT

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Background and aims: We will describe a case with peripheral neuropathic pain succesfullly treated with electroacupuncture therapy in combination with conventional pharmacologic treatment.
62-years old male patient came to Pain Clinic with progressive numbness in the feet with painful hyperesthesia in the

soles, burning, painful pins and needles sometimes like an electric - shock pain in both feet and soles. His pain was escalating with physical activity and in sleep.
VAS scale was 6-8, PD (Pain detect) questionnaire showed 20 points, NPSI(Neuropathic Pain Symptoms Index) 74%. Neurological bedside examination showed spontaneous ongoing pain,paroximal pain characteristic , evoked pain mechanical hyperalgesia, paresthesia and dysesthesia. EMG showed signs of axonal sensorimotor polyneuropathy. Punch biopsy of skin showed reduced number of intraepidermal nerve endings. Serologic and laboratory examination are in normal range. Conventional treatment with pregabalin, amytriptilin and alfa-lipoid acid alone was not successful.
Methods: We decided to introduce acupuncture therapy - electroacupuncture- with acupuncture protocol, applied to acupuncture points in close association with large nerves in the feet,10 electroacupuncture sessions with no interruption of pregabalin , tapentadol and alfa lipoic acid.
Results: After electroacupuncture therapy NPSI score was significantly lowering (during 6 months period) with decrease in both spontaneous and evoked neuropathic pain.
Conclusion: Individual approach to the patient and modification of conventional pharmacotherapy with complementary methods such as electroacupuncture are resulting in improvement of health and reduction of neuropathic pain in our patient.

eP184

DRY NEEDLING OF MYOFASCIAL TRIGGER POINTS UNDER ULTRASOUND GUIDANCE REDUCE THE SYMPTOMS OF PERIPHERAL NEUROPATHY

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Neuropathic pain is a widespread problem, require continuous treatment, development effective therapeutic approaches for personalized management is important.
The aim was to determine efficacy of treatment neuropathic pain via dry needling (DN) of myofascial trigger points (MTrP) under ultrasound (US) guidance.
We included 28 patients, 9 males and 19 females, aged 18-72 years (average 54 years) with clinically diagnosed chrobnic neuropathic pain (post-traumatic nerve injury, postoperative scars, compressing nerves, diabetic neuropathy, postherpetic neuralgia) over 3 month: in wrist (median, ulnar and radial neuropathy) - 17 patients; in foot (tibial, peroneal neuropathy) - 7 patients; in arm and shoulder (brachial plexus) - 4 patients. All patients underwent general diagnostic examination including MRI, laboratory, neurologic, orthopedic tests, ultrasound survey using linear 12 Mhz ultrasound at the levels of predicted nerve injury. Patients received DN of MTrPs under ultrasound guidance according to clinical examination, referred pain pattern with focus on potential nerve entrapment area.
After 7 days, VAS shown pain improvement from 7.7 to 2.5; LANSS from 15 to 4. In diabetic and postherpetic neuropathy cases we obtained similar results comparing to the rest of patients ($p< 0.05$). US imaging demonstrated improvement of neuropathy signs:decrease fascicles diameter from 1.8 mm to 0.9 mm, data correlated with self-assessment pain decrease ($r>0.8$).
We concluded that dry needling under US guidance is an effective method for decrease pain, ameliorate symptoms and treatment neuropathy of different locations and etiology. These data might allow to reconsider nerve compression as revocable mechanism and suggest novel treatment and prevention algorithms.

eP185

ANALGESIC EFFECTS OF CNIDIUM OFFICINALE EXTRACTS ON POSTOPERATIVE, NEUROPATHIC AND MENOPAUSAL PAIN IN RAT MODELS

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Background and aims: Unmanageable and long-lasting pain is one of the principal causes of poor quality of life, which is why many researchers have been looking for novel materials to lessen pain. *Cnidium officinale* have been reported to exhibit the pharmacological efficacy in various disorders. However, little has been reported on its role as a pain-killer. In this study, we investigated the pain-relieving efficacy of *C. officinale* extracts (COE).
Methods: In this study, we investigated the pain-relieving efficacy of COE in various *in vivo* pain models; a postoperative pain model, a neuropathic pain model, and a menopausal pain model. Hyperalgesia was confirmed by a mechanical withdrawal threshold assay and ultrasonic vocalization call analysis. Rats were treated with vehicle or COE at 30, 100 and 30 mg/kg orally.
Results: Administration of COE attenuated hypersensitivity in all of postoperative, neuropathic, and menopausal pain models. In addition, application of COE inhibited the induction of the pro-inflammatory cytokines and calpain-3 on dorsal root ganglion neurons in the SNI rat model. Treatment of ferulic acid, which was found as one of the components of COE from HPLC analysis, alleviated nociceptive behaviours.
Conclusions: Our findings suggest that ferulic acid from COE is an active compound and COE is a potential source of phytomedicine for pain relief by inhibiting process of inflammation.
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eP186

DORSAL ROOT GANGLION NEURONS ASSEMBLE AN AXON INITIAL SEGMENT-LIKE STRUCTURE THAT MAY MODULATE THEIR EXCITABILITY IN NEUROPATHIC PAIN

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Most CNS neurons have a multipolar morphology and a specialized structure - the axon initial segment (AIS), which generates action potentials, maintains neuronal polarity and modulates excitability *via* structural alterations. In contrast, dorsal root ganglion (DRG) neurons have a pseudounipolar morphology and it is not clear whether these neurons *in vivo* possess an AIS. We established an *in vitro* model in which DRG neurons recapitulate their physiological morphology and assemble an AIS-like segment at the stem axon enriched in the AIS-specific protein ankyrin-G. This prompted us to investigate the existence of this structure *in vivo*. Strikingly, we observed by immunofluorescence that, during embryonic development, the proximal stem axon of mouse DRG neurons becomes enriched in ankyrin-G and voltage-gated sodium (Nav) channels. However, the physiological role of this AIS-like segment is not clear, as action potentials are typically initiated in the peripheral axon terminals of DRG neurons. We are currently unraveling the contribution of this structure to the DRG neuron hyperexcitability in neuropathic pain, using the chronic constriction injury (CCI) model. After CCI, we observed that the AIS-like region of DRG neurons is

located in a more proximal position and are now investigating possible alterations in the distribution of Nav channels. To understand its importance we are also performing patch clamp recordings and calcium imaging in isolated DRGs, and developing mouse models lacking ankyrin-G in the DRG AIS-like segment. Given the importance of these AIS-like structures in modulating DRG neuron excitability, our novel findings may have critical implications in pain management.

eP187

POTENTIAL PREDICTIVE BIOMARKERS FOR CETUXIMAB IN THE TREATMENT OF NEUROPATHIC PAIN -EXPLORATORY BIOMARKER ANALYSIS FROM THE NOTOPAIN TRIAL-

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Background and aims: Epithelial growth factor receptor inhibitors (EGFR-Is) may alleviate neuropathic pain (NP).[1] The aim of the proof-of-concept trial NoTOPain, was to demonstrate a clinical signal of efficacy for the treatment of NP with the intravenous EGFR-I cetuximab.[2] Here, we report an exploratory biomarker analysis.
Methods: Fourteen patients with severe, chronic, therapy-resistant NP due to compressed peripheral nerve (CPN) or complex regional pain syndrome (CRPS) were treated with cetuximab and placebo, using a randomized, double-blind, placebo-controlled, cross-over design. Responders for this biomarker analysis were defined as patients with a ≥ 50% pain reduction on any day between days 2 and 15 following blinded cetuximab.
Pretreatment levels of 52 plasma proteins were analyzed with ELISAs and multiplexed immunoassays. Difference in mean biomarker levels between responders and non-responders was compared with t-tests, unadjusted for multiplicity.
Results: Two participants with insufficient baseline pain scores (< 4) were omitted from the final analysis. In the different neuropathic pain entities, four of six CRPS and three of six CPN patients were considered clinical responders.
Selected markers appear to be of particular interest in the context of EGFR-I and NP.

Biomarker	Absolute difference of biomarker level Non Responder (n= 5) / Responder (n= 7)	p-value
BDNF	6.97 ng/mL	0.069
MDC	106.60 pg/mL	0.082
MIP1_beta	-33.98 pg/mL	0.091
MMP9	141.00 ng/mL	0.105
NRG2	8.40 ng/mL	0.073
SCF	-52.60 pg/mL	0.040

Difference in baseline biomarker levels according to response to blinded cetuximab.
BDNF=Brain-Derived Neurotrophic Factor; MDC=Macrophage-Derived Chemokine; MIP-1 beta= Macrophage Inflammatory Protein-1 beta; MMP-9=Matrix Metalloproteinase-9; NRG2= Neuregulin-2; SCF= Ligand for the receptor-type protein-tyrosine kinase KIT/Stem Cell Factor

[Table 1]

Difference in baseline biomarker levels according to response to blinded cetuximab.
Conclusions: Potential predictive biomarkers for cetuximab in the treatment of NP should be analyzed further.

eP188

CAPSAICINE 8% PATCH PROTOCOL - AUDIT 1 YEAR AFTER IMPLEMENTATION

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Background and aims: The treatment of neuropathic pain is difficult. Oral pharmaceuticals have significant side effects and treatment efficacy tends to be modest. The use of topical analgesics reduces the potential for systemic side effects and allows direct application of medications to the area of pain. Capsaicin 8% topical patch is labeled for treating localized neuropathic pain. Capsaicin is a natural spicy substance and decreases pain sensation by reducing transient receptor potential vanilloid 1 expression and decreasing the density of epidermal nerve fibers in the application area. It's safety and efficacy has been demonstrated in open-label trials for up to 12 weeks. Our aim is to audit the implementation of Capsaicin 8% protocol in our Pain Unit after 1 year.
Methods: Qualitative and quantitative analysis of medical records of all patients treated with Capsaicin 8% was performed 1 year after protocol implementation.
Results: 12 patients were treated with topical capsaicin during this period: 4 male, 8 female, average age 45 (+/-12) years. 3 were treated twice, the remaining only once. Pre-emptive analgesia was given to 6 patients; 1 developed a local minor complication. Revaluation of treatment effectiveness was performed 10 times, not registered in 1 case. A complete response to treatment was achieved twice, temporary relieve twice and 5 patients had no response. Of our population, only 8 had paper records and 7 informatic ones.
Conclusions: This 1 year follow up made us aware that our protocol needs improvement and our records must be standardized.

eP189

QUTENZA FOR A NEUROPATHIC THORACOLUMBAR PAIN AFTER VERTEBROPLASTY

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Background: Percutaneous vertebroplasty (PVP) is a therapeutic-interventional radiologic procedure that involves injection of bone cement into a vertebral body. The complication rate of PVP is low, but cement leakage or at-level neuropathic pain could appear.
Method: A 52-year-old woman with a dorsal intractable pain radiating over both hemithoraxes was referred to the Pain Clinic for further evaluation and management. Two years earlier she experienced a house accident, and was diagnosticated of T6-T7 vertebral fracture. She underwent a vertebroplasty procedure of T6 vertebral body, and afterwards she developed neuropathic pain. MRI showed the vertebroplasty in the T6 vertebral body and leakage of cement in disk T6-T7, and also into the anterior epidural space T5- T6. At clinical examination there were no neurologic deficits; she had severe pain on both hemithoraxes at palpation and intensified in some positions like sitting or walking. Sensitivity exam showed hyperalgesia in T6-T7 metamere, with erythema, not allodynia.
She tried several medications, apart from trying several local lumbar nerve blocks, none of which improved her pain. We proposed to apply capsaicin 8% patches. A capsaicin patch was applied in the left painful area, according to the protocol.
Results: after 1 month, the patient's pain decreased considerably (DN 4: initial 6/10, final 1/10; VAS: initial 8/10, final 4/10) and the severity of the effects in the daily life was reduced.
Conclusions: capsaicin patches are a good option for neuropathic peripheral pain, which can be located and delimitated, if the first line doesn't work.

eP190

UNCOVERING THE MODULATION PROCESSES OF MECHANICAL ALLODYNIA INDUCED BY MECHANICAL STIMULATION ON PERIPHERAL NERVOUS SYSTEM

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Background and aims: Neuropathic pain is linked to changes on morphology and genes expression of the Peripheral Nervous System (PNS) cells and mechanical allodynia is a common phenomenon among patients with neuropathic pain. The selective repeated tension of the PNS also known as neurodynamic treatment (NDT) can be successful in pain modulation in chronic and acute neuropathic pain models. Nowadays still lack knowledge on the biological effects involved and no standard protocol is available. The study aim to assess the effects of NDT on PNS cells in order to develop a protocol of treatment for animal models of acute and chronic neuropathic pain.
Methods: Repeated 4 arms randomized controlled trials were performed using *in vitro* models of sensitive and motor neurons (50B11 and NSC34). Protocols were tested starting from those reported in literature and refined by previous trials results. Experiments were performed seeding cells on pre-coated silicone membranes and repeated tension protocols were administered using a bioreactor. Morphological, Genetic and protein expression analysis were performed.
Results: A standardized protocol of NDT was possible to be defined. Preliminary results have shown that NDT seems to have no side effects and can affect cell differentiation and avoids apoptosis. Interestingly, a protocol of NDT downregulates the expression of TLR2, a gene linked to mechanical allodynia.
Conclusions: NDT can promote regeneration processes in sensory and motor neurons inducing an anti-allodynic effect. All variables on which the NDT protocol was define still be very suitable to be translated in clinical settings.

eP191

MAKING QST A PAIN BIOMARKER: WHAT THE PROPERTIES OF STIMULATION ARE NEEDED TO SEPARATE PAINFUL FROM PAINLESS PERIPHERAL NEUROPATHY

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Clinical biomarkers of ongoing pain in painful polyneuropathies are lacking. The responsiveness of epidermal C and Aδ nociceptive fibers to cutaneous thermal and mechanical stimulation in quantitative sensory testing (QST) is not reliably associated with ongoing neuropathic pain[1].
We developed a diode laser, fiber-type specific, selective stimulation (DLss) technique that can selectively simulate either C or Aδ fibers[2]. DLss radiation can access and homogeneously heat nerve fibers either in the superficial or deep sub-epidermal skin layers, with stimulation depth allowing access to mechano-insensitive small fibers[5].
We previously demonstrated that spontaneously active C-fibers are sensitized to heat in patients with diabetic and chemotherapy-induced polyneuropathy, and the ratio of Aδ/C fiber pain threshold is significantly different between these patients and healthy controls[2-4].
Here, we applied the DLss Aδ and C-fiber tests to patients with painful chemotherapy-induced peripheral neuropathy (CIPN, N=13) and controls who received similar chemotherapy regimen but did not develop painful CIPN (N=7). Criteria for painful CIPN group included DN4 score >4, and pain severity >3 on 0-10 numerical rating scale.
DLss stimulation was applied to the dorsal foot to determine pain and detection thresholds for C and Aδ fibers. Subsequently, QST was performed to determine warmth, cold, mechanical, and vibration detection thresholds, and heat/cold pain thresholds. While QST measures were not different between groups, the Aδ/C ratio of detection thresholds in the painful CIPN (2.33) and control group (1.58) were significantly different ($P < 0.04$, t-test).
These preliminary data suggest that DLss may differentiate between painful and painless peripheral neuropathy.
Keywords: neuropathic pain; chemotherapy-induced painful neuropathy

eP192

USE OF THE NON-MEDICATION ON THE TREATMENT OF NEUROPATHIC POST-TRAUMATIC PAIN IN THE LIMBS

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Background and aims: The effect of the combination of the physiotherapy (low-frequent variable magnetic field, electrical stimulation) and of the acupuncture on the patients having neuropathic post-traumatic pain in the limbs was investigated.
Method: 96 patients aged from 25 to 65 (39 females and 57 males) having neuropathic post-traumatic pain in the limbs for 5 - 24 days after injury were observed. All patients were examined for MRI, ultrasound, electroneuromyography, examination by a traumatologist and neurosurgeon. The pain was examined and measured according to the visual analogue scale (5 - 8 points). The patients were divided into two groups. The first group (68 patients) received in addition acupuncture (individual points) and physiotherapeutic complex with low-frequent variable magnetic field and electrical stimulation treatment on the projection of pain. Every procedure exposure was 12 - 15 min. The complete course was 10 - 12 procedures. The second group (control, 28 patients), received only the basic medication (non-steroid anti-inflammations and anticonvulsants).
Results: The pain intensity of the patients in the first group was reduced after 10 - 12 days of treatment (65.3% patients) compared to the control group, where pain reduction after 20 - 22 days of treatment (31.6% patients); p< 0,01.
Conclusion: The addition of the non-medication therapy (combination of acupuncture, low-frequent variable magnetic field and electrical stimulation) to the treatment of acute neuropathic post-traumatic pain in the limbs resulted in earlier remission.

eP193

ANALGESIA AND SENSORY DEFICIT FOLLOWING PULSED RADIOFREQUENCY (PRF) FOR PERSISTING PAIN AFTER BREAST CANCER TREATMENT (PPBCT)- RESULTS OF A SIX YEAR (PILOT) STUDY

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Background: A substantial number of women remain refractory standard treatment of PPBCT[1]. PRF has been reported to relieve PPBCT in case series and retrospective analyses[23]. The intention of the study was to investigate the effect of PRF on pain-intensity and sensory disturbances of PPBCT.
Methods: In a double blind RCT, 28 patients with neuropathic PPBCT >6m, >50% reduction of pain-intensity after test-blocks of intercostal nerves (ICN), received paravertebral PRF and lidocaine or SHAM plus lidocaine. Endpoints were the intensity of PPBCT with 90°shoulder abduction and QST parameters 3w after treatment.
Results: The median pain with 90°abduction of NRS 5.5 (4/7) (PRF) and 6 (3/8) (SHAM) decreased significantly with -4 in both groups after three weeks and this effect was sustained until 1 y after treatment with no group differences -2 (-4 /-2) (PRF) and -4 (-7 / -2) (SHAM) (table 2).
Before treatment QST revealed significantly increased thermal and mechanical detection and pain thresholds of the painful side compared with the mirror image side. Pain sensitivity in deep tissue and pain summation were enhanced with signs of dysesthesia and paradoxical heat sensation. After treatment QST measures did not change significantly, but detection thresholds, WUR and PHS showed a trend towards normalisation.
Conclusions: Paravertebral ICN treatment with PRF and lidocaine significantly reduced the intensity of PPBCT

after 3 w and one year. QST revealed deafferentiation with subtle signs of central sensitization and (peripheral) sensitization. After treatment, this pattern did not change significantly, confirming our retrospective results reported earlier [2].

eP194

CAPSAICIN 8% PATCH IN TRIGEMINAL NEURALGIA: CASE REPORTS

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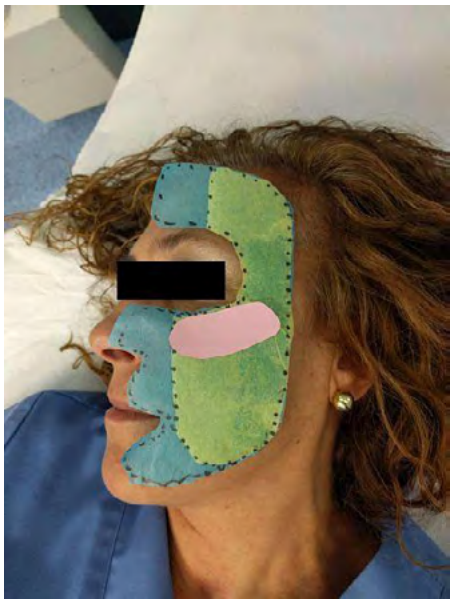
Capsaicin has a verified analgesic effect in post herpetic neuralgia, diabetic neuropathy, surgical neuropathy and other clinical pictures of peripheral neuropathic pain.
Trigeminal neuralgia (TN) is one of the most common neuropathic pains. Different mechanisms are involved with the onset and maintenance of pain both at peripheral and central levels.
We report two cases of TN, idiopathic and post-herpetic:
The first patient presented lancinating paroxysms and burning-like component. Also intense allodynia, hyperalgesia to cold and wind.
Given the ineffectiveness of medical treatment, it is decided to place capsaicin patch in the affected area, with good resetting reducing the pain. The second case is a postherpetic neuralgia with pain in first branch that also does not respond to medical treatment. Allodynia persists after blocking the sphenopalatine ganglion so we decided to use topical capsaicin.
After this, the symptomatology remains only on the left ciliary region. Both cases effectively responded.
Efficacy was greater in patient 2, in which the patch was applied two months from the onset of pain symptoms. In both cases concomitant medication could be reduced.
The significant reduction in the pain area in both cases, observed after initial application, coincides previous studies.
Capsaicin 8% patch has been successfully used for treatment of symptoms of peripheral neuropathic pain either alone or in association.
The existence of hyperalgesia to cold and on injection appear to be predictive factors of response to the patch as occurs in our reported cases.



[First Patient]

eP195

THE PATIENT JOURNEY IN PAINFUL DIABETIC PERIPHERAL NEUROPATHY (PDPN): REVEALING GAPS BETWEEN GUIDELINES AND REALWORLD PRACTICE

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Background and aims: PDPN is a major health burden. Guidelines recommend stepwise pharmacotherapy involving first-line antidepressants/antiepileptics followed by opioids and topical/local agents, and appropriate timely referral to specialist pain management. We conducted qualitative research to explore how PDPN is treated in clinical practice to deliver a detailed picture of the patient journey.
Methods: Interviews of 183 healthcare professionals (HCPs: pain specialists [PS], non-pain specialists, primary care physicians [PCPs], pain nurses) and 70 patients (with PDPN, post-herpetic neuralgia, postsurgical peripheral neuropathic pain [PNP], cancer-related PNP; for ≥12 months) in Europe (France, Germany, Italy, Netherlands, Spain).
Results: PDPN was predominantly treated by the primary manager of diabetes (PCP or diabetologist) as part of general diabetes management, including cycling through analgesia options. The patient was responsible for making appointments if needed. Referral to specialists was rare, owing to 3 factors: HCPs accept PDPN as part of diabetes, want to retain the patient within their care, and often think PS would not offer other options. Referral, usually within 6-12 months, was often a last resort when pain persisted despite multiple treatment lines. The impact of poor pain management was marked by patient distress and eventual resignation/acceptance of the condition. Essentially, the pain became normalised. Disconnects in HCP perceptions of patient education/awareness, goals of treatment and treatment compliance were identified.
Conclusions: PDPN is frequently poorly managed or ignored. Patients with PDPN are rarely referred to PS, often owing to misconceptions among HCPs.

eP196

CHEMOTHERAPY INDUCED PERIPHERAL NEUROPATHY AND THE RESPONSE TO DIFFERENT TREATMENT IN A SPECIALIST CANCER CENTRE

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Background: Chemotherapy-induced peripheral neuropathy (CIPN) can cause persistent pain and disability in cancer survivors.[1,2] Evidence for effective management for CIPN is lacking.[3] Pharmacotherapy options include anti-neuropathic agents and/ or topical therapies. We provided a descriptive analysis of the change in different outcome measures in treatment of CIPN patients at the Royal Marsden Hospital (RMH).
Method: CIPN patients attending RMH Pain Clinics between January 2106 and December 2018, who consented to providing data through a bespoke tablet interface (Research Ethics Committee approved) were divided into three treatment groups; anti-neuropathics, topicals or combined therapy (anti-neuropathic and topicals). Average change in mean scores of outcome measures [Brief Pain Inventory (Symptom severity; SS and Interference severity; IS) and Hospital Anxiety and Depression Score; HADS] before and after treatment were analyzed. Patient Satisfaction Scores (%) after treatment were also measured.
Results: Forty three CIPN patients were included. Thirty were treated with combined therapy, 4 with anti-neuropathics and 9 with topicals.

	SS before treatment, mean average	SS after treatment, mean average	Percentage change (%)	IS before treatment, mean average	IS after treatment, mean average	Percentage change (%)	HADS before treatment, mean average	HADS after treatment, mean average	Percentage change (%)
Anti-neuropathic group (n = 4)	4.6	3	35	3.8	2.2	42	11.8	12.5	6
Topicals group (n = 9)	5.1	5.1	0	4.2	4.5	7	18.3	15.9	13
Combined group (anti-neuropathic + topicals) (n = 30)	5	4.8	4	5.4	4.5	17	17.6	17.1	3

[Outcome measures and Patient Satisfaction Scores before and after treatment with and without anti-neuropathics in CIPN patients]

Conclusion: The average reduction in SS and IS scores are greatest in the anti-neuropathic group, while greatest improvement of HADS seen in the topical group. The smaller number of patients in anti-neuropathic and topical groups compared to combined group may account for difference in changes. Overall, high patient satisfaction is seen in all groups (>80%).

eP197

A PILOT STUDY INVESTIGATING WHETHER QUANTITATIVE SENSORY TESTING ALTERS FOLLOWING TOPICAL HIGH CONCENTRATION CAPSAICIN TREATMENT IN PATIENTS WITH NEUROPATHIC PAIN

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Background and aims: Neuropathic pain is a common disabling condition and is often difficult to treat due to its heterogeneity of its aetiologies. Capsaicin, a component of chilli peppers is a natural ligand of the transient receptor potential vanilloid 1 (TRPV1) channel. High concentration transdermal capsaicin (Qutenza, 8% patch) was introduced and licenced to treat a diverse group of neuropathic pain disorders. Quantitative sensory testing (QST) is a psychophysical test that investigates the patients‘ functional state of the somatosensory system. To evaluate whether QST detects a change in pain response in patients receiving topical high concentration capsaicin treatment.
Methods: 20 patients will be recruited to receive routine application of capsaicin 8% patch (Qutenza, Grünenthal GmbH, Germany). The patients are asked to come into clinic to have QST and questionnaires measured at baseline, 3 weeks and finally at 3 months following patch application.
Results: Patients with neuropathic pain demonstrated loss of CPM at baseline. A “normal‘ CPM was observed at 3 weeks and this was maintained. PPT‘s showed a significant improvement from baseline. Patients also reported a similar magnitude of improvements in the completed questionnaires.
Conclusions: The central sensitisation response particularly ‚dynamic responses‘ to Capsaicin has not been reported before. This is the first study demonstrating improvement in peripheral and central sensitization as measured by QST in patients with neuropathic pain following treatment.

eP198

INTRAVENOUS LACOSAMIDE AND NEUROPATHIC PAIN

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Background and aims: Herpes zoster virus (VHZ) is an infection whose symptom is neuropathic pain, usually limited to a dermatome. Among the treatments used, stand out oral antiepileptics and topical capsaicin. Lacosamide, available intravenously, is an antiepileptic that can be used for neuropathic pain (Ziegler et al., 2010; Greef et al, 2109). We provide our experience on the use of lacosamide iv in a patient with herpes zoster in which oral or topical administration of drugs was not possible.
Methods: A 78-year-old woman admitted to the ICU for septic shock after several intestinal suture dehiscence. Multi-organ failure in recovery. The oral administration is not possible, and we do not have topical formulations. On the 25th day in the ICU, she started with pain, showing herpes zoster on the right side, very close to the edge of the laparostomy (scale EVAS 8/10). Paracetamol 1g and metamizole 2g are administered, being insufficient. Opioids are avoided by presenting paralytic ileus (scale EVAS 8/10). After 48h, lacosamide 100 mg / 12h i.v. is administrated.
Results: After 5 days, the patient reported less pain (EVA 2/10).
Conclusions: Lacosamide is shown as an effective and safe alternative in the management of intra-hospital neuropathic pain, presenting rapidity of action and good tolerability, given its pharmacokinetic profile and without relevant interactions.

PHANTOM LIMB PAIN

eP199

PAIN AND ITS IMPACT IN MUSCULOSKELETAL TUMOR LOWER LIMB AMPUTEES

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Background and aims: Pain syndromes can influence the rehabilitation process of prosthetic fitting and its abandonment following amputation of lower limbs. Few studies exist in the musculoskeletal tumor lower limb amputee population evaluating the prevalence of phantom limb pain, residual limb pain and phantom sensation and their influence in prosthetic abandonment, return to previous activities or rehabilitation. This was the aim of this study.
Methods: This is a retrospective study based on medical records and telephone interviews of lower limb amputees due to musculoskeletal tumors between 1999 and 2016, treated by the Orthopedic Oncology Group of the Hospital das Clinicas da Universidade de Sao Paulo. A total of 222 patients were included. Data obtained were: gender, age, activity previous to and after amputation, rehabilitation time, prosthetic abandonment, phantom limb sensation and phantom limb pain, residual limb pain and contralateral limb pain.
Results: Out of the 222 patients,11,3% had residual limb pain, 15,3% had contralateral limb pain, 78.8% had phantom limb sensation, and 4 patients had phantom limb pain.
Residual limb pain, contralateral limb pain and phantom limb pain were correlated to protheses abandonment. Only 10,5% of the patients that had phantom limb sensation abandoned prosthetic use. Pain syndromes did not influence return to previous activity after amputation. Only phantom limb pain correlated to longer rehabilitation process.
Conclusions: Residual limb pain, contralateral limb pain and phantom limb pain influenced prosthetic abandonment but did not influence return to previous activities. Controlling phantom limb pain could reduce the time of rehabilitation process.

eP200

PHANTOM LIMB PAIN: PRESUMABLE MECHANISMS OF EMPATHO-TECHNIQUE USAGE

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Long-term monitoring of patients evidenced that Phantom Limb Pain (PLP) is correlated with triggers of various nature. Often the PLP duration can range from several hours to several years. During the chronisation of the pain, the nociceptive system is known to activity dominate over activity of antinociceptive system, and the pathological excitation focus develops and the pathological determinant appears in the brain. This is a part of pathological system and it manifests itself in various symptoms including PLP.
Objective: to assess the Empatho-techique efficiency for patients suffering from PLP and to describe its presumable mechanisms.
Materials: the research was carried out on 135 patients suffering from PLP (83 men and 52 women aged 25 to 74). Visual analogue pain scale was used for PLP intensity assessment before and after each session of Empatho-technique which was used for PLP elimination. STATISTICA v10.0 program was used.
Results and discussion: before the first “Empatho-technique” session, the intensity of PLP (6.58±0.19) level corresponded to strong level. After the first session, the intensity of PLP (2.62±0.09) significantly ($p< 0.01$) decreased and corresponded to the level of slight pain. Before the final session, the intensity of the PLP (1.76±0.09) corresponded to the level of light pain. After the final session, patients assessed their levels of PLP (0.98±0.04) as “absence of pain” or “slight discomfort”. Thus, grounding on the received results, we can assume that the ‚Empatho-technique” method neutralizes the pathological excitation focus, inactivates the pathological determinant and increases the inhibitory effects of antinociceptive system.

eP201

NEUROPHYSIOLOGICAL CORRELATES OF SENSORIMOTOR CORTICAL GATING EFFECT WITH THE MIRROR BOX (MB) PROCEDURE: AN EEG PILOT STUDY

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Background and aims: Moving our limbs when they receive a painful stimulation is a common action to relieve pain. This happens because the motor cortex inhibits the neighboring somatosensory cortex. This phenomenon is known as sensorimotor cortical gating effect. The aim of this pilot study is to test whether an illusory movement, provoked by a mirror, can activate the motor cortex such as to induce the inhibition of the painful information processing on the somatosensory cortex, as revealed by a lower alpha event-related desynchronization (ERD).
Methods: Healthy subjects performed auditory triggered right index finger movements in the mirror box to induce the illusion of the left finger movement. After 100ms from the auditory cues, electrical painful stimuli were delivered on the left index finger (out of their gaze). In the control condition, subjects performed the task without the mirror. The related pain sensation was assessed using the VAS scale. The electrical cortical activity has been recorded using a 64-channels EEG system.
Results: This study is under execution and when fully executed, it may show a reduction of alpha ERD both in the motor and somatosensory cortex as well as lower pain rates on VAS scale, reflecting the interaction and therefore the cortical gating effect.
Conclusions: This pilot study aim to investigate the mechanisms underlying the possible pain relief exerted by illusory movements. This could be relevant for syndromes that use the Mirror Box therapy, such as the phantom limb pain.

VASCULAR PAIN

eP202

SPINAL CORD STIMULATION ON THE TREATMENT OF RAYNAUD´S DISEASE

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Raynaud´s disease is a vasospastic disease affecting distal vessels. The Raynaud phenomenon can be subdivided into primary and secondary. The primary form occurs without any obvious cause .The secondary form is associated with autoimmune diseases and peripheral vascular disease .
Therapeutic approaches include recurrent amputation, sympathetic nerve block, surgical sympathectomy and spinal cord stimulation (SCS). This case describes use of SCS in severe ischemic pains with Raynaud´s Disease.
A 35-year-old female patient followed with Raynaud‘s disease for 2 years was admitted to our outpatient clinic complaints of coldness, pallor, pain and numbness in both of her hands.
On examination, cyanotic discoloration, ulcers and dystrophic changes of the nails were detected. The patient who did not respond to the medical treatment received 2 times diagnostic stellate ganglion blockage, 2 times neurolytic stellate ganglion blockage and 2 times stellate ganglion radiofrequency thermocoagulation. Despite the interventional procedures, ulcerative lesions and pain control could not be achieved. Right cervical SCS was applied with the aim of providing permanent pain control.
In the 6 months follow-up, VAS score was 4 (pre-op: 9). Digital ulcers showed a significant regression. During the 1-year follow-up, the patient presented similar complaints in the left hand and left cervical SCS was applied.
There have been important debates use of spinal cord stimulation in ischemic limb disease. SCS definitely affects peripheral vasoconstriction and should therefore be effective in vasospastic diseases such as Raynaud´s Disease. We demonstrated effective use of cervical SCS in this case of severe ischemic limb disease.

VISCERAL PAIN

eP203

NON-INVASIVE TREATMENT OF ADHESION-RELATED CHRONIC ABDOMINAL AND PELVIC PAIN AFTER SURGERY: A SYSTEMATIC REVIEW

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Background and aims: Chronic abdominal pain after abdominal surgery negatively impacts quality of life in millions of patients. Adhesions are a common cause of pain after surgery but diagnosis is invasive, and operative treatment by adhesiolysis controversial. Little however is known about optimal conservative treatment of adhesion related pain.
Methods: A search was conducted in Pubmed, Embase and Central by two independent researchers. Data extraction and analysis of quality were done by these researchers independently.
Results: Searches identified 3022 unique citations. 4 were included in this review.
In a small randomized trial pregabalin significantly reduced pain compared to placebo ($p< 0.0024$). Half of patients received side effects of pregabalin.
In one cohort study, sacral nerve modulation was provided to all patients with a history of pelvic surgery and chronic pain, with successful reduction in pain in 47%. No complications were reported.
Two case reports, presented abdominal plane neuron stimulation and soft tissue mobilization as a treatment for adhesion- related pain.

Conclusions: There is very little literature on treatment of adhesiolysis by other means than operative adhesiolysis. Pregabaline and nerve modulation seem promising in small cohorts. With increasing evidence of adhesions as a separate entity causing chronic pain, and new developments in non-invasive diagnosis of adhesions; research in this patient group is becoming increasingly relevant.

Study	Patients	Age	Pain duration	Pain score	Improvement	Time of treatment	Treatment	Follow up	Loss to follow up
Silverman et al, 2012	N= 18	26-77y	>3 months	Likkert-scale mean Drug 6.15 Placebo 5.8	Placebo 4,67 Drug 4,47	12 weeks	Placebo vs Pregabalin 150mg	12 weeks of treatment	8 patients
Martelluci et al, 2011	N = 17	Mean 56 y (35-71)	>6 months	VAS mean 8.2	6,4 points	4 weeks	Sacral nerve modulation	6 up to 36 months	9 patients failed

[Results of included studies]

eP204

THE DIFFERENTIAL DIAGNOSTIC APPROACH ON CHRONIC PELVIC PAIN

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Objectives: Chronic pelvic pain is a type of pain that has persistent or intermittent character, is located in the lower abdomen and that lasts for a period from 3 to 6 months.
Methods: 40 medical cards have been included in the study. All patients visit a pain specialist complaining about chronic lower abdominal pain.
Results: The study includes 40 patients medical histories, 24 women (60%) and 16 men (40%) respectively, p=0.268. The average age of the patients 38 y.o. The duration of chronic pelvic pain varies from 3 to 240 months. Somatoform autonomic dysfunction is diagnosed more often in 12 patients (30%). 11 patients (27%) have the diagnose of low back pain, 7 (17.5%) - irritable bowel syndrome, adenomyosis, diverticulosis, hemorrhoidal disease and chronic prostatitis. 6 patients (15%) suffer from depression. Pelvic surgery, endometriosis, unspecified colitis, interstitial cystitis was diagnosed in 5 patients (12.5%). 4 patients (10%) have ovarian dysfunction and adhesion disease, 3 (7.5%) - pilonidal cyst, 2 (5%) - prolapse or tumor of lesser pelvic organs, urogenital infection and chronic appendicitis. 1 (2.5%) patient has kidney leiomioma, Chron's disease and pelvis congestion disease. Most patients 10 (25%) have one diagnose. 9 (22.5%) patients have 3 diagnosis at once. 3 patients (7.5%) have 7 diagnosis that might cause chronic pelvic pain.
Conclusions: This study has shown that chronic pelvic pain is a multidisciplinary problem, only 25% of patients have one disease that causes pain. 75% of patients have diagnosed more than one disease that may cause chronic pelvic pain.

eP205

HUMAN LABOR PAIN IS INFLUENCED BY THE VOLTAGE-GATED POTASSIUM CHANNEL K_V6.4 SUBUNIT

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We sought Mendelian genetic influences on labor pain by studying healthy women who didn't request drug-based analgesia during their first labor. Sensory and psychometric testing revealed higher experimental pain thresholds in these women, compared with matched controls. We found an excess of heterozygotes carrying the rare allele SNP rs140124801 in KCNG4. Here we show that the rare variant K_V6.4-Met419 exerts a dominant negative effect and cannot modulate the voltage-dependence of K_V2.1 inactivation, as it fails to traffic to the plasma membrane. In vivo, we observed Kcng4 (K_V6.4) expressed in 40% of retrolabelled mouse uterine sensory neurons, all of which expressed K_V2.1, and over 90% of which expressed nociceptor genes Trpv1 and Scn10a. Moreover, the voltage-dependence of inactivation for K_V2.1 is more depolarized when K_V6.4-Met419 is overexpressed in mouse sensory neurones compared to K_V6.4, producing less excitable sensory neurones. K_V6.4 impacts human labor pain by modulating the function of uterine nociceptors.

WIDESPREAD PAIN

eP206

CRITICAL ROLE OF CA_V3.2 T-TYPE CALCIUM CHANNELS IN H_2S-DEPENDENT SOMATIC AND VISCERAL PAIN SIGNALING IN MICE

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Background and aims: H_2S, a gasotransmitter, enhances Ca_v3.2 T-type calcium channel activity, and promotes somatic and visceral pain signals. Ca_v3.2 is considered responsible for the H_2S-induced pain signaling, given its inhibition by the pharmacological blockade and genetic knockdown of Ca_v3.2. Thus, we further examined the role of Ca_v3.2 in somatic and visceral pain processing, using Ca_v3.2-KO mice.
Methods: Mice received intraplantar (i.pl.) or intracolonic (i.col.) administration of Na_2S, an H_2S donor. Painful neuropathy and colonic hypersensitivity were induced by repeated i.p. paclitaxel (PCT) and i.col. sodium butyrate administration, respectively. The mechanical allodynia in the hindpaw was evaluated by von Frey test. Nociceptive behavior was counted for 30 min following i.col. Na_2S, or colonic distention with infusion of water in a large volume (200 µL).
Results: The Na_2S-induced mechanical allodynia in the hindpaw and colonic pain-like nociceptive behavior were abolished by i.p. TTA-A2, a selective T-type channel blocker, and by genetic deletion of Ca_v3.2. The PCT-induced allodynia was abolished by TTA-A2, but not Ca_v3.2 deletion, whereas the anti-allodynic effect of TTA-A2 disappeared in the Ca_v3.2-KO mice treated with PCT. On the other hand, butyrate treatment caused colonic hypersensitivity to distension in mice, which was abolished by TTA-A2 and Ca_v3.2 deletion.
Conclusions: The present study thus provides concrete evidence for the role of Ca_v3.2 in H_2S-induced somatic and visceral pain signaling. Our data also suggest that Ca_v3.2 plays a crucial role in colonic hypersensitivity, although the lack of Ca_v3.2 is compensated by unknown systems in PCT-induced painful neuropathy.

eP207

A SYSTEMATIC REVIEW AND PROSPECTIVE STUDY INTO THE INFLUENCE OF AMBIENT TEMPERATURE ON PAIN INTENSITY IN FIBROMYALGIA

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Fibromyalgia syndrome (FMS) is a chronic widespread pain condition of unknown aetiology. Patients often report worse pain with changes in ambient temperature, and even disabling extreme temperature sensitivity during winter. In our murine passive transfer model for FMS, cold sensitivity in the animals appears to be conferred by patients' immunoglobulin G.
An electronic literature review was conducted into the influence of ambient temperature on pain intensity in fibromyalgia. Databases interrogated were: Pubmed, Google Scholar, and Science direct. Search terms included: "fibromyalgia", "hyperalgesia", "ambient", "environmental ", "temperature", "sensitivity", "pain intensity", "pain scores", "mechanical sensitivity", "weather". Exclusion criteria were: age < 18, animal studies, non-English and articles predating 2000. These results were compared to our own emerging data (IRAS:240099).
Four original articles were identified. An Argentinean study correlated pain with decreased temperature.(1) Geographical variation was seen in an American Twitter analysis.(2) Two Norwegian studies, however, were unable to correlate meteorological temperature with fibromyalgia pain.(3,4) Since little is published, we have commenced an interview-study to investigate temperature sensitivity. Of the 13 patients recruited to date (02.2019), 10 report increased pain with temperature drops. They identified a wide range of ‚ideal' ambient temperatures (14°C to 30°C), but the distribution was non Gaussian. The mode was 28-30°C.
In summary, there are few studies investigating sensitivity to ambient temperature in FMS. Studies present averages, and sensitivity heterogeneity, we posit, is the reason studies disagree. Detailed understanding of this phenomenon may identify patient subgroups with differing types of immunoglobulin G autoantibodies and support personalised treatment pathways.

eP208

THE BIOPSYCHOSOCIAL APPROACH IN MANAGEMENT OF CHRONIC PAIN - AN INDIAN PRESPECTIVE

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Aim: The aim of this study was to introduce the biopsychosocial model in the management of Indian fibromyalgia patients.
Methods: We enrolled 64 diagnosed cases of fibromyalgia (by ACR criteria),which were being managed on pharmacological agents.
History, general physical examination & systemic examination was done for the patients. Parameters recorded were VAS , Beck's score and Oswestry disability score.
Then each patient was reviewed by a multi disciplinary team which included a Pain physician, Phsiotherapist & psychologist.
After discussion with the patient & patient family a management plan was devised.
The patient was assessed after 15 days, 1 month & 3 months.
Results: The results were extremely encouraging. There was a statistically significant decrease in VAS(69.2%),Beck's score(75.4%)& Oswestry disability index(62.5%). The overall drug consumption also decreased in 80% patients. There was a lost to follow up for 7 patients.
Conclusion: The biopsychosocial approach to assessment will lead not only to
a better understanding of the patient's pain condition but, ultimately, will lead to a comprehensive treatment protocol

customized to the individual‘s unique situation. But there are certain unique challenges for the Indian sub continent eg- lack of culture specific scales and patient education materials, low patient doctor interaction time,logistic challenges for a multi disciplinary team etc. Hence this is holistic approach is the need of the hour for patients of chronic pain but the above said challenges have to studied for it to be successful.

eP209

PLASMA EXCHANGE TREATMENT FOR SEVERE FIBROMYALGIA SYNDROME

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Passive transfer of immunoglobulin G from patients with fibromyalgia syndrome (FMS) to mice reproduces mechanical and thermal sensitivities in the transferred animals (see abstract ‚Pathophysiological basis of FMS‘). Removal of immunoglobulin G antibodies may be therapeutic.
We report on therapeutic plasma exchange treatment (TPE) of two autoantibody positive patients with FMS. Both had successfully completed a comprehensive pain management program and had tried evidence-based pharmacological interventions but continued to experience severe symptoms. Their healthcare-provider approved TPE.
The patients were two females, ages 19 and 43 years with FMS durations of 4 and 2 years, and average pain intensities of 7.5 and 6 on an 11-point numeric pain rating scale (NRS, 0-10). In the first patient FMS had started after an acute episode of shingles on the background of graft versus host disease 5 years following (curative) bone marrow transplant for myelodysplastic syndrome, and in the second patient FMS had started after a series of very distressing events.
Each patient received 8 exchange treatments over 4 weeks and was assessed with EQ-5D-5L and Brief Pain Inventory (BPI) at baseline, 1, and 3 months after treatment start.
Beneficial effects started within 3 weeks. Patients reported pain reductions of 2.5 and 2NRS points and very substantial fatigue/temperature-sensitivity improvements at 1 month. The EQ-5D-5L overall health outcomes were 20-75-55 and 42-69-62 and the BPI interference averages were 7.4, 3.9, 7.1 and 9.4, 4.1, 6.9 at the three time points.
TPE appears to provide substantial, short-medium term improvement in patients with severe fibromyalgia syndrome.

eP210

AUTONOMIC DYSREGULATION AND FIBROMYALGIA

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Background and aims: Autonomic dysregulation is thought to contribute to the pathophysiology and symptoms of patients with fibromyalgia (FM), but there is a paucity of information on the non-invasive assessment of sudomotor function in FM, and on the links with central modulation of pain.
Objectives: Identify sudomotor function in FM patients vs controls, correlations with comorbidities and with the functionality of descending inhibitory pathways.
Methods: The study included 50 right-handed patients with FM (51±8years old;disease duration 30 ± 9.8 months

and 50 matched controls). The primary endpoint was electrochemical skin conductance (microSiemens(µS)) on hands and feet measured with Sudoscan (Impeto Medical, France). Secondary endpoints included anxiety, depression, social criteria, quality of life, sleep disorders (HAD, Beck, EPICES, Pittsburgh, SF12 questionnaires). A subgroup of 25 patients had Cold Conditioned Pain Modulation testing (CPM30 sec).
Results: Hand conductance was lower in patients (71.8 ±10.2 vs 74.7 ± 10.1 µS, p=0.003), on the dominant hand, p=0.03, especially when < 66 µS (=0.046). No difference was observed on feet. Patients were significantly impaired on all secondary parameters (p< 0.01 to 0.001). Only 25% patients had functioning inhibitory descending pathways and no correlation was observed between low hand electroconductance and poor CPM30 inhibition or disease duration.
Conclusion: This study shows that sudomotor/autonomic function is significantly impaired in FM females especially on the dominant hand. This marker is however independent of the duration of disease. It does not correlate with central inhibition functionality, suggesting the additivity rather than causality of peripheral and central events in FM disease.

eP211

PAIN HYPERSENSIVITY AND MYOFASCIAL TRIGGER POINT OF THE FIRST DORSAL INTEROSSEUM MUSCLE IN PATIENTS WITH RHIZARTHROSIS

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Background and aims: As for the clear functional role of the first dorsal interosseous muscle (FDI) in thumb motion, considering the presence of myofascial trigger point (MTrP) in patients with rhizoarthrosis could be a relevant factor for musculoskeletal pain management. The aim of this study was to investigate the presence of FDI MTrP in patients with rhizoarthrosis.
Methods: 67 patients with rhizoarthrosis of the dominant hand were consecutively recruited. Pressure pain thresholds (PPTs) were assessed bilaterally over the first carpometacarpal joint and in the C5-C6 zygapophyseal joint. Intensity of pain (Visual analogue scale, VAS), Quick Disability of the Arm, Shoulder and Hand (Quick-DASH scale), pinch strength test (dynamometer) were also measured bilaterally. The muscle was examined by an assessor blinded to establish the clinical conditions of the FDI following the international consensus on diagnostic criteria of MTrP.
Results: In patients with rhizoarthtrosis, prevalence of latent MTrP was higher when compared with non-dominant hand (72.0% vs 47%); No significant difference between right and left was found on the average level of PPT over the FDI muscle (P< 0.05) and no significant difference during pinch strength test was detected (P< 0.05).
Conclusions: A higher presence of latent MTrP in the dominant hand of patients with rhizarthtrosis was found. Previous study revealed bilateral widespread pressure pain hypersensitivity in patients with rhizartrosis and also exhibited a bilateral strength reduction. Future research should be conducted in order to establish if MTrP treatments improve hypersensivity in this population.

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ALTERED BLOOD PROTEINS CORRELATE SIGNIFICANTLY WITH DEPRESSION, ANXIETY AND SEVERITY OF FIBROMYALGIA

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Background and aims: Fibromyalgia (FM) is a multifaceted chronic pain condition with known clinical symptoms; generalized pain, increased pain sensitivity, and often anxiety and depression. The complete pathophysiology behind FM is not fully understood and objective validated markers for FM are lacking. The aim of this study was to investigate the correlation between anxiety, depression and severity of fibromyalgia, with plasma proteins in FM patients.
Methods: The plasma proteome profile of FM (n=30) and controls (CON, n=31) were analyzed with 2- dimensional gel electrophoresis in combination with mass spectrometry. Background data and clinical variables were retrieved via questionnaires. Multivariate statistical (Orthogonal Partial Least Squares, OPLS) and standard correlation analysis were used to evaluate correlation between plasma proteins, scores from hospital and anxiety depression scale, and Fibromyalgia impact questionnaire (FIQ).
Results: Significant differences were found in the clinical variables FIQ, anxiety and depression between FM and CON. In the OPLS model of anxiety, 9 proteins expressed as 19 protein isoforms, significantly correlated with anxiety in FM. In the OPLS model of depression, 8 proteins expressed as 14 protein isoforms, significantly correlated to depression in FM. Three of the protein isoforms from both models correlated to FIQ. The majority of proteins in the anxiety and depression models were involved in inflammatory/immunity responses.
Conclusion: In this study anxiety, depression and severity of FM correlated to specific plasma proteins involved in immune response. This study shows that proteomic in combination with clinical data is a useful tool to study the biopsychosocial perspective of FM.

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THERMAL HYPERALGESIA RESPONSES AND INTRAEPIDERMAL DENSITY OF CGRP-POSITIVE FIBERS IN DIFFERENT ANIMALS MODELS OF PATHOLOGICAL PAIN: A PRELIMINARY STUDY

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Background and aims: Skin punch biopsy testing has emerged as a diagnostic standard for small fiber neuropathy (SFN). Symptoms of SFN usually present distally, manifesting as foot or leg pain, and include paraesthesia, allodynia, hyperesthesia and numbness. The European Federation of Neurological Societies recommended the measurement of the density of small fiber epidermal innervation in skin biopsy. The aim of the present study is to evaluate the thermal hyperalgesia and density of intraepidermal profiles in mice subjected to either central or peripheral neuropathic pain conditions.
Methods: Thermal hyperalgesia was evaluated in mice subjected to spinal cord injury (SCI), reserpine induced myalgia (RIM), chronic constriction nerve injury (CCI) or intramuscular injection of acidified saline solution (ASI). Then, animals were anesthetized and the plantar hind-pads were removed, fixed in Zamboni solution and sectioned in a cryostat. Histological sections were processed by immunohistochemical techniques for visualization of CGRP-immunoreactive (-ir) intraepidermal profiles, and the density of intraepidermal profiles was determined through the images captured from the histological sections.
Results: Animals subjected to pathological pain induction conditions showed significant thermal hyperalgesia when compared with their respective controls. The density of intraepidermal CGRP-ir profiles increases in both SCI and RIM models but not in CCI neither ASI mice, respect to control animals.
Conclusions: Results suggest that the intraepidermal nerve fiber density in mouse skin biopsies may be useful for both studying and predicting types of somatosensory system lesions that trigger central or peripheral neuropathic pain.
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EVALUATION OF POLYARTHRALGIA

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Clinical case: Woman of 52 years, with:
diagnoses of:
a- Idiopathic vertebral hyperostosis.
b.-Low back pain, lumbar spondyloarthrosis with foraminal stenosis L3-L5 and central L4-L5.
c- Cervicodorsalgia.
d- Constipating osteitis of the iliac.
e- Right subtalar arthritis.
Current problem: Inflammatory episode in the right hand (D) in metacarpophalangeal joints (MCFs) and exacerbation of previous carpal tunnel syndrome symptoms, no motor compromise. The examination and ultrasound revealed: 1st interphalangeal osteoarthritis, 2nd and 3rd hand-held MCFs and deposits of pyrophosphate crystals in knees: compatible with pyrophosphate crystal arthropathy (1st form: normal laboratory studies). Increase in the size of the median nerve D: 13 mm2.
Treatment:
• Tips and exercises.
• Local heat in painful areas of the spine.
• Infiltration of the carpal tunnel D.
•Medication:
For pain: Tramadol 37.5 mg, paracetamol 650 mg every 8 hours according to the guidelines. If joint inflammation occurs use Naproxen 500: 1-2 times a day (use Omeprazole only if dyspepsia).
Resting splint is explained and if surgery is necessary if persistent manifestations of
carpal tunnel syndrome.
Perform clinical follow-up in 4-6 weeks
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eP215

COGNITIVE AND BEHAVIORAL FACTORS ASSOCIATED WITH PAIN IN PEOPLE DIAGNOSED WITH FIBROMYALGIA: A QUALITATIVE META-SYNTHESIS

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Background: Chronic widespread pain is the cardinal symptom of Fibromyalgia (FM). Understanding how people with FM evaluate and response upon pain is essential for the development of biopsychosocial symptom management strategies.
Aim: To synthesize qualitative descriptions on how people diagnosed with FM experience pain in terms of evaluation and response based on the Symptom Management Theory.
Methods: This paper followed the ENTREQ declaration and Sandelowski and Barroso's meta-synthesis principles.

Qualitative or Mixed Method studies published in English of Spanish between 1990 and 2018 were included. A pre-planned comprehensive search was carried out in PubMed, Scopus, ISI WebofScience and Cinahl Plus databases. A manual search was also implemented. The CASP Qualitative Checklist was used for methodological quality assessment. A thematic synthesis was employed to analyze and present the findings. The COVIDENCE and Nvivo12.Plus software were used for the process of studies selection and data analysis respectively.
Results: A total of 37 studies were included. In terms of pain evaluation 5 meta-themes were identified: 1) Believes about the origin of pain, 2) Pain modulating factors, 3) Pain as a modulating factor of other FM symptoms, 4) Emotional and psychosocial factors associated with pain, 5) Clinical and social stigma. Regarding pain response 3 themes were developed: 1) Pharmacological treatments: From dependence to ineffectiveness, 2) Non-pharmacological treatments: A huge economic impact, 3) Physical exercise: The cause of and solution to pain.
Conclusions: The findings suggest that the biomedical model continue influencing the pain beliefs and behaviors among people diagnosed with FM.

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DEPRESSION AND TRAIT-ANXIETY MEDIATE THE INFLUENCE OF CLINICAL PAIN ON HEALTH-RELATED QUALITY OF LIFE IN FIBROMYALGIA

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Objective: Fibromyalgia syndrome (FMS) is a chronic pain condition associated with a substantial decrease in health-related quality of life (HRQoL). This study investigated the relationships of HRQoL with clinical parameters of FMS (pain, insomnia and fatigue) and affective variables (depression and anxiety).
Methods: Women with FMS (n=145) and healthy women (n=94) completed the Short-Form Health Survey (SF-36) to evaluate HRQoL, and self-report questionnaires pertaining to clinical pain, symptoms of anxiety and depression, fatigue and insomnia. Associations were assessed by correlation, multiple linear regression, and mediation analyses.
Results: FMS patients showed lower scores on all SF-36 scales than healthy individuals. Both clinical and emotional factors were inversely associated with SF-36 scores. Although depression was the strongest predictor of global HRQoL (explaining 36% of its variance), clinical pain and fatigue were the main predictors of physical components of HRQoL; depression and trait-anxiety were the main predictors of mental HRQoL components. Results of mediation analysis showed that depression, trait-anxiety and fatigue mediated the effect of clinical pain on HRQoL. Additionally, depression, trait-anxiety and fatigue mutually influenced each other, increasing their negative effects on the different areas of HRQoL.
Conclusions: Our results suggest that FMS pain and related functional disability may increase depression and anxiety, in turn aggravating the primary symptoms of FMS and indirectly increasing the negative influence of pain on HRQoL. These results showed the need to evaluate and treat negative affective states in FMS.
Keywords: health-related quality of life, fibromyalgia, pain, anxiety, depression, fatigue.

eP217

ELECTROMYOGRAPHIC ABNORMALITIES OF THE SACRAL NERVE ROOT MYOTOMES ARE HIGHLY PREVALENT IN FIBROMYALGIA

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Background and aims: Patients with fibromyalgia (PFM) present neurological symptoms such as paresthesia, muscle weakness and ataxia. Moreover, electromyographic (EMG) evidence for large nerve involvement has been detected in 90% of patients. We previously hypothesized that FM is caused by (moderately) increased hydrostatic pressure in the spinal canal, producing irritation or damage to axons in the nerve roots to cause widespread radicular pain. Because hydrostatic pressure is the highest in the lower nerves, the sacral nerve root myotomes would be more frequently affected.
We hypothesize that EMG abnormalities in PFM are more prevalent in lower sacral than in lumbar nerve roots.
Methods: We retrospectively reviewed 17 consecutive EMGs of PFM (diagnosed according to the 1990 criteria of the American College of Rheumatology > 5 years). All EMG tests were conducted by the same expert electrophysiologist.
Results: During needle-EMG, neurogenic motor unit potentials were seen in 0% of L2 myotomes, 8% of L3, 29% of L4, 71% of L5, 47% of S1, 94% of S2, and 76% of S3S4 myotomes. S1 Hoffmann reflexes were delayed in 41%. Additionally, 88% of PFM showed delayed S3S4-supplied anal reflexes, indicating that the sensory and/or motor limb of the reflex arc were affected.
Conclusions: EMG in PFM shows abnormalities in the legs, feet and anal sphincter. Most striking is that nearly all PFM show abnormalities of the lowest sacral nerve roots (S2 and S3S4). These findings may suggest that hydrostatic cerebrospinal pressure in the spinal canal plays a role in the pathophysiology of FM.

eP218

SPINAL CORD STIMULATION AT 10 KHZ FOR TREATMENT OF ELHERS DANLOS SYNDROME

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Background: Chronic Widespread Pain (CWP) including fibromyalgia affects 10-15% of all world populations (1). Widespread pain is an unconventional target for neurostimulation therapy, due to the technical challenge of large pain area parasthesia coverage, required by traditional-SCS. We describe a group of Elhers Danlos Syndrome (EDS) patients treated with high frequency spinal cord stimulation (HF-SCS) at 10 kHz, for treatment of their chronic pain symptoms. HF-SCS at 10 kHz provides good diffuse analgesic effects in the trunk and limbs without the requirement for parasthesias and likely has mechanisms different from other stimulation modalities (2).
Methods: Ten EDS patients with CWP intractable to conservative modalities (average of 11.1±9.0 years) were selected for combined cervical and thoracic HF-SCS. Leads were placed over the C2/T2 or C2/T9 vertebral levels, or three electrode leads placed over the C2/T2/T9 vertebral levels. Patients were followed up an average of 2.6±2.0 years post permanent implant.
Results: A statistically significant pain reduction was observed (baseline: 7.4±0.9 numerical rating scale (NRS) vs. follow-up: 3.4±1.1 NRS, $p \leq 0.05$). Pain relief ranged between 63.0±19.9%, 69.3±18.4% and 68.6±17.7% for head and neck, upper back and lower back, respectively. Following HF-SCS, 4/9 patients using analgesics at baseline, ceased strong opioid medication, whilst a further 2 patients halved their intake. Five out of the 9 work eligible patients returned to work or study following HF-SCS.
Conclusion: HF-SCS provides long term widespread pain relief in this difficult to treat EDS patient group.
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ANTINOCICEPTIVE AND BEHAVIOURAL EFFECTS OF PREGABALIN IN FEMALE MICE SUBJECTED TO RESERPINE-INDUCED MYALGIA AND INTRAMUSCULAR ACIDIFIED SALINE INJECTION

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Background and aims: Fibromyalgia (FM) is a chronic disorder characterized by widespread pain and sharing some common symptoms with depression and anxiety. There are no effective treatments against fibromyalgia's pain, and limitations imposed by animal models constitute major obstacles to assay and discover new pharmacological strategies. This study aimed to evaluate nocifensive (i.e., thermal hyperalgesia) and emotional (depression- and anxiety-like behaviours) responses in two experimental rodent models of FM. As a positive control, the effect of pregabalin was assessed in both models.
Methods: Adult female mice were subjected to either reserpine injection (RIM) or intramuscular acidified saline solution (ASI). Hyperalgesia, anxiety- and depression-like behaviours were evaluated using Hargreaves, open-field and forced swimming tests, respectively. Both acute dose-response and repeated treatment with pregabalin during two weeks were assessed during the experimental period to study its antinociceptive effect in both models.
Results: Thermal hyperalgesia lasted longer in RIM-mice than in ASI-mice. Depressive-like symptoms were found in both FM models but only RIM-mice showed anxious behaviours. Acute administration of pregabalin reduced thermal hyperalgesia in a dose-dependent manner in both models. The repeated treatment with pregabalin at 20 mg/kg also decreased thermal hyperalgesia in both models, and despair-like behaviour in RIM-mice.
Conclusions: Reserpine injection causes a long-lasting thermal hyperalgesia associated with anxious and depressive-like disturbances, whereas ASI elicited pain-related behaviours only for a short period after induction. Acute and repeated pregabalin treatments exert effective antihyperalgesic and antidepressant effects on both experimental FM models.
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ANATOMY AND PHYSIOLOGY SOMATOSENSORY SYSTEM

eP220

CEREBRAL PROCESSING OF NOCICEPTIVE STIMULI PREDICTS SLEEP DISRUPTION

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Sleep disruption by nociceptive stimuli follows the apparition of a ‚cognitive' wave, supposed to reflect the activation of a widespread cortical network (Bastuji et al Pain 2008). The aim of the present study was to characterize the post stimulus cortical network leading to sleep disruption. For this purpose, intra-cerebral electrophysiological signals during sleep were analysed in the second after delivery of nociceptive stimuli.
Data were obtained in 17 epileptic patients receiving thermo-nociceptive stimulations, slightly above the individual pain threshold, during whole night sleep. Evoked cerebral responses within the first second after the stimulus were analysed in sensori-motor areas (post. insula, S2, mid cingulate, SMA) and multi- or supramodal associative areas (dorso-lateral prefrontal, posterior parietal, orbitofrontal, precuneus, posterior and perigenual anterior cingulate

cortices). The responses were analysed and compared according to presence or absence of arousal post-stimulus, during sleep stage N2 and paradoxical sleep (PS).
Immediately before an arousal, the area under the curve of the evoked response was significantly enhanced, as compared to non arousing instances, in all sensori-motor and multimodal associative areas during N2, but only in multimodal associative areas during PS.
Between the stimulus and the arousal reaction, there were signs of increased neuronal activity, which was global in N2 stage, and which in PS concerned only multimodal associative areas, probably due to the fact that sensori-motor areas were already pre-activated during this sleep stage. This activation of sensory and association areas may facilitate information propagation leading to conscious perception and physiological response.

eP221

ACUTE PAIN „CHRONIFICATION" - IS THIS RELEVANT?

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Background and aims: The search for the key to acute pain "chronification" as the way to find better treatments for prevention is a growth industry. We do have data from post-surgery patients that there seems to be a connection. Animal data is flawed by no definition of "chronic" for lab animals. How relevant is this in the general population?
Methods: As part of the HUNT pain study of a general population in mid-Norway, 551 subjects were interviewed and examined and 399 were diagnosed with "moderate" to "very severe" chronic pain (enriched study). All were asked how their chronic pain began with the choices being "gradually", "after surgery", "after an accident", "after an illness" and "other".
Results: 76.5% of the chronic pain subjects reported that their pain began gradually and most had trouble identifying exactly how long they had had pain. On the lab research side, a review of PubMed in reference to pain chronification indicated that the times for "chronic" pain to be established in rats and mice was from two hours to six weeks (rare) with the majority using two weeks as the starting point. All animals developed "chronic" pain after injury.
Conclusion: Chronic pain after surgery or trauma is relatively common. The mechanism is reputed to be "chronification" which may be relevant in a minority of the general population with chronic pain. But it does not seem relevant in the majority. We should stop using this as our explanation for all chronic pain.

eP222

DEVELOPMENT OF COLD TOLERANCE AFTER LONG-TERM COLD EXPOSURE

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Background: Cold exposure triggers behavioural and physiological responses known as cold acclimatization. Somatosensory system alters and adapts to changing environmental conditions according to the physiological need. Accordingly, we aimed to study the role of Trpm8 as an essential part of the somatosensory apparatus in behavioural responses after long-term cold exposure.
Methodology: Forty-six male 6-week old C57BL/6 mice were gradually acclimatized to thermoneutral control (27°C) or cold ambient conditions (6°C). Two experiments were performed after 4 weeks: *1)* Thermal preference behaviours were evaluated using thermal gradient test for 30 min (0-50 °C); *2)* Mice were injected with vehicle (DMSO 60%) or icilin (Trpm8 agonist; 5%) and thermal preference behaviours were evaluated using thermal gradient test.
Results: Thermal preference was different in long-term cold and thermoneutrally-housed mice. Whereas control

mice spent more time at 24-36°C (with no significant difference compared to cold group), the cold-exposed mice occupied a broader thermal range. In particular, cold exposed mice spent 27% more time at temperatures < 20°C than controls ($P < 0.01$). Icilin-injected mice resided a more narrow thermal range skewed towards the warmer end of gradient. This effect of icilin was less pronounced in long-term cold-exposed mice.
Conclusion: Icilin injection indices cold sensation mediated through Trpm8 activation. The less effect of icilin in cold-exposed mice suggests some differences between cold and thermoneutral-acclimatized mice at the level of Trpm8. Therefore, induction of cold tolerance after long-term cold exposure as reflected by more preference to cold side might be explained by molecular adaptation of Trpm8.

eP223

THE ASSOCIATION BETWEEN GUT MICROBIOME COMPOSITION AND PAIN PERCEPTION IN YOUNG HEALTHY SUBJECTS

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Background and aims: The gut microbioma (GM) through the gut-brain axis has been implicated in numerous diseases. GM is known to be associated with the stool condition. We previously reported that the stool condition was associated with pain perception. The aim of this study was to investigate the association between GM composition and pain perception in young healthy subjects.
Methods: A total of 50 healthy volunteers (age 20±0.6 yr.) completed the present study. The pain perceptions were assessed by pressure pain threshold (PPT), current perception threshold (CPT), temporal summation of pain (TSP), and conditioned pain modulation (CPM). During CPT examination, 5, 250, 2,000 Hz stimulation were used to stimulate C, Aδ and Aβ fibers. GM composition was evaluated by using 16S rRNA analysis. Four major phylum (Bacteroidets, Firmicutes, Actinobacteria, Proteobacteria) and bacterium (Bifidobacterium, Lactobacillus, Butyrate-producing, Equol-producing) were selected.
Results: PPT showed a negative association with Bacteroidetes, in contrast to a positive association with Firmicutes. Aδ and Bacteroidetes, and C and Equol-producing bacterium showed negative correlations. Aβ showed a positive association with Bifidobacterium. CPM showed a negative association with Firmicutes. However, TSP did not show any association with the GM composition. In addition, we found that a significant contributor to PPT was Firmicutes, one to C was Equol-producing bacterium, one to Aδ was Bacteroidetes, one to Aβ was Bifidobacterium, and one to CPM was Proteobacteria and Actinobacteria.
Conclusions: The present study showed that the pain perception was significantly associated with the GM composition in young healthy subjects.

eP224

THE EFFECT OF PULSE SHAPE AND FREQUENCY OF ELECTRICAL CONDITIONING STIMULATION ON THE INDUCTION OF SECONDARY HYPERALGESIA

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Background and aims: Animal studies showed that high frequency stimulation (HFS) of peripheral C-fibers induces long-term potentiation (LTP) within spinal nociceptive circuits. In humans, HFS (five 100 Hz trains of electrical pulses for 1 second repeated every 10 seconds) applied to the skin using an electrode designed to activate nociceptive afferents induces secondary mechanical hyperalgesia, considered as a manifestation of central sensitization. Our aim was to test the frequency-dependence of HFS-induced secondary hyperalgesia, and whether part of the effects of HFS could be due to charge accumulation in the stimulated skin.

Methods: In a first experiment (N=15), we compared within subjects the secondary hyperalgesia induced by 100-Hz HFS using monophasic vs. charge-compensated biphasic pulses. In a second experiment (N=3x15) we compared between subjects the secondary hyperalgesia induced by 100, 20 and 5 Hz charge-compensated stimulation, keeping constant the number of pulses and the inter-train interval. Secondary hyperalgesia was quantified as the change in intensity of perception elicited by 128 mN pinprick stimuli and the size of the area of increased pinprick sensitivity.
Results: No significant difference was observed in the secondary hyperalgesia induced by monophasic vs. biphasic pulses. The increase in pinprick sensitivity was dependent on stimulation frequency, and maximal for 20 vs. 5 and 100 Hz stimulation.
Conclusions: Charge accumulation does not influence secondary hyperalgesia induced by HFS. 20 Hz stimulation induces a stronger secondary hyperalgesia than both 5 and 100 Hz stimulation. Future studies are needed to understand whether this frequency-dependence is due to peripheral vs. central factors.

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THE INFLUENCE OF SKIN TYPE AND LASER WAVELENGTH ON LASER-EVOKED BRAIN RESPONSES: PRELIMINARY RESULTS

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Background and aims: Previous evidence reported different transient brain responses to brief CO_2 laser heat pulses between glabrous and hairy skin, suggesting different innervation. However, this could be due to differences in skin thickness. Our aim was to investigate the influence of laser type (low vs. deep skin penetration) and skin thickness on the amplitude of laser-evoked brain potentials (LEPs) and reaction times (RTs).
Methods: Nine healthy subjects received brief CO_2 (10.6 mm, low penetrance) and YAP (1.34 µm, high penetrance) laser stimuli with two intensities on the right hand dorsum and palm. For each laser, 30 stimuli were delivered at each intensity and location. RTs were recorded together with LEPs. The average amplitude of the N2–P2 vertex potential and the average RT were determined for each subject and stimulus type.
Results: There was a significant interaction between laser type, stimulation intensity and skin type for both RT and N2-P2 amplitudes (RM ANOVA, $p< 0.021$ and $p< 0.014$, respectively). Participants exhibited longer RTs ($p< 0.001$) and smaller N2-P2 amplitudes ($p< 0.017$) for low-intensity CO_2 laser stimuli delivered to the hand palm vs. dorsum. This skin type effect was not observed for low-intensity YAP stimulation (RT $p=0.098$; N2-P2 $p=0.541$). Moreover, participants exhibited longer RTs and smaller N2-P2 amplitudes for high intensity stimuli delivered to the hand palm vs. dorsum, both for CO_2 (RT $p< 0.0002$; N2-P2 $p< 0.012$) and YAP stimulation (RT $p< 0.009$; N2-P2 $p< 0.002$).
Conclusions: Skin thickness has an impact on laser-evoked brain responses, especially when penetrance is low.

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ANTINOCICEPTIVE EFFECTS OF VITAMIN B12 AND KETOROLAC IN LONG EVANS RATS IN WRITHING TEST

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Background and aims: Effects of vitamin B_{12} on pain have been demonstrated in different animal and human studies either alone or with or without other B vitamins and analgesics for treatment of different painful and

inflammatory conditions in animal studies. However, comparison of these effects with similar effects of ketorolac tromethamine (KT) and their combination have not been established. To assess the effects of vitamin B_{12} on pain and also to compare them with those of the combinations of vitamin B_{12} with KT in rat models.
Methods: Experimental study was conducted in the Department of Physiology, BSMMU, from March 2015 to February 2016. 20 (twenty) Long Evans rats (215±35 gm) of either sexes were divided into control (A, with 5 ml/kg normal saline) and experimental (B1, with 15 mg/kg B_{12}; B2, with 10 mg/kg KT; B3, with B_{12}+KT) groups with 5 rats in each group. All drugs and vitamin were administered intraperitoneally in a single dose just one hour before writhing test. Statistical analysis was done by ANOVA, followed by Bonferroni post hoc test. In the interpretation of results, $p \leq 0.05$ was considered as significant.
Results: B_{12} lowered only the writhing count and KT lowered both writhing appearance latency time and writhing count significantly ($p \leq 0.001$) in the writhing test. But combination of B_{12} and KT significantly ($p \leq 0.001$) lowered both the study variables in writhing test.
Conclusion: It may be concluded that, vitamin B_{12} possess analgesic effects and combination of B_{12} with KT is more effective than those of their individual administration.

eP227

MODERATE ASSOCIATION BETWEEN PRESSURE PAIN THRESHOLD AND MUSCLE VISCOELASTIC PROPERTIES OF GASTROCNEMIUS MUSCLES IN HEALTHY INDIVIDUALS: A PRELIMINARY STUDY

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Background and aims: Pressure pain threshold (PPT) is commonly used to assess pain and a useful prognostic indicator of clinical pain states. Differences in muscle viscoelastic properties have been reported in people with chronic pain compared with healthy controls. Little is known, however, about the possible association between muscle viscoelastic properties and pain responses in healthy individuals. Therefore, the aim of the study was to examine the relation between PPT, muscle stiffness and state of tension, and subcutaneous tissue thickness in healthy subjects.
Methods: 20 healthy individuals (55% females) were included. Pressure pain thresholds, muscle stiffness, and muscle state of tension were measured bilaterally at three points of the biceps brachialis and gastrocnemius muscles, including muscle belly (MB) and musculotendinous (MT) sites.Subcutaneous tissue thickness was measured by ultrasound. The Spearman‘s rank test or Pearson product-moment correlation coefficient analysis were used to test for associations between variables.
Results: There was a significant positive correlation between muscle stiffness of MB sites of the gastrocnemius muscles of the dominant side and PPTs of MB sites ($r=0.460$-0.485, $p< 0.05$). Muscle state of tension at MT sites of the gastrocnemius muscles ($r=0.553$-0.710, $p< 0.05$) was also positively correlated with PPT of MT and MB sites of the dominant side.
Conclusions: These preliminary findings suggest a moderate association between PPT and gastrocnemius muscles viscoelastic properties in healthy subjects. However, no association was found between muscle viscoelastic properties and PPT over the biceps brachialis, and subcutaneous tissue thickness does not seem to influence pressure algometry responses.

eP228

LATERALITY JUDGEMENT AND TACTILE ACUITY IN PATIENTS WITH FROZEN SHOULDER: A CASE-CONTROL STUDY

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Background and aims: Tactile acuity measured by means of the two point discrimination threshold (TPDT) and laterality judgement are recognized clinical signatures of cortical representation and working body schema, respectively. Disruption of tactile acuity and laterality recognition have been shown in different chronic pain populations. Whether they are impaired in people with frozen shoulder (FS) remains unknown.
The aim of this study was to investigate tactile acuity and laterality recognition in people with FS.
Methods: 32 subjects with idiopathic FS and 32 sex and age-matched healthy controls were tested for tactile acuity by measuring the TPDT and laterality recognition with the NOI Recognise App. Within-group differences (affected versus non-affected shoulder in the FS group) and between-group differences (affected shoulder in the FS group vs dominant shoulder in the control group) in TPDT and accuracy and speed in the Recognise test were calculated using Student´s t-test.
Results: Within-group differences were found in TPDT (p=0.04) and laterality recognition (accuracy p=0.039; speed p=0.05) between the affected and non-affected shoulder in subjects with FS. As compared to healthy controls, subjects with FS presented statistically significant differences for speed in the Recognise test (p=0.023).
Conclusions: The results of this study suggest that tactile acuity and laterality judgment are impaired in the affected shoulder of subjects with FS. When comparing with healthy subjects only speed in laterality judgment was impaired in people with FS.

BIOLOGY

eP229

TARGETED SINGLE BASE RESOLUTION ANALYSIS OF DNA METHYLATION IN FIBROMYALGIA WOMEN AND THEIR HEALTHY SISTERS

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Background and aims: Fibromyalgia (FM) is a pathological condition characterized by chronic widespread pain and comorbid symptoms. Its multifactorial nature complicates the diagnosis, the underlying etiological mechanisms comprehension and development of effective therapies. Epigenetics, reflecting the influence of environmental co-factors, might reveal fundamental understandings for both basic research and clinical practice. This pilot study aims to investigate DNA methylation in genome regions of eight FM women compared to their healthy sisters.
Methods: Methylation status was tested in leukocytes' DNA by bisulfite sequencing (Illumina) of 240.134kbp (Agilent SureSelect^{XT}Target Enrichment System), including CpGs in promoters of genes previously found associated with FM or related symptoms. Chronic pain, sleep problems and depression were explored using the questionnaires/scales

FIQ, WPI, SS, VAS, PSQI and BDI.
Results: Four regions related to *C11orf40*, *TNFRSF13B*, *mir129-2*, *OXT* genes were found differentially methylated comparing eight FM women and their sisters. Eight differentially methylated cytosines were identified with p-value< 0.05. However, the significance of these results did not survive the correction for multiple comparisons, possible due to the low sample size.
Conclusion: This is the first study profiling DNA methylation at single-base resolution in targeted regions of FM women and their sisters. Given the small sample size and the high genome coverage, more in-depth analyses on a larger number of patients are in progress to investigate the regions identified. In light of the suffering of FM patients and the huge medical/social costs associated, it's worth to clarify how epigenetics might reveal new perspectives on this disabling pain condition.

eP230

FUNCTIONAL OMICS APPROACH TO IDENTIFY OVERLAPPING AND UNIQUE PAIN PATHWAYS

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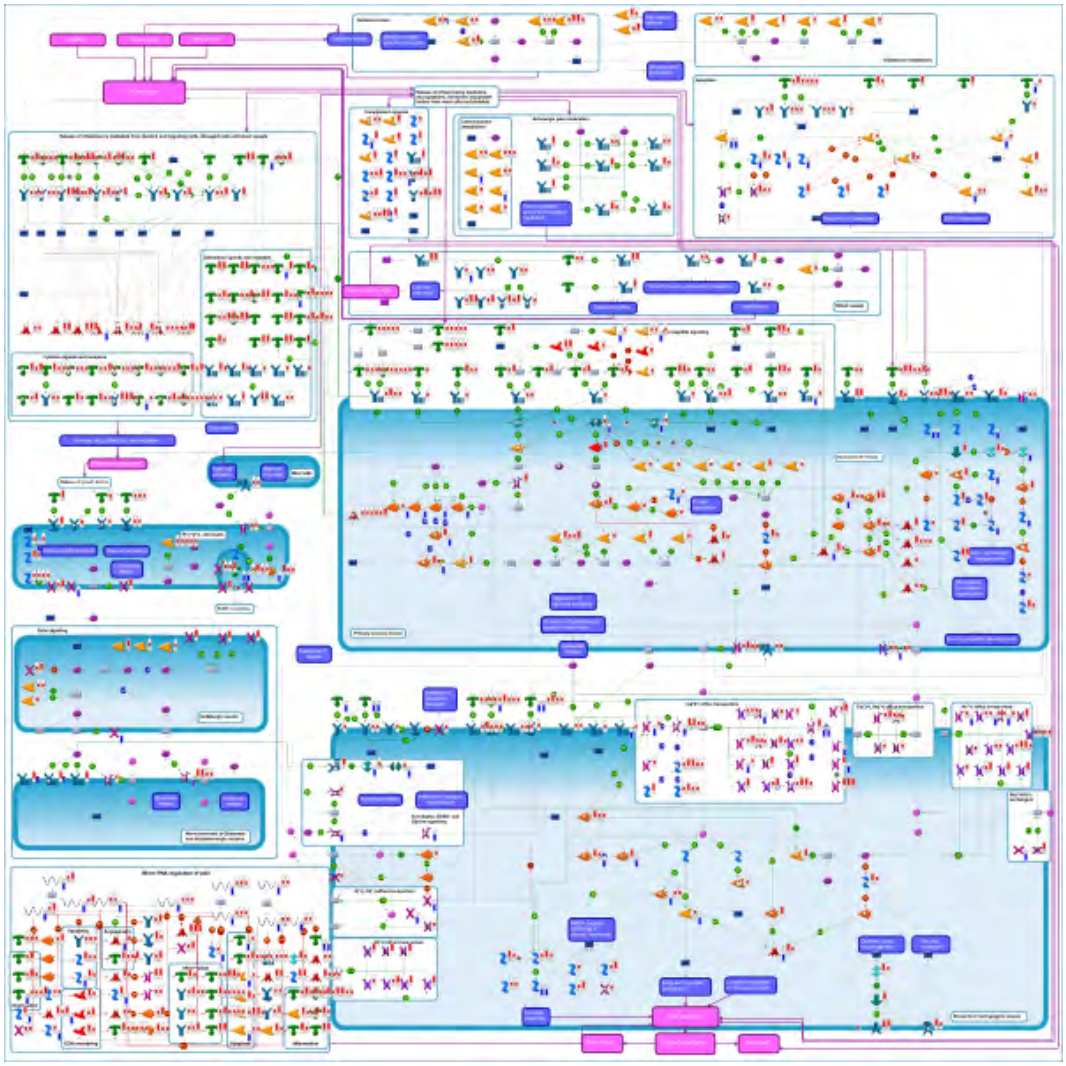
Background and aims: The broad diversity of chronic pain conditions needs a better understanding of the underlying pathophysiology which can be described by disease pathways[1]. The aim of this work was to generate an integrated disease pathway map for pain that contains major pathophysiological components like involved cell types, miRNA and inflammatory regulations that allows to identify overlapping and unique pathways[2] for disease understanding of the pathophysiology and identification of novel therapeutic interventions.
Methods: CRPS, Endometriosis, Vulvodynia, Spinal cord injury pain, Radiculopathy, Small fiber neuropathy (CIPN, DPN), Fibromyalgia and chronic post-operative pain have been selected to cover a brought range of pathophysiology. Pubmed searches were used to compile omics results from genomics, proteomics, transcriptomics and miRNA to build databases of associations and regulations in disease tissue. Subsequent pathway analysis[3] using gene set enrichment analysis have been integrated into a BigPainMap.
Results: Overlapping and unique pain pathways in 8 different indications have been identified including relevant description of the pathophysiology: Dorsal horn root ganglion neuron, Ca/Na ion channels, ASICs, P2X, GluR, TRPs, NMDA, miRNA regulation, GABA-, glutamate- and histaminergic neurons, microglia/astrocytes, inflammation/ mediators, neuropeptide/hormone signaling, blood vessels, apoptosis, oxidative stress, primary sensory neuron, adrenergic pain modulation and the complement system.
Conclusions: Successful generation of an integrated disease pathway map for disease understanding and underlying pathophysiology in pain. Identification of overlapping and unique pathways for 8 indications.



[BigPainMap]

eP231

FRACTALKINE-INDUCED HYPEREXCITABILITY OF SPINAL DORSAL HORN NEURONS IN AN ANIMAL MODEL OF MYOFASCIAL LOW BACK PAIN

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Background and aims: Activated microglia play a crucial role in central sensitization leading to chronic pain. An important spinal modulator between microglial cells and dorsal horn neurons is the chemokine fractalkine (FKN). The aim was to study the spinal sensitization effects of FKN in an animal model of myofascial low back pain (LBP).
Methods: In deeply anesthetized rats, in vivo recordings of single dorsal horn neurons with input from the low back were made. Two injections of nerve growth factor (NGF; 5 days apart) into the multifidus muscle which induced neuronal hyperexcitability of dorsal horn neurons to peripheral input served as a model of myofascial LBP. The hyperexcitability was expressed in an increased proportion of neurons with convergent input from different types of

tissue. The additional afferent input came exclusively from deep tissues.
Two experimental series were carried out:
1. The FKN signaling pathway was blocked by intrathecally applied neutralizing antibodies to prevent the NGF-induced hyperexcitability.
2. FKN itself was administered intrathecally to determine whether it caused the identical hyperexcitability as two NGF injections.
Results: The neutralizing antibodies completely prevented the NGF-induced increased proportion of neurons with convergent input ($p< 0,01$) and input from deep tissues ($p< 0,05$), while FKN induced the identical neuronal hyperexcitability as two NGF injections ($p< 0,01$).
Conclusions: The data show that FKN plays a crucial role in sensitization of dorsal horn neurons as one first step in the chronification of myofascial LBP.
The project was supported by the Deutsche Forschungsgemeinschaft (DFG-TR236/24, SFB1158_S01).

eP232

GUT MICROBIOTA DYSBIOSIS REDUCED NEUROPATHIC PAIN IN MICE BY MODULATING MICROGLIOSIS

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Background and aims: In the past decades, the association of gut microbiota and human neurological diseases has been well-established. Clinical and preclinical evidence suggested altered gut microbiota composition and reduced bacterial diversity play a key role in visceral pain and chemotherapy-induced pain. Microglia is an essential cell type involved in neuropathic pain development. In this study, we hypothesized that gut microbiota could modulate peripheral injury-induced chronic neuropathy pain via regulating microglia.
Methods: Adult male mice were treated with an antibiotics cocktail (ABX) or vehicle (SPF) for 3 weeks. Spared nerve injury (SNI) or sham surgery were performed on left hind limb. Fecal and cecum tissue samples were collected for gut microbiota composition analysis. Mechanical allodynia was tested with Von Frey for up to 7 days. Fecal microbiota transplantation (FMT) were performed to validate the action of antibiotic cocktails. Lumbar spinal cord tissue was collected for qPCR and immunofluorescence to assess and quantify microgliosis. BrdU was applied to examine microglia proliferation.
Results: Pre-treatment with antibiotic cocktail eliminated most gut microbes and led to reduced mechanical allodynia in mice with SNI surgery for at least 7 days. FMT with fecal samples of SPF mice abolished the alleviation of mechanical allodynia by ABX pre-treatment. Proliferation but not M1/M2 ratio of microglia was significantly attenuated in ABX/SNI group when compared to SPF/SNI group.
Conclusions: Antibiotic treatment- induced gut dysbiosis reduced microglia proliferation and alleviated chronic neuropathic pain.

DIGITISATION IN PAIN MANAGEMENT

eP233

INFERRING FUNCTIONAL STATUS IN PEOPLE WITH PAIN-LIMITED MOBILITY USING PATTERNS DERIVED FROM PHYSICAL ACTIVITY MONITORS

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Background: Clinical assessments of physical function do not objectively quantify real-life activities. Wearable activity monitors enable such measurements, but do not map to clinically measured functional outcomes.
Methods: We represent physical function as a daily activity profile derived from wearable activity monitor data. From the Osteoarthritis Initiative (OAI) activity monitoring data we constructed daily activity profiles. Using the daily activity profile as input, we trained statistical models that classify subjects into quartiles of clinically measured function using the 400m walk test, the 20m walk test and 5 times sit/stand. We evaluated model performance on held out data.
Results: The daily activity profile derived from activity monitors can accurately predict physical function as measured via standard clinical assessments. Using held out data, the AUC obtained in classifying performance values (respectively for the 400m walk, 20m walk, and 5 times sit/stand) in the 1st quartile was 0.79, 0.78 and 0.72, and in the 4th quartile was 0.77, 0.66 and 0.73. Evaluated on data from two years into the future, for the 20m pace test and the 5 times sit stand tests, the highest AUC obtained was 0.77 and 0.68 for the 1st quartile and 0.75 and 0.70 for the 4th quartile respectively.
Conclusions: We can construct activity profiles that represent actual physical function as demonstrated by the relationship between the activity profiles and the clinically measured functional measures. Such objective and continuous measurement of physical performance via the activity profile can enable remote functional monitoring of patients.

EDUCATION OF PAIN CARE

eP234

A MULTI-PARAMETER MACHINE LEARNING AI APPROACH FOR OBJECTIVE MEASUREMENT OF PAIN

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Historically, pain has been measured using subjective ratings, such as the visual analogue scale, to determine presence and severity. While this is important information, subjective self-report is a challenging metric with clear limitations. Over the past few years, significant advances have begun to be made in the development of measures as valid biomarkers for the presence of pain. Measurement of various physiology parameters like heart rate, blood pressure, sweating, etc. have shown to be potentially associated with the presence of pain. In this original research, we present a multi-parameter approach using BiovitalsTM analytics Algorithm for measurement of presence and severity of pain in an ambulatory setting. BiovitalsTM uses machine learning to learn the correlation between multiple physiology biomarkers (for e.g. heart rate, hear rate variability, oxygen saturation and various other derivatives) and detect subtle changes in patient‘s physiology which indicates patient‘s pain response. An exploratory study was performed in patients undergoing total knee replacement surgery to assess whether patient reported pain

levels correlate with deviations in multivariate physiology biomarkers. The study recruited 20 patients post-surgery and were monitored for 30-days at-home using a wearable biosensor called Everion® along with a patient facing smartphone app, PainfocusTM. Patient used the mobile app to report their pain scores using numerical rating scale (NRS) and in addition also reported their symptoms and QoL using EQ-5D-3L questionnaires. Study results indicate statistically significant correlation between patients reported pain levels and the deviations in multiple physiology biomarkers, providing a confirmation of the pain episodes detection by BiovitalsTM.

eP235

BRAZILIAN INTERNET RESEARCH ON CHRONIC PAIN: AN OVERVIEW

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The prevalence of chronic pain has increased in Brazil. People suffering from this condition do not know where and how to obtain the appropriate treatment. Specialized care is scarce and therefore the internet is widely used as a way to access information about pain. In this research, we aim to investigate how Brazilians use this democratic search engine as a reliable source of information and what are the most sought after mediums for this research. The study was a descriptive research carried out through an electronic questionnaire, containing 16 questions about the use of the Internet to obtain information about pain. The sample consisted of 100 people with pain, 90% had chronic pain, 82.8% had women, the average age was 42.5 years. Of the participants, 96.8% accessed the internet on a daily basis. Most used media: 97.7% search tools, 62.5% Facebook, 50% YouTube.
Regarding the quality of the information: 87.5% were concerned about it; 57.1% stated that they checked the legitimacy of the content by observing whether the language was easy to understand and 48.1% whether the author had technical ability.
Given the finding that the available information about pain on the internet ranges from average to low quality, it is vital that this content be clarified so that patients may discern the quality of what the research shows. Health practitioners must also learn to use the online tools as allies in fostering health and must commit to the development of content that improve the quality of the offered information.

eP236

EVALUATING THE IMPACT OF EDUCATION PROGRAM ON IMPROVING NURSING KNOWLEDGE AND ATTITUDES TOWARDS PAIN WITHIN A DISTRICT GENERAL HOSPITAL

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Acute pain management continues to be an ongoing challenge faced by healthcare professionals in the acute setting. The incidence of pain has remains high with an estimated 75% of patients reporting moderate to severe pain in the acute setting, this has remained unchanged since the 1950‘s. Throughout the literature it is felt that this is largely due to a lack of knowledge and misconceptions regarding assessment and management of pain by all healthcare professionals.
A modified version of McCafferty & Ferrell Knowledge and Attitudes survey was used to evaluate nursing staff current level of knowledge and attitudes towards pain assessment and management. A baseline audit was performed and following the results a bespoke education plan was delivered to registered nurses across the District General Hospital. The survey was then repeated to evaluate the impact of the educational interventions.

58 surveys were completed in the base line audit and a further 65 were completed following educational interventions. The mean knowledge score increased from 73% to 76% following educational interventions, individual question analysis also reviled a significant improvement across questions relating to pharmacology, pain assessment and belief in patient‘s report of pain improved.
This audit has allowed for the identification of knowledge gaps and following educational intervention it was possible to change and challenge long held misconceptions regarding pain assessment and management. Even though there was a small improvement in mean knowledge score there was a significant improved seen in individual question analysis.

eP237

A STUDY ON KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING PAIN MANAGEMENT AMONG MEDICAL OFFICERS OF THE SRI JAYEWARDENEPURA GENERAL HOSPITAL

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Background: Pain is not a pathology, but a symptom indicating underlying disease. Blind treatment of pain can mask the only presentation of a possible sinister underlying pathology The objective of this study is to analyze the knowledge, attitudes and practices on pain management among doctors to prevent underuse, misuse and abuse of analgesics and to optimize pain management.
Methodology: This is a descriptive study, where a standardized self-administered questionnaire;”Knowledge and Attitudes Survey Regarding Pain” (KASRP) was filled by doctors at the Sri Jayawardenepura General Hospital, and analyzed.
Results: Among 102 participants the mean KASRP score was 56.25%, with majority of 59.8% subjects having moderate scores (50-70%), and 7.8% having high scores (>70%). The mean number of years of experience among those who had low scores was 3.52 years and that of high scores was 6.25 years, but there was no significant correlation between years of experience and KASRP score (p-0.073). The mean score of Postgraduate trainees was 61.9%. Post graduate trainees have a statistically significant higher score than Intern medical officers (p- 0.001) and Intern medical officers have a statistically significant higher score than medical officers (p- 0.04)
Conclusion: The awareness on pain management among the study population is average and needs to be improved. The Knowledge, Attitudes and Practices are higher among those who have a continuous medical education and training, Introducing pain management workshops will be beneficial in improving the outcome.

eP238

ANTENATAL EXPECTATIONS: PAIN, METHODS OF PAIN RELIEF, INFORMED DECISION MAKING

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Childbirth is a very important experience for most women. To be involved in decision-making implies educating and informing women about the methods to relieve pain in labor, reducing anxiety symptoms that occur at this stage. Thus, anesthesiologists have the responsibility to inform and clarify pregnant woman on the various methods of pain relief available, particularly epidural analgesia.
The aim of this article is to review pregnant women‘s expectations of labor pain and methods for its relief, ascertain the involvement of women in decision making, highlighting the importance of prenatal information on epidural analgesia, so they can give consent and experience this extraordinary moment. Literature search was conducted regarding women´s antenatal expectations of pain and pain relief in labor, methods available for pain relief, as well as their involvement in the decision-making. This literature review summarizes published studies that focus on

these variables. During labor, pain experienced by pregnant women is influenced by previous experiences which in turn modulate their expectations. Antenatal education about methods available for pain relief increases women satisfaction with birth experience and allows a time for reflection prior to decision-making. Pamphlets are the most common form of clarifying women regarding labor, but the role of the anesthesiologist in providing accurate information is crucial. Women have ideal hopes of what they would like to happen regarding pain relief. Antenatal information improves knowledge, clarifies unrealistic expectations of outcomes, augmenting skills in shared decision-making. Appropriate aids are advised, but do not replace the anesthesiologist´s interview.

eP239

ELECTRONIC CONSULTATIONS BETWEEN PRIMARY AND SPECIALTY CARE CLINICIAN. RESPONSE TIME

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Waiting times is an important issue in the Spanish Public Health System. To meet this problem some tools have been developed and E-consultations are one of them.
The Galician Public Health System decided to implement this tool in our sanitary environment (EOXI VIGO) to improve access to specialty care. In 2014 a pilot study for referring pain patients from primary care (PC) to our Pain Service was established; as a result to this pilot study (n=114), this referring tool was adopted as the regular reference way from primary care to our unit.
In this communication we have studied the actual time course on the e-consults in the year 2018.
Methods: This is a retrospective analysis of 676 patients´ medical charts with pain unit e-consults requested by medical providers in the EOXI Vigo. We divided the e-consult time course into two broad milestones: Response (time from submission of e-consult to the time the pain physician generates a clinical electronic response), and Follow up (Time elapsed from the response time to the moment the patient is revisited in our pain unit)
Results: Among the 676 e-consults requested from primary care physicians, we recommended a face-to-face consults for 74, 4%.
The average time needed for responses were 7,3 days.
The average time needed for Follow up 26, 9 days.
E-consultation, in our sanitary environment, is a procedure that favors communication between primary care physicians and the pain unit with a short response time and trying to move the patient as little as possible.

eP240

ASSESSING THE IMPACT OF PATIENT UNDERSTANDING ON PAIN PERCEPTION SCORING IN A COHORT OF PATIENTS ATTENDING A CHRONIC PAIN CLINIC

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Introduction and background: Nearly 1 in 5 people report periods of moderate to severe chronic pain. The physical, psychological, social and economic impacts on the individual and society are enormous. Given these facts, it is a pressing issue which requires investment, research and attention. As part of the Swansea University Medical School‘s curriculum, students decided to develop a resource that would convey some of the complexities of neuroscience and nociception and the current medical and surgical therapies. Material and Method In October 2015, questionnaries were handed out to all patients who attended the clinic over a period of two months. The aim of the questionnaire was to obtain from the patient cohort an understanding of:

- Beliefs surrounding pain, specifically: where pain originates from, how mood affects pain and the difference between acute and chronic pain
- Whether a resource that gave them more information about pain and its perception would be useful
- What treatment modalities they wanted more information on

Results: 100 questionnaires were distributed, with 25 returned completed by December 2015. Of these, 72% said they wanted to know more about how pain is produced by the body. 56% selected a booket, which informed the choice of format for the patient resource.Accompanying the booklet was a questionnaire asking for feedback on the resource.Patients could return this by post or online feedback to encourage participation in the process.
Conclusion: This resource has now been distributed to patients and we are collecting feedback.

EPIDEMIOLOGY

eP241

PAIN CHARACTERISTICS OF PATIENTS REFERRED TO A UNIVERSITY HOSPITAL SECONDARY CARE PAIN MEDICINE SERVICE IN LIVERPOOL, UK

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Background and aims: The demand for secondary care Pain Medicine Services (PMS) has continued to increase with the perception amongst clinicians working within those services that greater numbers of patients are referred with complex pain symptoms. This study aims to describe demographics and pain characteristics of patients referred to a secondary care PMS in Liverpool, UK.
Methods: Patients referred to the Royal Liverpool and Broadgreen University Hospitals NHS Trust PMS between June and November 2018 were retrospectively analysed. Demographic data were obtained from General Practitioners' referral information and the clinical information from the clinical review at first appointment with the PMS.
Results: 430 patients met the inclusion criteria; 64% were female. The age of patients referred ranged from 16 to 91 years old with the duration of pain ranging from 5 weeks to 46 years at time of first assessment. 283 (66%) patients had pain for over 2 years and the overall average pain duration at time of the first patient assessment was 7.2 years. 267 (62%) presented with multiple sites of pain; 46 (11%) with isolated back pain; 189 (44%) with back pain associated with pain in other sites; 148 patients had neuropathic pain, of whom 94 had radicular pain.
Conclusions: Musculoskeletal pain accounts for the majority of referrals with a significant proportion of patients presenting with widespread pain. Patients' duration of pain before referral to the PMS may be a reflection of service waiting times and the treatments that primary care services are able to provide.

eP242

MOST PREVALENT DIAGNOSES ASSOCIATED WITH CHRONIC PAIN IN ANDALUSIA. GENDER DIFFERENCES

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Background and objectives: Chronic pain is an unpleasant sensory experience that acts as a warning signal against imminent or existing damage, lasting more than three months. Several studies have related chronic pain with the comorbidity of other mental illnesses. The objective of this study is to describe the comorbidity of people with chronic pain in Andalusia.
Methods: A cross-sectional descriptive study was carried out based on a secondary analysis of the Andalusian Health Survey of Andalusia in 2015 using free software R. The sample size was 6569 people over 18 years old, living in Andalusia.
Results: The average age of the participants was 54.08 ± 16.48 years. 14% of respondents suffer from chronic pain (13.4% men and 17.8% women), observing an increase in prevalence from 55 years (20-28%). Women are more likely to suffer depression (OR: 1.5, 60%) and anxiety (OR: 1.85, 65%) in comorbidity with chronic pain than men. However, men have higher rates of comorbidity between chronic pain and kidney disease (OR: 1.55, 61%), hypercholesterolemia (OR: 1.57, 61%), gastric ulcer (OR: 2.28, 70%), heart attack (OR: 1.51, 60%), stroke (OR: 2.25, 70%) and other mental problems different from anxiety and depression (OR: 2.54, 72%).
Conclusions: Chronic pain is associated with comorbidity with all chronic diseases assessed in the survey. Results show different comorbidity rates for every related with gender, which implies the need to carry out an in-depth study of this inequality from a gender perspective, analyzing causes and consequences.
Keywords: Chronic diseases, chronic pain, comorbidity, gender

eP243

EVALUATION OF THE EPIDEMIOLOGY OF CONSTIPATION AS AN ADVERSE EVENT OF OPIOID USE IN THE UNITED KINGDOM IN RELATION TO OPIOID ANALGESIA POTENCY

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Background and aims: Opioid use is associated with gastro-intestinal adverse events. In this study, we evaluated how opioid strength impacted upon the risk of constipation.
Methods: Patients were selected from the Clinical Practice Research Datalink (CPRD); a large, routine primary care data source from the UK. Only patients whose record could be linked to Hospital Episodes Statistics were included. Continuous episodes of opioid exposure of ³90 days were selected from between January 1998 and December 2017 with the date of first exposure used to define their index date. Opioid exposure episodes were classified as either strong, weak or a combination. Constipation during the opioid episode was identified based upon either a laxative or enema prescription, or an inpatient hospitalisation with a constipation diagnosis.
Results: 290,275 opioid episodes met the study criteria; 8,235 (2.8%) were classified as strong, 251,659 (86.6%) as weak and 30,831 (10.6%) as a combination of weak and strong opioids. Based on laxative prescription; rates of constipation were 535.9 per 1,000 years exposure for strong opioids, 117.6 for weak and 183.6 for combined. The respective values for enema prescription were 49.6, 2.3 and 13.7, respectively. Furthermore, the rates of hospitalisastion with a diagnosis relating to constipation were 44.9, 6.0 and 22.2, respectively.

Conclusion: Exposure to strong opioids resulted in increased risk of constipation compared to weak opioids or regimens combining weak and strong opioids. The impact of constipation on patient quality of life and resource use should be considered when prescribing strong opioids.

eP244

PAIN IN CHILDREN AND YOUNG ADULTS WITH CEREBRAL PALSY

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Introduction: Cerebral palsy (CP) is a group of movement and posture disabilities caused by damage or abnormal development of the immature brain. Pain is a common problem for individuals with CP. In Sweden, 95% of all children and adolescents are followed in a national registry and follow-up program called CPUP, which includes data on pain. The purpose of this study was to analyse the pain prevalence based on sex, age and gross motor function. Pain was also characterized by intensity, pain site, and the effects of pain on sleep and daily activities.
Method: Cross-sectional register study using CPUP data collected in 2017-2018 on participants aged 4-18-years old. Gross motor function was classified using *Gross Motor Function Classification System (GMFCS)*. Logistic regression was used to analyse pain prevalence and effects on sleep/activities.
Results: In total, 3545 participants were included. The overall pain prevalence was 44%. Increasing age and female sex were associated with a higher risk of pain (OR 1.07, 95% CI 1.06-1.09 and OR 1.28, 95% CI 1.12-1.47 respectively). Pain site was most common in the lower extremities. Pain intensity increased with age and GMFCS-level. Hip/thigh pain and abdominal pain were the pain sites with the most intense pain. Of those who experienced pain, 36% and 61% experienced effects on sleep and daily activities, respectively.
Conclusion: This study expands the knowledge base regarding pain in CP, showing that effects on sleep and activities are common, and that pain intensity is more severe with increasing age and higher GMFCS-level.

eP245

PATTERNS OF CHRONIC PAIN IN OUTPATIENTS

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Background and aims: Chronic pain is a public health priority worldwide. It is characterized with high prevalence in hospitalized cancer and palliative patients in Georgia, however scarce data is available on chronic pain in ambulatory patients.
Methods: Cross-sectional survey aimed to study chronic pain prevalence, epidemiological patterns and impact on health-related quality of life (HRCoL) in 280 randomly selected patients in one of the outpatient clinics of the capital city during 2017. IASP and SF-36 questionnaires, adjusted to the national peculiarities and the numeric pain scale were employed. Results were processed for significance.
Results: Age ranged from 20 to 84, median was 31. Chronic pain prevalence was 27% (95% CI 22.15% - 35.65%, P< 0.005). 84% of patients were of productive ages. Over 50% were females. Headache (30%), low back pain (23,3%) and knee pain (23,3%) dominated among patients. 93.3% of the study subjects suffered of severe pain upon referral to the clinic. Over 40.0% - had a history of chronic pain for 5 years and more. Due to unrelieved pain every forth patient had to refer to family physician 2-3 times per year. Chronic pain had a serious impact on HRCoL, in particular on work ability and everyday activity (r_s=-0.593 p=0.005), sleep (r_s=-0.393 p=0.001), however it did not correlate with social attitudes and eating behavior.

Conclusions: 1. Chronic pain prevalence is high in outpatients; 2. Unrelieved pain is the main cause of frequent referral to family physicians; 3. Pain prevails in patients of active ages, having impact on HRCoL.

eP246

RISK FACTORS FOR DEVELOPING INSOMNIA IN CHRONIC SPINAL PAIN PATIENTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background and aims: Insomnia is a major problem in the chronic pain population, including people with chronic spinal pain (CSP), and has a negative impact on health and well-being. The purpose of this systematic review is to identify risk factors for developing insomnia in CSP patients.
Methods: Pubmed, Web of Science and Embase were searched, resulting in 2501 original research reports (no abstracts, case-reports, reviews, meta-analysis, letters, or editorials). All articles will be screened for eligibility on title and abstract, and then on full text. An article will be considered eligible if
(1) participants are human adults diagnosed with nonspecific CSP (neck or back pain present for at least 3 months) and
(2) insomnia related outcomes are presented.
Reference lists of the relevant articles will be hand-searched for additional eligible papers. Screening, study selection, methodological quality assessment and data extraction will be done by three independent reviewers. The odds ratios of every investigated factor by the eligible studies will be presented. Data will be pooled in meta-analysis if possible. When a high heterogeneity between studies is present, subgroup analyses will be conducted based on study design, pain location or used measurement tool.
Results: Review is ongoing. Main results will be ready to present at the congress.
Conclusions: To our knowledge, this is the first review investigating risk factors associated with the development of insomnia in CSP patients. Findings may contribute to early detection of persons at risk, and to the development of new treatment and prevention strategies.

eP247

OCCUPATIONAL RISK ASSESSMENT OF LOWER BACK PAIN FOR INDUSTRY WORKERS

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Occupational risk related to lower back pain has been analyzed based on the results of medical examination of 3215 industry workers and odds ratio (OR) for lower back pain has been calculated. Male workers aged 30 to 50 have greater risk of developing LBP. Overweight and obesity increase the risk of LBP, which is particularly evident when body mass index exceeds 26 (OR= 4, 2). The cervical spine pain (OR =5,9) and joint disease (OR= 2,4 (95% CI 1,42-4,08) increase dramatically the risk of developing LBP. Other important factors contributing to the development of LBP disorders are weight lifted, body tilt (OR =1,89 (95% CI 1,39-2,56), whole-body vibration (OR =2,9). The most impact is made by continuous workload during workshift, lifting and carrying heavy loads by hand (OR =2,2). Continuous sitting or standing in the same working posture are also considered to be risk factors for LBP (OR= 1,42 (95%). An IPAQ-based study of work-related and leisure-time physical activity has yielded interesting results: the prevalence of LBP is affected by insufficient or vigorous physical activity at work; leisure-time physical inactivity definitely increases the risk of LBP as well (OR= 1.5). At the same time, such comorbidities as medical conditions related to respiratory system, gastrointestinal tract, as well as cardiovascular diseases and smoking do affect the probability of lumbar pain syndromes in industry workers.

ETHICS AND LEGAL ISSUES

eP248

PROCEDURAL CONSENT - DO ACUTE AND PERSISTENT PAIN WARRANT A MENTION?

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Background and introduction: Persistent pain after surgery is well described (1, 2), as is the strong association between unrelieved acute pain and chronic postsurgical pain (CPSP). A surgeon‘s failure to inform the patient of the risk of persistent pain after a surgical procedure has resulted in an appeal by a claimant against an NHS Trust (3). The claimant argued unsuccessfully that a breach of duty took place.
Methods: After gaining institutional approval we undertook a prospective review of procedural consent forms of patients scheduled for intermediate and major cardiothoracic surgery (via minimally invasive and traditional surgical incisions) and cardiac device insertion (pacemakers and internal cardiac defibrillators) from 01.03.2019 - 31.05.2019 in a tertiary cardiothoracic institution.
Results: Final results will be available for presentation at congress. Appropriate statistical analysis will be undertaken to illustrate findings.
Conclusions: CPSP is well established in the literature. Recent trends in judicial claims for chronic pain may change how we consent patients for surgical procedures. This review of consent practice will illustrate proportions of patients who have been consented for pain as part of their procedural consent. Following completion, the findings will be disseminated to raise awareness, promote discussion and promote changes in practice.
1. Gan T. Poorly controlled Postoperative pain: prevalence, consequences, and prevention J Pain Res. 2017; 10: 2287-2298.
2. Bruce J, Quinlan J. Chronic Post Surgical Pain Rev Pain. 2011 Sep; 5(3): 23-29.
3. England and Wales Court of Appeal (Civil Division) Decisions (2018): http://www.bailii.org/ew/cases/EWCA/Civ/2018/1307.html; [Accessed 17.02.2019]

HISTORY

eP249

IS THE BRITISH NATIONAL FORMULARY THE BIBLE OF CHRONIC PAIN MANAGEMENT?

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Background and aims: The British National Formulary (BNF) is considered to be a core reference text in the United Kingdom regarding prescribing within the National Health Service with the first being published in 1981. The aim of this study was to review the advice on opioid prescribing in chronic pain over the last 38 years.
Methods: Each edition of the BNF was reviewed. Morphine sulphate was examined within the text and the guidance for its use in the context of chronic pain was analysed.
Results: Since its introduction, 76 editions of the BNF have been published and each were reviewed. The indication of chronic pain for morphine sulphate was first introduced in edition 11 in 1986. Then, morphine sulphate was recommended in chronic pain at a dose of oral 5-20mg, regularly at 4 hourly intervals. This equates to a maximum of 120mg per day which is the current maximum morphine dose by the Faculty of Pain Medicine. The BNF 54 in 2007 changed the recommendation to 5-20mg at 4 hourly intervals as required. In 2010, the BNF 60 further reduced the recommended dose to 5-10mg at 4 hourly intervals. This equates to a maximum total daily dose of 60mg.
Conclusions: It is remarkable that the BNF identified in 2010 the need for a lower dose of morphine for chronic pain before the start of the opioid crisis. Perhaps the foresight of this publication will be reflected in national guidance soon.

eP250

POLISH PIONEERS OF REGIONAL ANAESTHESIA

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Aim: The aim of this paper is to present outstanding Polish physicians, Henryk Hilarowicz (1890-1941) and Ryszard Rodziński (1890-1938), who were the first in the world to describe and apply in everyday clinical practice the regional techniques developed by them at that time (in the 1920s): the interscalene brachial plexus block (performed between the anterior and middle scalene muscles) and combined spinal-epidural anaesthesia.
Methods: For this purpose, the available medical literature, databases and documents from 1920-1939 were reviewed.
Results: Professor Henryk Hilarowicz first described the technique of brachial plexus block performed in the interscalene groove between the anterior and middle scalene muscles. His article describing the technique was published in the German journal *Zentralblatt für Chirurgie* in 1925 *[Hilarowicz H.: **Zur Technik der Leitunganästhesie am Plexus Brachialis**, Zentralblatt für Chirurgie 1925, 42, 2349-2351]*, 45 years before Alon Winnie, who is widely credited as the originator of this method.
Ryszard Rodziński was the first in the world who combined both neuraxial blocks. He used combined spinal-epidural analgesia not only in general surgery, but also in gynaecology, obstetrics, and urology. *[Rodziński R.: **Über eine neue Betäubungsmethode der unteren Körpergebiete: Sakrolumbalanästhesie.** Zentralblatt für Chirurgie 1923, 50, 1249-1251].*

Conclusions: Based on the evidence available in historical documents and medical literature, Henryk Hilarowicz and Ryszard Rodzinski should be regarded as worldwide pioneers of regional anaesthesia.

ORGANISATION OF CLINICAL PAIN CARE

eP251

TEAM WORKING AND INTERPROFESSIONAL PRACTICE IN HEADACHE MANAGEMENT

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Background and aims: Primary headaches affect 79.6% of the European population (M:F ratio = 1:2). It is a disease that affects biopsychosocial factors with a biobehavioral disorder resulting from the interlocking between cortical hypersensitivity and the social learning process.
Primary headaches generate a challenging answer for the multidisciplinary treatment program (MTP), with disadvantages for the patient, such as the time consumed and the cost of private treatment. It takes time to generate adherence to treatments but as a consecuence it can increase treatment efficacy and reductions in the painful frequency of symptoms among several outcomes. Possibly, the best approach is a combination of pharmacological and non-pharmacological treatments.
The aim is to critically evaluate the evidence for the effectiveness, benefits and weaknesses of inter/multi-disciplinary teams in the management of primary headaches.
Methods: A systematic review has been conducted, screening and reviewing more than 10 among databases and journals to answer the aim.
Results: The evidence analysed supports the efficacy, benefits of inter/multidisciplinary teams in a Headache Management Programme in improving patient outcomes, subsequently promoting more in-depth team working and interprofessional practice and discussion about the feasibility for continuation of the delivery of MTP.
Conclusions: Using a multidisciplinary team favours the correct treatment approach that is now multidimensional, rather than only pharmacological, in order to be able to approach it from a holistic biopsychosocial viewpoint. Adverse effects are not typically demonstrated and where a worsening of symptoms has been noticed in a very small percentage.

eP252

FIVE YEARS OF AN INTEGRATED PAIN POLICY PROJECT IN THE BELGIAN HOSPITALS

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Background: Following an inter-university research in 2011 on the incidence, the approach and suggestions on the organization of an integrated pain policy, the administration of the Minister of Health and Social Welfare launched in the summer of 2013, three projects financing different multidisciplinary teams in the Belgian hospitals: a multidisciplinary algological team in every hospital (n=102), 35 multidisciplinary centers for the treatment of chronic pain and 13 projects on the problem of “pediatric pain”. This multimodal national initiative has been reported at the

EFIC conference of 2015 in Vienna (1).
Methods: Every hospital reported yearly a standardized report collecting quantitative data on the composition of their teams, formation, infrastructure, activities in and outside the hospital, case-mix of the patient group, networking and a description of opportunities and threats in a qualitative way.
With the collection of the data from 2018 the guidance committee of the Federal administration likes to present the aggregated data in the evolution during the past 5 years of this national policy project.
Results: Given the general evolution in Belgium towards hospital networks, the results will focus on the formation of such networks in the regional collaboration between the three different projects and the development of shared protocols and sharing expertise in relation to pain policy.

eP253

PAIN MANAGEMENT IN EMERGENCY DEPARTMENT: FROM TRIAGE TO SPECIALIZED CARE

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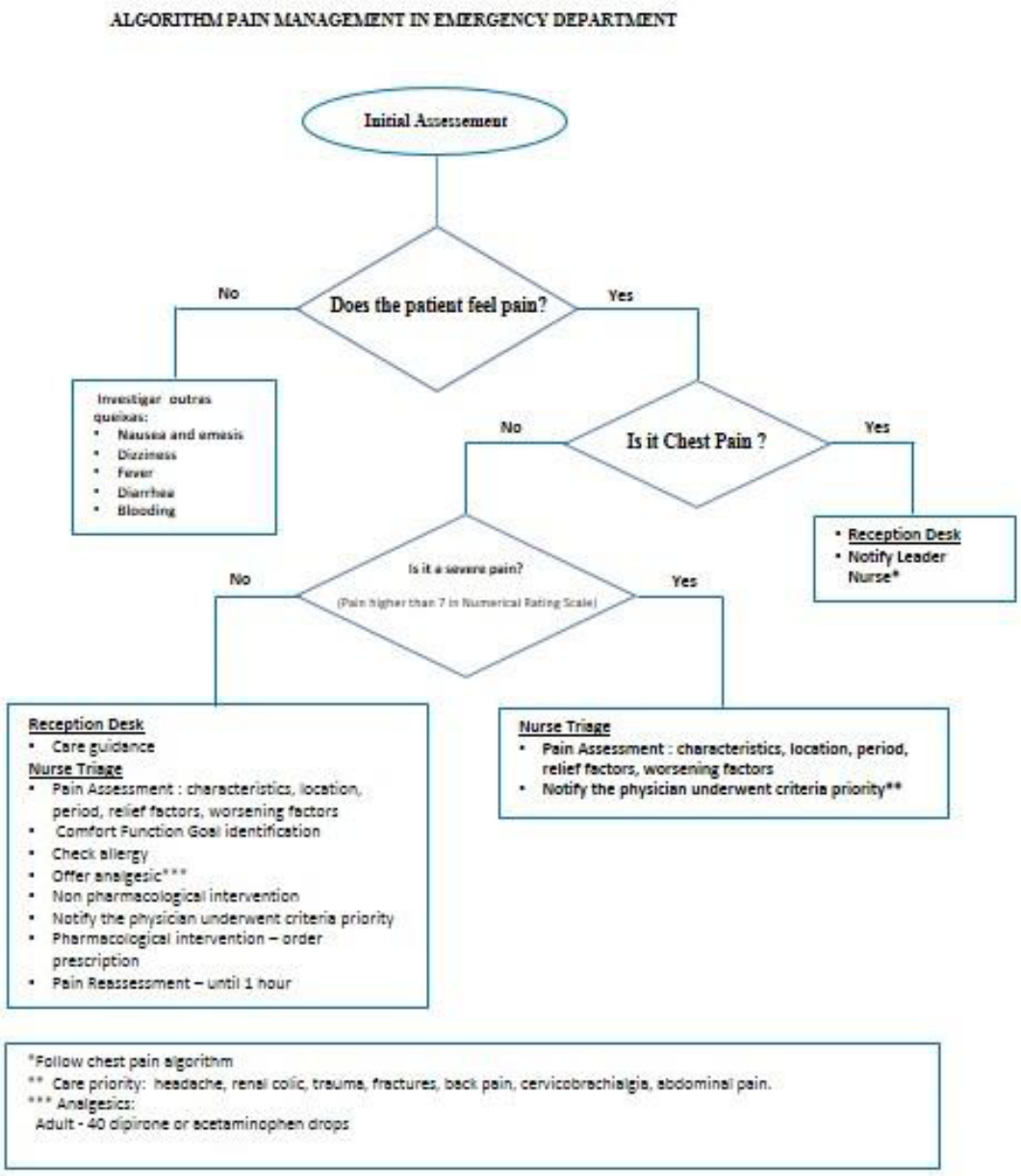
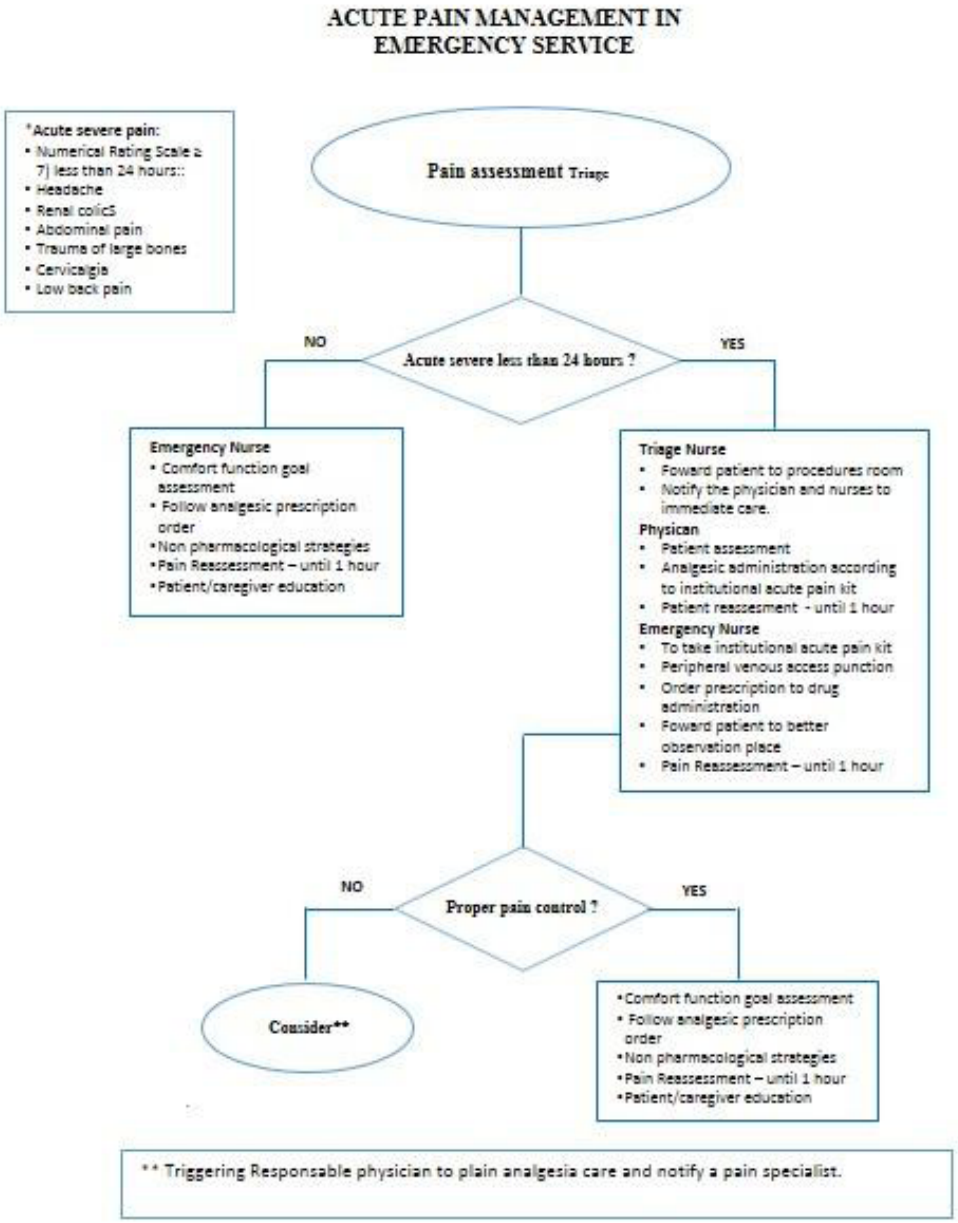
Background and aims: It is estimated that 75% of patients seeking care in Emergency Department are experiencing some level of pain. Pain is also the primary reason patients seek medical care and take prescription medications. Many patients waiting in Emergency Departments have to endure pain for extended periods as a result of overcrowding. The nurse triage is an important tool to prioritize the pain management.The aim of this study is to describe a pain management algorithm in the emergency department.
Methods: Scientific integrative review through bibliographic search in databases Scopus, Medline, LiLACS and WebofKnowledge. It was performed a search strategy with the following terms (“triage or “emergency services hospital”) and (“pain management” or “pain measurement” or pain) and time-to-treatment”. The inclusion criteria were adult patients, referred pain in the Emergency Unit and nursing triage. Studies were assessed through Melnyk criteria.
Results: 59 papers about pain management and nurse triage in emergency department were found, after the reading and analysis underwent criteria 15 papers were included to develop the pain management algorithm (Fig.1- 2).
Conclusions: The pain management algorithm can improve the quality care in emergency services.


ALGORITHM PAIN MANAGEMENT IN EMERGENCY DEPARTMENT
Initial Assessement
Does the patient feel pain?
No
Yes
Investigar outras queixas:
Nausea and emesis
Dizziness
Fever
Diarrhea
Blooding
Is it Chest Pain ?
No
Yes
Reception Desk
Notify Leader Nurse*
Is it a severe pain?
(Pain higher than 7 in Numerical Rating Scale)
No
Yes
Reception Desk
Care guidance
Nurse Triage
Pain Assessment : characteristics, location, period, relief factors, worsening factors
Comfort Function Goal identification
Check allergy
Offer analgesic***
Non pharmacological intervention
Notify the physician underwent criteria priority
Pharmacological intervention – order prescription
Pain Reassessment – until 1 hour
Nurse Triage
Pain Assessment : characteristics, location, period, relief factors, worsening factors
Notify the physician underwent criteria priority**
*Follow chest pain algorithm
** Care priority: headache, renal colic, trauma, fractures, back pain, cervicobrachialgia, abdominal pain.
*** Analgesics:
Adult - 40 dipirone or acetaminophen drops

[Figure 1]


ACUTE PAIN MANAGEMENT IN EMERGENCY SERVICE
*Acute severe pain:
• Numerical Rating Scale ≥ 7) less than 24 hours::
• Headache
• Renal colicS
• Abdominal pain
• Trauma of large bones
• Cervicalgia
• Low back pain
Pain assessment Triage
Acute severe less than 24 hours ?
NO
YES
Emergency Nurse
• Comfort function goal assessment
• Follow analgesic prescription order
• Non pharmacological strategies
• Pain Reassessment – until 1 hour
• Patient/caregiver education
Triage Nurse
• Foward patient to procedures room
• Notify the physician and nurses to immediate care.
Physican
• Patient assessment
• Analgesic administration according to institutional acute pain kit
• Patient reassesment - until 1 hour
Emergency Nurse
• To take institutional acute pain kit
• Peripheral venous access punction
• Order prescription to drug administration
• Foward patient to better observation place
• Pain Reassessment – until 1 hour
Proper pain control ?
NO
YES
Consider**
• Comfort function goal assessment
• Follow analgesic prescription order
• Non pharmacological strategies
• Pain Reassessment – until 1 hour
• Patient/caregiver education
** Triggering Responsable physician to plain analgesia care and notify a pain specialist.

[Figure2]

eP254

ROLE OF A CLINICIAN NURSE IN MANAGEMENT OF HOSPITAL CONSULTATION REFERRALS IN A TERTIARY CARE PAIN CLINIC. *PRELIMINARY RESULTS*

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Background and aims: Utilization of a clinician nurse for management of patients with chronic pain has been encouraged in the past as part of an interest to reduce the cost of medical care, but also to give the patient a more personalized and less crisis oriented service. Here we present results of such a collaboration for patients who are admitted at a tertiary care hospital and medically stabilized but who require chronic pain services.
Methods: The clinician nurse time is dedicated to these referrals and begins with triage of elements used for priority. The clinician nurse intervention then involves significant teaching towards nursing and medical staff about overall use of analgesics, patient advocacy and presence amongst multidisciplinary meetings.
Results: The pain clinic staff physician will only be consulted for 3 out of 4 new referrals and 1 out of 5 reassessments. There is a constant pool of 10-15 admitted patients for which our pain clinic is actively involved but only 1 out of 10 will require outpatient follow up at our clinic after discharge.
Assessment facilitators include positive physician attitude towards a clinician nurse expertise and support from hospital administration. The most common barriers include staffing shortages and negative prejudice towards patients viewed as having ‚pain or opioid seeking behaviour".
Conclusion: An established collaborative agreement between a clinician nurse and a group of physicians leads to reduced discharge times for patients.

eP255

BY THE WAY - LAST MINUTE DISCLOSURES

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Introduction: Patients present important information while leaving the consultation.
Aim of this quality improvement project was to reduce the number of such last-minute disclosures (LMD).
Methods:

- Systematic search for communication strategies to reduce LMD
- Iterative plan-do-study-act cycles introducing one strategy per week
- Each strategy was used at least 20x
- Outcome measure: number of patients with LMD

Results:

- Found 9 different strategies, one discarded as impractical (give extra appointment), 8 trialled
- Evaluated 172 consultations
- LMD rate reduced from 45% before to 17% after the project
- The overrun per clinic caused by disruptively late information was reduced from 18 to 6.8 minutes, saving 11 minutes,

Most useful were:
— Invite patients to disclose their agenda by open questions
— Orient patients to structure of consultation
— Summarize
— Ask about ‚anything else'
— Create artificial door situation

Not useful:
— Write down cues to secondary issues
— Hand out clinic letters straight away
— Speed up consultation in order to make time for last-minute disclosures
— Arrange to deal with the additional issue at the next appointment
Conclusion: Sequential plan-do-study-act cycles are useful to improve clinician communication skills.
LMD is a practical, ``hard´´, countable, non-subjective outcome measure of communication skills.
Improved communication skills worked better than tweaking the clinic system.
We use the results to teach consultation skills to our trainees.

eP256

A PROPOSAL OF VIRTUAL COMMUNICATION BETWEEN PRIMARY CARE UNITS AND THE CHRONIC PAIN UNIT

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Actually 83% of patients with chronic pain are treated by family doctor, 15% by other specialists and 2% by the Chronic Pain Unit.
- Main objective: To optimize the coordination between the Primary Care Units and the Chronic Pain Unit of the A.G.S. South of Seville
- Other Objectives*:* Implement improvement actions that allow an adequate management of the Chronic Pain Process in Primary Care, as well as a better referral of patients to the Chronic Pain Unit.
Method: A review of the patients derived from Primary Care to the Chronic Pain Unit was carried out and the compliance of the referral criteria to the Chronic Pain Unit was analyzed.
Results: Of 904 patients assessed in first consultation, 20% were directly derived from family doctor and 80% from other specialties. Of the patients referred from Family Doctor 47% did not meet criteria to be referred to the Chronic Pain Unit. It was developed from a tool that allowed virtual communication between professionals from different Units, called „SharePoint“. SharePoint is a platform that can be used on websites and that allows access to shared workspaces, information stores and documents.
Conclusions: The use of this tool by primary care professionals and the Chronic Pain Unit has allowed:
- The family doctor consult any doubt and raise cases of patients with chronic pain processes virtually.
- The Specialist Pain carries out a filter through a virtual consultation.
- The cases derived are patients with complex chronic pain process.

eP257

PSYCHOPHYSICAL MULTI-PROFESSIONAL PAIN THERAPY GROUP AS PART OF OCCUPATIONAL HEALTH CARE AND TREATMENT OF CHRONIC PAIN

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We have introduced a chronic pain management model in which we seek to utilize the most versatile expertise possible

A team of pain care professionals (medical specialists, psychologist, physioherapist and socialworker) work together with 10 -12 chronic pain patients in 8 weekly sessions.
Access to the group patient requires prone to prolonged pain, sufficient medical examinations and first-aid, self-will and psychological and physical resources sufficient for peer learning.
The goal of chronic pain group therapy is

- Reinforcing patients pain management.
- Prevent new flare-ups of pain.
- Improve the QOL despite the chronic pain.
- Prevent or deminish the using frequency of health care services and drug misuse.
- Prevent or deminish absence from work

The whole pain therapy group course includes 16 hours of pain management activities and information led by healthcare professionals and course material, books, as a home material.
One of the goals of the Pain Management Group is to use as much as possible the help of psychological pain management
Specialized occupational health psychologist provides information and coaching of nonmedical pain management techniques. Process includes mapping patient‘s needs for information, patient‘s excisting pain management behaviors and need for refinement or change of them. The specialist also screens possible pain related trauma and plans the needed therapeutic treatment in co-operation with medical staff in charge of the patient‘s care. If needed the occupational psychologist assists in psychic work ability assesment prosess. Coaching of pain managements techiques includes cognitive based short therapy, NLP and individualized relaxation training and mindfullness training.

eP258

THE IMPORTANCE OF A PAIN CLINIC IN PRIMARY CARE - A 4 YEAR EXPERIENCE

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Background and aims: The burden associated with chronic pain has a social and economic impact that justifies a new framework for its management.
Pain management consults in primary care units can become a vital component for improving the quality of life of individuals suffering from chronic pain. This will inevitably lead to less disability days and have a major positive impact in the social and economic condition of a country.
Methods: We developed a referral protocol for a primary care unit in Portugal, with approximately 16000 patients. In this protocol, patients are referred to the chronic pain consult by their physician. In this consult the patient is assisted by a primary care physician specialized in pain management, working in the same primary care unit.
This enables a fast-track for patients suffering from chronic pain, offering the patient a rapid first observation in their primary care unit. Furthermore, there is a quicker access to a follow up visit which leads to a greater efficacy in pain relief of these patients.
Results: Over the last 4 years we made aproximately 2000 pain consultions. Our patient´s satisfaction and improvement in quality of life are routinely evaluated. We found that more than 80% of our patients are very satisfied with this consultation and that more then 70% showed a marked improvement in pain scores as well as quality of life indicators.
Conclusions: We think this model could be replicable in other primary care settings, thus helping improve the quality of pain managment.

ORGANISATION OF RESEARCH IN PAIN

eP259

THE EQIPD FRAMEWORK FOR RIGOUR IN THE DESIGN, CONDUCT AND ANALYSIS OF BIOMEDICAL EXPERIMENTS

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There has been growing awareness of the negative repercussions of unstandardized planning, conduct and reporting of preclinical research. Several initiatives have set the aim of increasing validity and reliability in reporting of studies and publications. While these overlap significantly, they differ in detail, and show variance in generalizability or specific challenges for a single field. Consequently, it is hard for researchers to decide which guidelines to follow, especially at the stage of planning future studies.
Aim of the EQIPD (European Quality in Preclinical Data) framework was to unify current suggestions, find a basis in evidence behind their rationale, and prospectively test the newly set framework for feasibility in multi-center animal experiments.
A systematic review of guidelines identified 62 publications fitting the inclusion criteria. A list of 58 items were extracted, and in a Delphi process 33 of these were constructed into five major domains:
Exploratory vs. confirmatory research: Is your experiment testing a predefined scientific hypothesis which is statistically testable or is it exploring a space of interesting options to generate hypotheses?
Pre-planning and standard operating procedures: Prespecify, document and standardize all methods and analyses before the experiment.
Statistics: Think about which form of aggregate measures are meaningful for your data and choose appropriate statistical methods and plan your sample size accordingly.
Randomization and blinding: Randomize and blind your processes to avoid the introduction of confounding and systematic error.
Documentation: Not all bias can be avoided, but most can be uncovered: use full and comprehensive documentation.

eP260

ANTINOCICEPTIVE EFFECT OF AVENANTHRAMIDE C IN A RAT MODEL OF INFLAMMATORY PAIN

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Background and aims: Avenanthramides (Avns) extracted from oats and those synthetically prepared exhibit potent antioxidant properties in vitro and in vivo. Avenanthramides C (Avn-C), one of the major forms of Avns has the highest antioxidant activity in vitro. Therefore, the purpose of this study was to examine the effect of Avn-C in the formalin-induced pain model.
Methods: An intrathecal catheter was inserted in male Sprague-Dawley rats. For induction of pain, 50 μl of 5% formalin solution was applied to the hind paw. Pain behavior was quantified by periodically counting the number of flinches of the injected paw after injection. The number of flinches was counted for 1 min periods at 1 and 5 min and at 5 min intervals from 10 and 60 min. For the intrathecal dose-response study, Avn-C was administered intrathecally 10 min before the formalin injection.
Results: Intrathecal administration of Avn-C decreased dose-dependently the sum of the number of flinches during phase 2, but not during phase 1 in the formalin test.
Conclusions: These findings indicate that Avn-C is effective against facilitated pain evoked by formalin injection at the spinal level. Thus, the spinal Avn-C may be useful in the management of tissue injury pain.

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PSYCHOLOGY

eP261

GOAL REENGAGEMENT AS A MEDIATOR BETWEEN SOCIAL SUPPORT AND ADAPTATION OF PATIENTS WITH CHRONIC PAIN

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Background and aims: The theoretical framework for this research was the Goal Adjustment Model. The aim of this study was to investigate the relationships between social support and the strategy of goal reengagement in a sample of patients with chronic pain and how this association affects their well-being. It was postulated that the variable goal reengagement had a mediating effect between social support and the adaptation of patients with chronic pain understood as pain intensity, daily functioning, disability, vital purpose and positive affect.
Methods: One-hundred and sixteen patients with chronic musculoskeletal pain took part in this study. They were administered a battery of questionnaires to assess positive affect, social support, goal disengagement and goal reengagement, pain intensity, disability , daily functioning and vital purpose.
Results: The results only confirmed the mediating effect of goal reengagement between social support and positive affect.
Conclusions: It would be convenient to train patients to seek and maintain meaningful social relationships. Likewise, family and health professionals should be instructed to provide adequate social support. In addition, patients must be trained in the management of their vital goals, especially in the commitment with new goals.

eP262

THE INFLUENCE OF ATTENTION ON VISUAL INDUCED ANALGESIA

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Visual analgesia describes a reduced pain perception induced by watching the painfully stimulated body part (e.g. hand) compared to watching a neutral object (e.g. book). In chronic back pain patients, visual analgesia could be shown in respect to experimental pain, movement-induced pain and habitual pain. Visual feedback also improved the effects of massage treatment and manual therapy. However, it remains unclear to which extent these effects are driven by attentional processes due to the unfamiliarity with one‘s own back.
Participants received painful electrical stimuli at the thumb and the back while either the real-time video of the thumb or the back was presented on the screen (condition: visual feedback). In addition, they had to count the number of

faster presented stimuli, either on the back or the thumb (condition: attention).
We found significant main effects for attention and visual feedback as well as a significant interaction. While the back was being watched and the attention was focused on it, the pain on the back was rated as being less intense than in all other conditions.
This result suggests that directing attention to the visually presented site increases the effect of visual analgesia. The significant difference between attention and distraction by getting visual feedback of the back showed that the factor attention modulated pain and enhanced the effect of visual analgesia. In contrast, distracting from pain and watching another part of the body could also reduce pain. However, the combination of visual analgesia and attention yielded the lowest pain ratings.

eP263

PATIENT'S BELIEFS AND VIEWS OF THEIR CHRONIC PAIN

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Background and aims: Beliefs and views about one's disease can lead to negative or positive emotional states and (mal)adaptive behaviours. At our outpatient rehabilitation service, we regularly organise educational-interactive workshops for non-cancer chronic pain patients. Health professionals (specialist in physical and rehabilitation medicine, clinical psychologist, physiotherapist and occupational therapist) educate chronic pain patients to develop a better theoretical understanding of chronic pain syndromes and facilitate better coping with various problems related to chronic pain.
Methods: Between November 2018 and February 2019, we conducted seven educational-interactive workshops for chronic pain patients. In order to identify patient's automatic thoughts, expectations and beliefs regarding their chronic pain, we asked them a question: "When you think about chronic pain, what thought or image goes through your mind?« Patients individually and anonymously wrote their answer. In our research, we included 103 patients (88 female, 15 male).
Results: We divided the answers into seven content categories of automatic thoughts: "Resignation, despair", "Non-acceptance, fear, uncertainty", "Impact on pain", "Causes", "Misunderstanding by others", "Psycho-social consequences" and "Acceptance, hope".
Conclusion: Our content categories of automatic thoughts (secondary appraisals) are consistent with the transactional model of stress by Lazarus and Folkman of three general types of primary appraisals: threat ("Non-acceptance, fear, uncertainty", Misunderstanding by others", "Psycho-social consequences", "Causes"), loss ("Resignation, despair") and challenge ("Impact on pain", "Acceptance, hope"). These findings can help the professionals to identify chronic pain patients' views and beliefs about their pain and facilitate more effective coping with chronic pain and chronic pain related challenges.

eP264

AUTOMATIC THOUGHTS OF CHRONIC PAIN PATIENTS REGARDING THEIR MEDICAL DOCTOR - PATIENT RELATIONSHIP

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Background and aims: For chronic pain patients, the medical doctor-patient relationship is very important regarding the patients' compliance and successful outcome of chronic pain rehabilitation programmes. From literature and our

clinical experience, we can see that medical professionals and patients still have difficulties understanding the bio-psycho-social model of pain, which has an important impact on the patient - medical doctor relationship. The purpose of our research is to identify the patients‘ automatic thoughts, expectations and beliefs regarding their relationship with their medical doctor.
Methods: Between November 2018 and February 2019, we conducted seven educational-interactive workshops for chronic pain patients. Our research included 116 patients (99 female, 17 male). At the beginning of each a workshop, the patients were posed a question: “What thought or image goes through your mind when you visit your medical doctor regarding chronic pain?
Results: We divided answers of patients with chronic pain into six content categories, written in descending order regarding their frequency: “Emotional aspect”, “Misunderstandings, prejudices, stigma”, “Expectations finding the cause of pain and to cure it”, “Somatic aspect of pain”, “Medications”, “Job”.
Conclusion: Based on the written responses of patients we highlight the importance of medical doctors recognizing and understanding their chronic pain patient‘s emotional experiences/reactions. The results also show the difficulties chronic pain patients experience in accepting the chronic nature of their pain. These findings can help us to educate patients as well as doctors with the purpose of improving the patient-medical doctor relationship.

eP265

THE ROLE OF FACIAL MUSCLE MANIPULATION IN PAIN-RELATED EXPERIENCE: PILOT STUDY

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Background and aims: Facial feedback hypothesis posits that deliberate activation of facial muscles related to a certain emotion induces the experience of emotion. Current study aims to explore whether different manipulation of facial muscles influences individual‘s pain-related experience.
Methods: Healthy university students blinded to the purpose of the study were informed that the present study aims to investigate the role of psychological factors in multi-tasking. Participants were randomly assigned to Duchenne smile (n = 8), frowning (n = 8), and neutral conditions (n = 8). While engaged in a cold pressor task, participants were instructed to hold chopsticks in their mouth and activate facial muscles assigned to each condition. Participants reported pain intensity and pain recovery using a numerical rating scale; and threshold and tolerance measurements were taken. For the statistical analysis, multivariate analysis of variance (MANOVA) was employed.
Results: MANOVA results indicated participants assigned to each condition had significant difference in pain intensity. Duchenne smile condition reported the highest pain intensity (M = 7.63) followed by neutral (M = 7.38) and frowning condition (M = 5.38). Furthermore, participants in Duchenne smile and frowning condition reported significant difference in pain recovery. Duchenne smile condition (M = 7.00) reported significantly higher pain recovery score than frowning condition (M = 4.38).
Conclusions: Inconsistent with facial feedback hypothesis, findings implicate that smiling while physically experiencing pain may not be beneficial. However, when painful stimulus is removed, smiling can help recovery from the pain.

eP266

MACHINE-LEARNING DERIVED PATTERNS OF PSYCHOLOGICAL PARAMETERS RELATED TO PAIN INTENSITY AND INTERFERENCE IN PATIENTS TREATED FOR BREAST CANCER

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Backgroud and aims: Psychological factors modulate pain perception, interpretation and coping. For multimodal pain treatment to be successful, we should be able to recognize psychological traits that explain unfavourabe coping. The aim of the present analyses was to show the utility of machine-learned techniques to identify clusters of psychological variables that associate with pain-related coping.
Methods: We studied 373 women treated for breast cancer for pain intensity and interference (BPI), sleep-related (ISI), and 16 psychological parameters including depressive symptoms (BDI), anxiety (HADS), temperament (TCI), personality (TIPI), resilience (RS-14), and catastrophising (PCS). Patients were allocated into five pain groups based on their levels of pain intensity and interference. A self-organizing map was trained with the psychological variables. Fast and frugal tree-analysis was performed to identify variables associated with pain groups.
Results: A structure emerged in the patterns of psychological variables indicating two clusters. A small subgroup (N=43) was characterized by low resilience, higher depressive symptoms, and low extraversion. The group "Low pain but high interference" (N=33) was overrepresented. Focused exploration of these patients indicated that in addition to being more depressive and less resilient, they displayed increased symptoms of insomnia, catastrophising and anxiety.
Conclusions: The results support the utility of data-driven approaches to help to identify cluster structures from psychological variables associating with pain. This approach is applicable for structuring new hypotheses and finding target variables for interventional studies. A subgroup of patients with "low pain intensity but high interference" needs multimodal pain treatment, focusing especially on sleep, mood, and catastrophising.

eP267

PREVALENCE OF POST SURGERY CHRONIC PAIN AFTER HYBRID ABLATION OF ATRIAL FIBRILLATION IS PREDICTED BY DEPRESSION, ANXIETY, INTENSITY OF PAIN AND EDUCATION

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Background and aims: We aimed to compare the prevalence of postsurgery chronic pain (PSCP) between patients who had undergo staged hybrid ablation (HA) for atrial fibrillation and those who had undergo conventional cardiac surgeries (CS).
Methods: 38 HA patients (age 64±9.5, 58% M, education 13.6y±2.7) and 42 CS patients (age 67±8.5, 81% M, education13.6y±3.3, coronary artery bypass graft (CABG) 38%, heart valve surgery 31%, mixed CABG/valve surgery 31%) completed self-report tools before surgery, 3 and 12 months thereafter. Questionnaires measured depression (BDI-II), anxiety (GAD-7), pain intensity/unpleasantness, location (VAS, Margoles), fear-related pain (FPQ-III).
Results: The two groups did not differed significantly regarding the prevalence of PSCP in 3 months after surgery, but differed significantly in 12 monts after surgery (Fisher´s test, p=0.017). In the HA group 21% (n=7) patients experienced PSCP compared to 48% (n=20) patients in CS group. We found strong significant positive correlation between intensity of pain and depression before (r=0.361, p=0.026; r=0.353, p=0.028) and 3 months after surgery in both groups (r=0.375, p=0.038; r=0,414, p=0,007). Regression analysis in HA indicated that depression and anxiety presurgically were predictive factors for PSCP in 3 months (p=0.019, p=0.019); intensity of pain and education were predictive factors for PSCP in 3 (p=0.026, p=0.020) and 12 months (p=0.005, p=0.031).
Conclusions: The rate of PSCP was less in patients undergoing HA comparing CS in one year folow up. PSCP in HA group was significantly predicted by preoperative anxiety and depression.
Acknowledgments: This study was supported by Grant Ministry of Health, Czech Republic (No 16-32478A).

eP268

UNINSTRUCTED PARTICIPANTS USE PAIN SCALES TO INDICATE SOCIAL DISTRESS

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Background: In common usage, the term "pain" is often used to denote emotional distress. In recent years, this broader use of the term has also permeated the scientific literature, notably to describe the distress of social exclusion ("social pain") (Eisenberger, 2015). This raises the possibility that individuals might use pain scales to reflect their current emotional state, creating ambiguity around self-reported pain in clinical and experimental settings. To examine this possibility, we elicited social distress and then asked participants to rate pain both with and without explicit instructions on what should be considered pain.
Methods: Forty participants played a computerised ball-tossing game in a three-player social exclusion paradigm (cyberball). Participants initially received the ball twice, but were excluded on all subsequent trials. Following the trials, participants were asked to rate their pain and unpleasantness. To determine whether explicit instruction would alter pain rating behaviour, half the participants were given the IASP pain definition prior to making their ratings.
Results: Despite receiving no nociceptive stimulation, participants rated the cyberball experience as painful, indicating that "pain" was being used to indicate a negative emotional state. This tendency was significantly reduced for individuals given the IASP definition prior to the cyberball trial (M=3.65 for uninstructed individuals, M=1.95 for instructed; $t=2.18$, $p< 0.01$).
Conclusion: These results indicate that participants will use pain scales to rate their emotional state, even in the absence of any nociceptive stimulation. This behaviour was significantly reduced by providing explicit instructions about what should or shouldn't be called pain.

eP269

HEALTHCARE PROFESSIONALS' BELIEFS AND ATTITUDES TOWARDS CHRONIC PAIN MANAGEMENT

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Background and aims: Healthcare professionals (HCPs) do not treat patients only according to their technical knowledge, their attitudes are also influenced by their beliefs. The aim of this study was to analyze the beliefs and attitudes of HCPs - students of a postgraduate course in pain - toward chronic pain.
Methods: Sixty-three HCPs out of 90 (70%) completed a Personal and Professional Characterization Profile and the Survey of Chronic Pain Attitudes-Professionals to evaluate their beliefs toward emotions, control, disability, solicitude, cure and harm.
Results: The mean age was 40.4 years (SD=11.2) and they had a mean of 14.7 years (SD= 10.8) since graduation; the majority were physicians (79.3%); 88% had completed specialization courses; 63.5% had clinical experience treating patients with chronic pain and 67.5% stated they assist over 20 patients per month. The HCPs showed "strongly desirable" beliefs in the control (3.3), and emotion (3.9) domains, "moderately desirable" in the harm (1.1), and disability (1.6) domains; "strongly undesirable" in the cure domain (3.3) and "moderately undesirable" in the solicitude domain (2.6).
Conclusions: The "undesirable" beliefs that "solicitude" is desirable and that a cure for chronic pain is highly possible indicate that there is a need for the inclusion of new concepts in clinical practice. Inadequate beliefs can mislead the conduction of treatment as well as reinforce unrealistic expectations, and cause increases in incapacity and dependence. Future research should assess the effect of engaging HCPs in a reflection on their own attitudes and beliefs on their practice.

eP270

FUNCTIONAL IMPACT OF COGNITIVE COMPLAINTS IN FIBROMYALGIA PATIENTS

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Background: Fibromyalgia (FM) patients commonly report functional disability and cognitive complaints. We aim to assess the effect of cognitive complaints on FM patients' functionality.
Methods*:* 438 FM patients (ACR 2010 criteria) completed the item I.2 of the *Fibromyalgia Survey Questionnaire* (FSQI.2) to report cognitive complaints, and the Spanish version of the *Fibromyalgia Impact Questionnaire* (S-FIQ) to inform their functionality and quality of life. Sociodemographic and health determinants data were also collected.
Results: 85.8% of FM patients reported cognitive complaints in the FSQI.2. Patients with and without cognitive complaints were comparable in age, education and body mass index, but differed in all S-FIQ scores (patients with cognitive complaints being worse): physical functioning (t[432] = -4.27, p = .00), well-being (t[419] = -4.02, p = .00), work difficulty (t[418] = -3.95, p = .00), functionality (t[425] = -4.94, p= .0017), pain (t[429] = -5.42, p = .00), fatigue (t[431] = -5.16, p = .00), morning tiredness (t[426] = -3.64, p = .00), stiffness (t[429] = -6.29, p = .00), anxiety (t[432] = -5.94, p = .00) depression (t[433] = -6.09, p = .00), and total (t[433] = -7.31, p = .00).
Conclusions: There is a high prevalence of cognitive complaints in FM patients, associated with a wide functional impact regardless of age, education or physical condition. Cognitive complaints must be considered in FM treatment approaches to improve the functionality and quality of life of patients.

eP271

DISSEMINATING, ENGAGING, AND SHARING KNOWLEDGE (DESK): PATIENT INFORMED RESOURCE FOR UNDERSTANDING RESEARCH

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Background and aims: The aim of this project is to determine how to effectively disseminate findings from research conducted in the Centre for Pain Research (CPR) to patients and service users. Sharing research findings with the general public is very important but can be difficult to get right; we want to explore what people will actually find useful and engaging.
Methods: Participants (patients, carers, health researchers) will be recruited to take part in a workshop which will be informed by principles of patient and public involvement and use Collective Intelligence (CI) research methods. This format will enable the group to combine knowledge, share insights, and generate possible solutions to how research findings could be shared with the general public and in what format. For example, would participants prefer copies of published papers, lay summaries, posters, videos with case stories or animations? How much detail do they want?
Results: A multi-format digital media resource on how best to disseminate research findings to health service users, research participants and members of the public will be created based on perspectives shared in the workshop. Participants will be invited to remain involved throughout the resource development, design and feedback stages.
Conclusion: There is an increasing emphasis on involving patients, participants and the general public in all stages of research. It is anticipated that this resource could become an effective and straightforward template on how best to share knowledge/findings for both the CPR team and other health researchers.

SOCIETAL IMPACT

eP272

PAIN ALLIANCE EUROPE (PAE) SURVEY "PAIN AND STIGMA" 2019 THE CHRONIC PAIN PATIENTS' EXPERIENCE OF STIGMA WITHIN HEALTHCARE SERVICES AND IN DAY-TO-DAY LIFE

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Background and aims: Chronic pain is more seen as a disease in its own right. However, pain remains invisible. Even for someone close to the person in pain, the impact chronic pain has on the individual remains very difficult to recognise. It varies from person to person, in time, by country or culture.
Study reviews* have shown that the stigma associated with chronic pain can have a devastating effect on an individual's life.
The aim of this survey is to obtain a better insight into the chronic pain patient's point of view.
* Pain 2016 "Understanding stigma and chronic pain: a state-of-the-art review" De Ruddere L, Craig KD
Methods:
· European-wide online survey
· Available in 16 languages to respondents in 22 countries from 4/12/2018 to 01/03/2019
· Population: chronic pain adult patients, regardless of any underlying condition
· Data protection: consent requested, anonymous data
· Developed by patients, PAE members assisted by academic experts
· Data analysis by Babes-Bolyai University, Cluj-Napoca, Romania
Results: The survey will provide a report on the impact of stigma as perceived by chronic pain patients. Around 5000 patients are expected to participate, based on previous projects. The survey results will be presented the first time at the EFIC Congress 2019.
Conclusion: The survey results will help identify opportunities for the advocacy work of PAE and its members, aimed at improving the quality of life for people living with chronic pain in Europe by developing solutions to reduce the stigma related to pain.

eP273

CHRONIC PAIN AND VOCATIONAL REHABILITATION: A SCREENING TOOL

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Background and aims: With about 20%, prevalence of chronic pain is very high in Europe. The burden of chronic pain is also very high, resulting in high direct and indirect costs.Furthermore, there is a relation between not working and early death, higher incidence of suicide and higher risk on psychological problems and general health issues. Therefore, early vocational rehabilitation should be an essential part of care for chronic pain patients. The aim of this study is to develop a screening tool in order to detect as soon as feasible the focus of treatment towards Return To Work (RTW) and facilitate clear communication between all stakeholders.
Methods: After performing a literature study two expert groups were organized. By means of a nominal group technique we selected work and pain related indicators who should at least being assessed. Moreover we detected short clinical tests evaluating functional capacity which should, based on expert opinion being used.

Results: Currently, the first version is finalized and is being tested in order to evaluate user friendliness (medical doctor and patient). If results are good, further validation studies will be done. The tool consists of a brief questionnaire and a short clinical test. Results are shown in two parts: part one summarizes the motivational aspects and clinical test. The results of part two are shown in a visually clear radar chart.
Conclusion: The use of a screening tool could facilitate the approach needed for leading chronic pain patients to a successful RTW.

eP274

ATHEROSCLEROSIS PHYSIO-PATHOLOGY AND TREATMENT

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Etiology: From the etiological point of view, the main causes of arteriosclerosis are: The habit of smoking, high amounts of certain fats and cholesterol in the blood, high blood pressure, diabetes and sedentary lifestyle as well as
1.- Stress and anxiety.
2.- Insomnia.
3.- Abundant food.
4.- Medications.
5.- Ingestion or inhalation of non-degradable substances.
6.- Organic pathologies.
Objectives: We evaluated from the biochemical point of view, by gasometries related to acid / base balance, that these alterations modify the cellular functioning, caused by toxic irritative products.
These are slow-moving processes that manifest in the heart and brain, and subsequently the symptomatology is reflected in lower and back limbs, dizziness and difficulty in walking.
The goal of this work, is to control the systemic aspects and the pain in the legs.

eP275

DETECTION OF SOCIAL PROBLEMS IN CHRONIC PAIN PATIENTS USING A NEW QUESTIONNAIRE

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Background and aims: According to the bio-psycho-social model of disease social problems may be the origin of chronic pain or may contribute to the persistence of pain. As social counselling in most countries is not part of the medical system social problems are often not addressed properly. Previous studies revealed a high burden of social problems in chronic pain patients.
Methods: Based on a previously developed structured interview a questionnaire was developed asking for non-satisfactory conditions in family relations, housing conditions, social contacts, income and insurance matters. The results are interpreted on the data background from our pain questionnaire, including information on pain intensity, chronicity of pain, pain grading scale, depression and anxiety symptoms etc.
Results: Correlations between social burden and chronic pain are described statistically. The results point out the necessity to address social matters assessing chronic pain.
Conclusions: The questionnaire offers an approach to social problems in chronic pain patients and allows to monitor progress in social counselling.

eP276

CENTRAL NEUROPATHIC PAIN: IMPLICATIONS FOR THE QUALITY OF LIFE OF PATIENTS WITH SPINAL CORD INJURY

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Pain is a consequence of spinal cord injury, urination and intestinal disorders, changes in sexuality and reproduction, social and family problems. Understanding the pain and its adverse effects on the quality of life can help professionals assisting patients find the most appropriate way to control neuropathic pain. Investigators at the International Association for the Study of Pain evaluated articles published between 1975 and 2007 and found that the least studied subject was spinal cord pain. This study aimed to assess the quality of life of patients with neuropathic pain induced by traumatic injury to the spinal cord.
It is a quantitative research, transversal, exploratory and descriptive.
Seventy percent of patients with neuropathic pain rate it as severe to severe, with scores greater than five in the visual analogue scale. Men, aged 30 to 39, married, with a fall injury, paraplegic, with incomplete injury and injury time between one and five years, are the ones who suffer the most. The quality of life is better for patients who have had a complete injury to the spinal cord and have been injured by a firearm. Patients with faecal incontinence referred to an even worse quality of life and also reported that the pain was harmful to them.
It was observed that patients´ quality of life and social relationships evoking more severe pain were degraded, including personal relationships, sex life, and support from friends.

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EFFECT OF POSTOPERATIVE AMBULATION LEVEL ON THE QUALITY OF LIFE IN A TRANS-TIBIAL AMPUTEE

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Background: Quality of life of a trans-tibial (TT) amputee is not only determined by his functional rehabilitation but also social, economical and psychological rehabilitation. A number of studies have analyzed the influence of lower limb amputation on these factors. This study analysed effect of functional recovery on other parameters of quality of life in a TT amputee.
Method: This was a 10 years retrospective and 2 years prospective study. Total of 160 patients were followed. Their postoperative ambulatory status was calculated using Pinzur's ambulatory level. Their quality of life was determined on basis of answers to a five point questionnaire which included their social, economic and psychological aspects. These parameters were correlated to assess the influence of functional recovery on the quality of life.
Results: All amputees with Pinzur's 0-1 level of ambulation suffered loss of income consequent to loss of job. All of them felt increased level of depression and anxiety after amputation. 50% of the patients with postoperative 0-1 level of ambulation felt socially neglected. Comparatively much less percentage of amputees with 5-6 level of ambulation suffered economic, social and psychological crisis.
Discussion and conclusion: Quality of life of TT amputee is determined not only by his functional rehabilitation but also social, economical and psychological factors. From this study we concluded that post operative functional outcome significantly affects the quality of life of an amputee. An amputee with better ambulation level fares better economically, psychologically and socially in comparison to an amputee with poor ambulatory outcome.

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SOCIETAL IMPACT OF PAIN (SIP) - EXPERIENCES FROM A SIP NATIONAL PLATFORM IN MALTA

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Background and aims: In 2017, the European SIP Symposium "Structured Cooperation between Health Care Systems tackling the Societal Impact of Pain" took place under the auspice of the agenda of the 2017 Maltese Presidency of the Council of the EU. On this occasion, the first national SIP platform in Malta has started its work.
Methods: Representatives from the Maltese European Parliamentarians' office, Maltese Parliament, Ministry of Health, Service providers, professionals, patients and citizens' organisations agreed to work together to address the common theme of pain. SIP Malta was initiated in 2016 to build a coalition of national SIP allies and to identify the gaps and needs how to improve pain management in Malta.
Results: SIP Malta co-hosted the SIP 2017 symposium and presented a Maltese consensus paper. This was followed by a research project on the impact of chronic pain in Malta. Results were presented at a conference in 2018 which led to a position paper on chronic pain for further policy work.
Conclusions: SIP Malta is a great example how to build a coalition of relevant stakeholders and to advocate for better management of pain to national policy makers. Next step is to create a National Pain Plan and to contribute to the National Health Strategy 2030, that means pain featuring across various sectors from prevention to health at the workplace, access to adequate treatment in a timely manner and further training and awareness amongst general public, patients and professionals.

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SOCIETAL IMPACT OF PAIN (SIP) - EXPERIENCES FROM A SIP NATIONAL PLATFORM IN SPAIN

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Background and aims: Pain represents a serious burden for individuals and the whole society. Under the umbrella of the European Societal Impact of Pain (SIP) platform a national platform has been established in Spain. It aims to improve pain care policies by gathering a broad coalition of multi-disciplinary organisations, putting the patient in the centre.
Methods: A common SIP strategy has been followed to build a coalition of national SIP allies and to identify the most relevant gaps and needs on how to improve pain management. In Spain, patient organizations, healthcare professionals and regional healthcare responsibles came together in December 2018 to join the SIP Spain forum. Within three working groups, relevant topics such as pain as a quality indicator, sharing best practices on coordination and regional pain plans to ensure continuity of care and treatment of specific patients groups were discussed.
Results: Areas for further development were identified. An holistic treatment of pain in care plans, further healthcare professionals' education on pain and the active involvement of patients in pain treatment were identified as relevant topics to continue working on.
Conclusions: Within the first SIP Spain forum, the relevance of involving different interest groups in pain care was discussed. This is a significant milestone to tackle the societal impact of pain inSpain to advocate for better pain management at national and regional level. Sharing the conclusions to promote the development of further regional pain plans will be key to improve the current burden of pain in Spain.

CLINICAL DIAGNOSTICS FOR THE ASSESSMENT OF PAIN

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SOCIETAL IMPACT OF PAIN AS A THEMATIC NETWORK OF THE EU HEALTH POLICY PLATFORM

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Background and aims: Uncontrolled pain has a serious impact on individuals and society. The Societal Impact of Pain (SIP)* Thematic Network is an innovative initiative under the auspices of the European Commission. It aims at improving pain care policies by involving a broad range of stakeholders in the development of policy recommendations and commitments.
Methods: In 2018, the SIP Thematic Network resulted in a Joint Statement drafted on the EU Health Policy Platform with the coordination of the European Commission, focused on 4 areas:
· pain indicators
· pain research
· pain and employment
· pain education
Lessons: The Joint Statement highlights opportunities for action and collaboration among the European Commission, member States and civil society. Over 100 stakeholders including patient groups, healthcare professionals, citizen organisations and policymakers endorsed the SIP Joint Statement so far.
Conclusions: The Thematic Network program provides a great opportunity to connect with other stakeholders across sectors and initiatives to tackle the Societal Impact of Pain building on existing policy actions and paving the way for new initiatives at European and National level.
Disclosure: The scientific framework of the SIP platform is under the responsibility of the European Pain Federation EFIC®. Cooperation partners are Pain Alliance Europe and Active Citizenship Network. The pharmaceutical company Grünenthal GmbH is responsible for funding and non-financial support.

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QUANTITATIVE MEASURES OF PAIN SENSITIZATION ARE ASSOCIATED WITH SELF-REPORT CENTRALLY MEDIATED PAIN AS MEASURED BY THE CENTRAL SENSITIZATION INVENTORY IN OSTEOARTHRITIS OF THE KNEE

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Background and aims: A subset of people with knee OA show a predominance of centrally mediated pain which may adversely effect treatment outcomes. Quantitative Sensory Testing (QST) used to investigate pain sensitization may not be easily translated to the clinical setting. This study aimed to investigate differences in QST and self-report measures of pain sensitization in OA of the knee as measured by the Central Sensitization Inventory (CSI).
Methods: 134 people with OA of the knee were assessed for pain sensitization using (i) QSTs of pressure pain thresholds (PPT), temporal summation (TS), cold hyperalgesia (CH), conditioned pain modulation (CPM), vibration and mechanical detection thresholds (VDT) (MDT) and (ii) self-report pain measures using PainDETECT, WOMAC Pain, numerical rating scale (NRS) and CSI. Participants were dichotomized into groups with high CSI (≥40) and low CSI scores (< 40).
Results:

(i) The results showed significantly lower PPTs and enhanced TS in the high (n=40) versus low (n=94) CSI groups (p< 0.025-0.001). The high CSI group demonstrated a less efficient CPM (p< 0.001), increased cold hyperalgesia (P< 0.038) and MDT (p< 0.045), and no significant differences in VDT.
(ii) The high CSI group showed significantly increased PainDETECT, NRS and WOMAC Pain scores (p< 0.001).
Conclusion: The group with high centrally mediated pain symptoms (high CSI) demonstrated enhanced QST and self-report measures of pain sensitization compared to those with low CSI. The CSI may have utility for clinicians to identify sub-groups of people with knee OA and aid in the selection of targeted interventions.

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ICD11 PC LINEARIZATION AND CLASSIFICATION OF CHRONIC PAIN IN PRIMARY CARE

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Background: For the first time, the International Classification of Diseases, 11th Revision (ICD-11) contains a coding system categorizing chronic pain into primary and secondary pain syndromes. Recognizing chronic pain in a systematic classification represents an opportunity to improve pain coding and treatment throughout all healthcare systems. Of all general practitioner consultations, 22% to 50% are related to pain. A Swedish study showed that, of those presenting to primary care with pain, the pain was classed as chronic according to ICD-11 in 48% of cases.
Methods: Many different coding systems are in use for primary care, e.g. ICD, ICPC, SNOMED and Read. The most widely used classification is the International Classification of Primary Care (ICPC). It was developed by the World Organization of Family Doctors‘ (WONCA) International Classification Committee (WICC), and linked to the International Classification of Diseases (ICD). We explored potential links between ICD-11 and other coding systems, with respect to chronic pain.
Results: For the time being, there is no ICD11 Primary Care linearization for chronic pain. Our pilot field testing has indicated a possible ICD-11 linearization with ICPC-2, i.e. a classification of chronic pain is applicable in primary care, but no official classification exists. However, ICPC-3 will choose ICD10-11 and SNOMED concepts that are important for primary care to develop this.
Conclusion: The coding system for chronic pain proposed in ICD-11 is feasible to apply in primary care. It is to be welcomed for its numerous potential benefits in managing chronic pain in primary care and beyond.

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INTENSITY OF PAIN IN PATIENTS WITH POLYDISCOPATHY AND CHRONIC LUMBAR SYNDROME

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Background and aims: The most common causes of chronic lumbar syndrome (LS) are single or multiple degenerative changes in the intervertebral disc and other spinal components. Multiple changes need for more complex diagnostic and therapeutic procedures. **Objective:** This study was to assess how often there are multiple damage compared to individual impairments in patients with chronic LS and in what degree the results of a visual analog scale (VAS) can help in their differentiation and in the selection of diagnostic and therapeutic procedures.
Methods: 60 patients with chronic LS, 48.97±10.49 years of age, 28 males (46.67%) and 32 women (53.33%), treated at the Clinic for Medical Rehabilitation, Clinical center of Vojvodina. Pathological changes were evaluated by MR spine and the intensity of the pain was evaluated using the VAS scale.

Results: 6 (10.00%) patients with normal MR findings had VAS 2.6 (p < 0.01). Damage to intervertebral discs was 54 (90,00%) of patients with a pain intensity of 6.32 according to the VAS scale (p < 0.01). Compression of the nerve root had 34 (56.67%) patients with a score of 8.39 according to the VAS scale (p < 0.01). Multiple, i.e. More than two lesions recorded on MR images were 48 (80.00%) and a pain intensity of 7.12 according to the VAS scale (p < 0.01).
Conclusions: Multiple spinal lesions ascertained by MR in the LS spine are often present in patients with chronic LS and they are associated with high pain intensity values according to the VAS scale.

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PAIN EXPERIENCE OF ICU PATIENTS RELATED TO PAIN, ASSESSMENT ADEQUACY AND PAIN CONTROL

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Objective: The aim of this study was to gain information about pain, assessment adequacy and pain control of patients who were admitted in ICU due to sepsis, postoperative care after major surgery, trauma or other reasons which needed support of vital functions.
Methods: This was a prospective, observational study of patients who were admitted to ICU Clinical Center of Vojvodina and later discharged to other hospital wards. Patients who were unable to speak or who had cognitive deficiency were excluded from this study. All patients signed informed consent form. Data were collected using questionnaire.
Results: A total of 121 patients were included 53,7% were female. Patient age ranged from 33-86 years, and ICU stay was more than 7 days. Majority of patients were admitted due to postoperative care after major surgery (39,7%) and other disease that needed support of vital functions (26,4%). Most of the patients 54,5% had no difficulty in expressing their pain. The problem to express pain was in their impossibility to speak (61,8%). Both doctor and nurses asked patients about pain (42,7%), mostly by simple asking whether there is pain or not (42,7%) and by using numerical rating score (22,2%). Length of stay influenced the level of fear and anxiety (p=0,00634). The cause of admission was related with problem to express pain (p=0.00003). The most prominent pain was back pain (47,1%), pain related to surgical wound (30,6%), pain related with physiotherapy (24,8%).
Conclusion: Patients were satisfied with their pain control and efficiency of analgesic therapy.

INSTRUMENTS FOR THE ASSESSMENT OF PAIN

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FACTOR STRUCTURE AND RELIABILITY OF THE CENTRAL SENSITIZATION INVENTORY (CSI) IN A POOLED MULTI-COUNTRY SAMPLE

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Background and aims. Central Sensitization (CS) involves the amplification of neural signaling within the central nervous system, which evokes pain hypersensitivity. The Central Sensitization Inventory (CSI) assesses 25 overlapping health-related symptom dimensions that have been found to be associated with CS-related disorders. Previous studies have found satisfactory test-retest reliability and internal consistency, but factor analyses have exhibited conflicting results in different language versions. The purpose of this psychometric study was to thoroughly examine the dimensionality and reliability of the CSI, with pooled data from 1,987 individuals with chronic pain.
Methods. The multi-country sample was randomly divided into two sub-samples for the purpose of cross-sample validation, allowing for principal component analysis (PCA) with one sub-sample (n= 1049), and confirmatory factor analysis (CFA) with the other (n= 1044). Cronbach´s α coefficients as well as two types of unbiased measures of reliability [Omega (ω) and omega hierarchical (ω-h)] were computed.
Results. The PCA suggested that one general factor of CS best described the structure. A subsequent CFA revealed that a bifactor model, which accounted for the covariance among CSI items, with regard to one general factor and four orthogonal factors, fit the CSI structure better than the unidimensional and the four-factor models. Additional analyses indicated substantial reliability for the general factor [i.e. α= 0.92; ω= 0.95; ω-h= 0.89]. Reliability results for the four specific factors were considered too low to be used for subscales.
Conclusions. The results of this study clearly suggest that only total CSI scores should be used and reported.

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ASSESSMENT OF PERCEIVED DIFFICULTY OF SELF-REPORT PAIN INSTRUMENTS BY CZECH PATIENTS WITH STROKE

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Background and aims: Pain is common in patients with stroke. However, their ability to report pain may be compromised due to various cognitive problems. Furthermore, only a limited number of evidence-based self-report pain instruments are available in the Czech language. The Czech version of the Revised Iowa Pain Thermometer (IPT-R-CZ) is a newly translated instrument intended for use in the Czech clinical practice. The aim was to determine how difficult it is for Czech stroke patients to use the IPT-R-CZ, the Faces Pain Scale-Revised (FPS-R), and the Numerical Rating Scale (NRS), based on their subjective ranking.
Methods: Fifty-four Czech patients with acute stroke were enrolled; the inclusion criteria included ability to cooperate. The patients assessed their pain using three pain intensity instruments: the IPT-R-CZ, FPS-R, and NRS, and ranked them in order of difficulty (#1 = the least difficult instrument).
Results: Overall, the IPT-R was ranked first most frequently (24 cases). Similarly, the IPT-R was ranked first most frequently from the viewpoint of most of the examined demographic and clinical parameters (age, gender, educational level, side of brain lesion). However, among patients with an abnormal cognitive screening result, the FPS-R obtained the highest ranking most frequently.
Conclusions: The patients found it feasible to self-report pain intensity. Most frequently, the IPT-R-CZ was perceived as the least difficult instrument. Therefore, it can be recommended for use by Czech stroke patients who are cognitively intact. The instrument could be translated into other languages and its use by stroke patients could be explored.

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PAIN MEASUREMENT IN TRAUMATIC AMPUTATIONS IN LOW AND LOWER MIDDLE INCOME COUNTRIES; A SYSTEMATIC REVIEW

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Background and aims: The majority of traumatic amputations occur in low (LIC) and lower-middle income countries (LMIC) resulting in debilitating injuries with serious physical and psychological consequences. Pain is one of the most significant impairments, affecting quality of life and rehabilitation and must be accurately measured for effective management. This review will determine how pain is currently measured in those who have suffered a traumatic amputation.
Methods: The review comprised three stages:
(i) Six electronic databases, PUBMED, COCHRANE, CINAHL, EMBASE, WEB OF SCIENCE and PSYCHINFO were searched using search terms including pain measurement, outcome measure, traumatic amputation and a list of LICs and LMICs obtained from the World Bank. Inclusion criteria: English language, human participants, traumatic limb amputation and pain outcome measure completed in LIC and/or LMIC.
(ii) Potentially relevant papers were independently reviewed by two reviewers.
(iii) Relevant data were extracted and summarised. The quality of the included papers was also undertaken.
Results: 26 studies were included, representing 2154 patients. The majority were conducted in India (n=12), with conflict the most common cause of the ampuation. The VAS was the most commonly reported measure (n=14), followed by the NRS (n=5), SF-36 (n=3),TAPES (n=2), LANSS (n=1), 11 Point Verbal Scale (n=1), Krio Word Scale (n=1), SATPRO (n=1), Never/Always Scale (n=1), SFMPQ (n=1), Nottingham Health Profile (n=1) and Universal Pain Score (n=1).
Conclusions: A range of validated outcome measures is used to measure pain following traumatic amputations.

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PAIN ASSESSMENT IN INFANTS: INCREASING THE FEASIBILITY OF AUTOMATED FACIAL ASSESSMENT

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Background and aims: Head movement has been known to be a significant impediment to using automated facial analysis to assess pain in young children. In this study we investigated the feasibility and validity of using automated single frame facial analysis to detect pain related facial action units (AUs) in infants 0-12 months undergoing a painful procedure (e.g. heel prick, immunisation).
Methods: The facial expressions of 30 infants were analysed 10 seconds after they underwent a painful procedure using PainChek® Infant app's (iOS V1.1.15) automated recognition and facial analysis. Two different modes of analysis were used: standard 3 second video analysis (SVA), and adaptive video analysis (AVA) using 1, 2, 3 and 5 frames. All analyses were undertaken on video footage of the procedures, and all were repeated in triplicate.
Results: Of 90 SVAs attempted 58 (64.4%) were completed successfully, compared with 346 of 360 (96.1%, $p < 0.0001$) undertaken using the AVA. The success rates for the analyses using 1, 2, 3 and 5 frames were 96.7%, 96.7%, 95.6% and 95.6%, respectively. A significant difference in face score was seen only once in 72 (1.4%) occasions when SVA and AVA paired results could be compared. Similarly, only one of 108 (0.92%) comparisons of paired AVA results differed significantly.
Conclusions: These results demonstrate that the use of a single frame analysis provided comparable detection of pain related facial AU codes, when compared to SVA. Further, adaptive video analysis significantly increased the probability that a successful assessment could be completed.

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ASSESSMENT OF COGNITIVE FUNCTIONS IN PATIENTS WITH FIBROMYALGIA

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Objective: The aim of the study was to assess the pain intensity, depression symptoms, and memory functions in patients with secondary fibromyalgia compared to the control group of healthy subjects.
Material and methods: The cross-sectional study has included 40 (35 women, 5 men) of patients with secondary fibromyalgia, mean age 49.61 ± 9.38 years, treated at the Medical Rehabilitation Clinic, Clinical Centre of Vojvodina. The control group consisted of 30 (27 women, 3 men) healthy subjects of mean age 48.3 ± 6.42 years. Diagnosis of fibromyalgia was set according to modified criteria (ACR) from 2011, pain intensity was noted and assessed by Visual Vascular Scale (VAS) scale and Beck´s Depression Scale (BDI) was used to evaluate the severity of depression, for memory assessment Weschler´s Memory Scale was used.
Results: The mean pain intensity values in patients with fibromyalgia were 66.75 ± 21.05 (VAS). Statistically significant difference was found in the mean values of the scores noted by scale for assessing the symptoms of depression in the group with fibromyalgia compared to healthy subjects (BDI-FM-18.12 ± 9.81 vs C-6.93 ± 4.49, $p<0.05$). Statistically significant differences were found in memory coefficients (WMS) in a group of patients with fibromyalgia compared to the control group (WMS: FM -121.65 ± 5.27 vs. C-136.37 ± 6.07; $p<0.05$).
Conclusion: In patients with fibromyalgia, clinical variables such as pain, fatigue, and depression play an important role in dyscognition, as assessed by both objective and subjective measures, and should be taken into account in future researches.

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EVALUATION OF APPLICABILITY OF WELL-ESTABLISHED MEASUREMENT INSTRUMENTS IN INTERDISCIPLINARY MULTIMODAL PAIN THERAPY: INVESTIGATION OF THE INTERNATIONAL CONSENTED VAPAIN RECOMMENDATIONS

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Background and aims: Interdisciplinary multimodal pain therapy (IMPT) is a bio-psycho-social intervention to treat chronic non-cancer pain. To solve the problem of heterogeneity in outcome measurement in effectiveness studies of IMPT the VAPAIN initiative recommended domains for the development of a core outcome set (COS).
Aim: of the present study is to identify valid instruments suitable for application in this COS being used in effectiveness studies of IMPT. In order to rate the suitability of existing and well-established instruments (German versions of: *CESD, CPAQ, CPGQ, CSQ, FABQ, SF-36, NRS, PCS, PDI*) for the COS their psychometric property (responsiveness) was examined in the target population.
Methods: The examination was conducted with secondary data (*n=282*) of instruments being used for routine record keeping at the ComprehensivePainCenter in Dresden, Germany. All instruments presenting a significant and clinically relevant change (pre/post intervention) were included as factors in a regression analysis to detect the impact on subjectively experienced therapy success (*Global Rating Scale, GRS)*.
Results: None of the tested instruments fulfilled the conditions required for a regression analysis. Only two (sub) scales ($SF\text{-}36_{BodilyPain}$, *NRS*) presented a significant difference in changes (pre/post) between populations with positive and negative experienced therapy success.
Conclusions: To identify valid instruments for measuring the domains recommended by the VAPAIN initiative further evaluation studies of existing instruments with construct specific data collection regarding change should be considered. If no valid instruments can be identified the development of new instruments taking the specificity of the target population and intervention into account should be considered.

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EXPERT AND PATIENT PERSPECTIVES ON THE CROSS-CULTURAL TRANSLATION AND ADAPTATION OF THE CENTRAL SENSITIZATION INVENTORY INTO GERMAN

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Background and aims: The Central Sensitization Inventory (CSI) is a patient-reported screening-tool for evaluating physical and emotional symptoms related to central sensitization. A valid cross-cultural adaption requires those who complete the questionnaire to have an unambiguous understanding of the meaning of test items.
Method**s:** Following the recommendations of the American Association of Orthopaedic Surgeons Outcomes Committee, the original English CSI was translated into German. An expert committee evaluated language equivalences to the original, produced forward- and the backward-translated versions with input from an original developer of the CSI. Prior to performing a full psychometric evaluation, a three-step pretest interview was conducted with 15 chronic pain patients to identify problematic items.
Results: Most of the test items were translated without difficulty. Additional discussion was required by **t**he expert committee to establish the most equivalent translations and constructs of ‚anxiety attacks' (A 3), ‚discomfort [in my bladder]' (A 11) and ‚[my legs feel] uncomfortable' (A 22). The patient group reported difficulty comprehending the German translation of ‚traumatic experiences in childhood' (A24) and ‚multiple chemical sensitivities' (B7), so these items were reworded into a more culturally sensitive translation.
Conclusions: Slight cultural differences in wording and understanding of central sensitization concepts were found between the German translation and the original English version of the CSI. Results of the pretest demonstrated the benefits of involving patients' perspectives in the translation process.
Key-Words: 1. Central Sensitization 2. Patients' perspective 3. Questionnaire
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Ethics Approval: Human Research Ethics Committee, Universitätsmedizin Göttingen, Germany (Number: 15/9/17)

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PUPILLOMETRY FOR OBJECTIVE NOCICEPTIVE ASSESSMENT OF PAIN DURING SURGERY: A DOUBLE BLIND RANDOMISED CONTROLLED TRIAL

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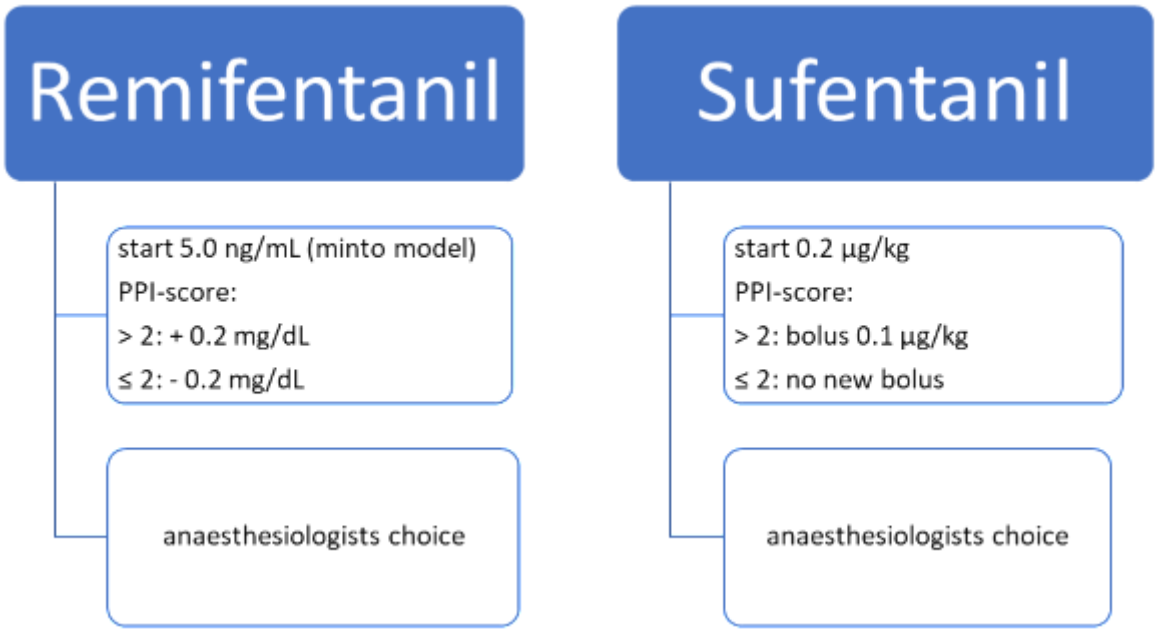
Background and aims: Objective and reproducible pain measurement can help anaesthesiologists. This study evaluates pupillometry for titrating opioid administration during anaesthesia. Primary outcome parameters are postoperative pain and analgesic consumption.
Secondary outcome parameters are pupil dilatation reflex (PDR) characteristics, peroperative opioid consumption, PONV incidence and length of stay on the postanaesthesia care unit.
Our hypothesis is that peroperative individual opioid titration can be superior in the above described parameters.
Methods: 120 patients are enrolled and divided into 4 groups. Groups are patients receiving remifentanil or sufentanil and each group is divided in dosing the opioid based on PDR measurement or anaesthesiologists experience.
PDR is measured using an infra-red pupillometer (Algiscan®, ID Med, France) after standardised nociceptive stimulation by median nerve somatosensory evoked potentials.

Depending on the PDR measurement, a pupillary pain index (PPI) score is given and opioid administration is executed using the study algorithm.

Maximum Intensity (mA)	PPI score	Pupil reactivity patient
10	9	Dilatation ≥ 13% stimulating 10 mA
20	8	Dilatation ≥ 13% stimulating 20 mA
30	7	Dilatation ≥ 13% stimulating 30 mA
40	6	Dilatation ≥ 13% stimulating 40 mA
50	5	Dilatation ≥ 13% stimulating 50 mA
60	4	Dilatation ≥ 13% stimulating 60 mA
60	3	Dilatation ≥ 13% during 2nd stimulation 60 mA
60 (5% < pupil dilatation < 13%)	2	Dilatation ≥ 13% during 3rd stimulation 60 mA
60 mA (pupil dilatation ≤ 5%)	1	Dilatation ≥ 13% during 4th stimulation 60 mA

[Table 1: PPI score.]



[Figure 1: study algorithm of remifentanil and sufentanil.]

Results: Results are expected by July 2019 and will be presented during the abstract conference.
Discussion: NRS is proven to be the best rating scale for pain. Unfortunately it is not usable in sedated patients. PDR measurement during surgery could optimize individual opioid titration, increasing analgesic effects while side effects are reduced.
Conclusions: Pupillometry for nociceptive evaluation shows promising results. More well designed studies are necessary to evaluated different outcome parameters.

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AUTONOMIC NERVOUS SYSTEM CHANGES IN INDIVIDUALS WITH CHRONIC PAIN: A SYSTEMATIC REVIEW OF THE LITERATURE

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Background and aims: Treatment of chronic pain has placed enormous economic burden on the global healthcare system. Autonomic nervous system (ANS) dysregulation is suggested to be a biomarker of stress and overall health, and is correlated to chronic pain. One measure of ANS dysregulation is heart rate variability (HRV), and diminished HRV can strongly and independently predict adverse future prognosis. While an association between HRV and all-cause mortality has been demonstrated, cheaper and quicker measurements of heart rate (HR) and blood pressure (BP) have been less investigated. The aim of this review was to investigate the relationship between HR or BP and chronic pain conditions.
Methods: Searches in multiple databases were performed including PubMed, Ovid, Google Scholar, and CINAHL from September 2003 through February 2019 and included clinical trials (with or without randomization), systematic reviews, and meta-analyses. Inclusion criteria was preregistered though PROSPERO.
Results: Aberrant responses in HR and BP were present in a wide variety of chronic pain conditions, although at varying degrees and inconsistently. These responses were sometimes present at rest, and sometimes secondary to physical or cognitive effort or stress.
Conclusions: These findings suggest that chronic pain conditions may result in dysregulation of the ANS. Valid measurement of HRV is typically confined to cumbersome ECG equipment or expensive wearable devices. HR and BP may provide quicker and less expensive ways of measuring this dysregulation, but further research is needed to determine HR and BP are valid measures in those with chronic pain conditions.

eP294

ACCOMMODATION OF CUTANEOUS NERVE FIBERS ASSESSED WITH THE PERCEPTION THRESHOLD TRACKING TECHNIQUE

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Background and aims: There is a lack of methods for studying the excitability of small cutaneous sensory nerve fibers. Our research group has therefore developed a novel perception threshold tracking (PTT) technique, which indirectly assess excitability in nerve fibers. The aim of this study was to use PTT technique to assess accommodation in small and large fibers.
Methods: A multiple-pin electrode was used to preferentially activate small fibers whereas a conventional patch electrode was used for activating large fibers. We used linearly-increasing ramp currents with durations of: 1 ms, 10 ms, 25 ms, 50 ms, 100 ms, and 200 ms. Two detailed multi-compartment fiber models were developed to associate nerve fiber accommodation to transmembrane ion currents. The axon models included a wide range of voltage-gated ion channels: Na_{TTXs}, Na_{TTXr}, Na_p, K_{dr}, K_M, and HCN.
Results: The large fibers displayed accommodation to ramp pulses longer than 50 ms ($p< 0.05$; rmANOVA). However, the small fibers did not accommodate; the perception thresholds decreased as the pulse duration increased ($p< 0.05$; rmANOVA). The computational model showed that difference in accommodation could be explained by different distribution of TTX sensitive- and TTX resistant sodium channels which have different inactivation properties.
Conclusions: The PPT technique could identify excitability changes during accommodation and may potentially become a clinical tool for evaluating excitability.
Acknowledgements: Funded by Center for Neuroplasticity and Pain (CNAP). CNAP is supported by the Danish National Research Foundation (DNRF121).

eP295

THERMOVISION AS A POSSIBLE DIAGNOSTIC METHOD OF OROFACIAL PAIN

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Objective measurement of pain intensity is a continuing and difficult problem in pain management, which is particularly demanding for certain types of pain, such as orofacial pain.Thermovision can be used in various medical applications for monitoring acute and chronic orofacial pain syndrome. With this diagnostic method, thermal differences in the examined region are usually compared to the same reference region on the opposite side of the body.This method is based on detection of infrared radiation, which is naturally emitted from the body surface.The fact that many patients with orofacial pain mention dental treatment or dental surgery in their medical history and the pain appeared to be associated with inflammation, led us to focus on inflammation as a potential diagnostic feature. First day measurements found significantly higher maximum, minimum, and average temperatures, before and after therapy, in the area where the patient subjectively reported pain. The fifth and final measurements, before and after therapy, found only a slight elevation of the maximum temperature of the assessed regions, relative to the same regions on the opposite side of the face.During the measurements on the fifth day, a thermal difference greater than 0.4 °C was only observed relative to the minimum temperatures associated with the regions of self-reported pain before and after therapy.Thermal imaging seems to be a promising as well as inexpensive tool that can be used to visualize inflammation associated with or perhaps causing orofacial pain. Despite its high accuracy and sensitivity, infrared thermography should be viewed as an auxiliary method.

eP296

EVALUATION OF THE INDICATION OF THE STUDY WITH BONE DENSITOMETRY IN THE ASSESSMENT OF FRACTURE

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Purpose: Evaluation of the indication of the study with bone densitometry in the assessment of fracture risk (during the period 2017-2018).
Methods:
Design: Longitudinal evaluation: Palmer's Quality Cycle
Setting: An urban health care center.
Population and ample: densitometry (Dx) requested (years 2017-2018) (n = 20, 22)
Interventions: Internal evaluation, dimensions:scientific-technica, quality, adequacy, accessibility, continuity of care; data related to the care process and intermediate results; explicit, evidence-based procedural criteria.
Subjects: Analysis of coverage. Analysis on the evolution of treatment compliance. The Z statistical test for comparing proportions, alfa 0,05.
Results: It has been reduced to less than half of the % of Dx that would not be indicated: from 30% to 14%. If we include those of doubtful indication in the first field work, the reduction would be 45% to 15%, that is, less than one third.
The number of Dx requested has decreased slightly (17.41%): fieldwork 3 months in 2017: 20 Dx (6.66 / month), fieldwork 4 months in 2018: 22 Dx (5.50) / month).
Conclusions: A qualitative level was observed in the second field work that a study request number with Dx, its objective was to control the BMD in patients, who are following a specific antiresorptive treatment, but there was no previous diagnosis of objectified osteoporosis, many, have been scheduled from the 2nd level of assistance. In this case, the study with Dx also provides a value in the suppression of the treatment.

eP297

BREAKTHROUGH-PAIN LIKELIHOOD IN CANCER PATIENTS: AN IMPACT STUDY OF A NOVEL SCORING SYSTEM

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Objectives: Preliminary results of an impact multicenter study with a novel Scoring System (SS) based on a validated diagnostic/prognostic tool, the IQ-BTP[1,2] for Breakthrough Cancer pain (BTcP) recognition and likelihood (High, Intermediate, Low).
Methods: The IQ-BTP SS was administered at 3 consecutive visits to over 300 cancer patients. Studied variables were: demographics, disease related information, pain therapy, Brief Pain Inventory and, physician concordance with and appreciation of the SS. We planned to establish among patients with potential BTcP the proportions of its High, Intermediate and Low likelihood and the feasibility/reliability of the SS.
Results: The SS enabled correct classification of patients as potentially having (or not having) BTcP. In all visits ‚potential BTcP' was found in roughly 40% of the patients. Among the latter BTcP likelihood was moderate to high in roughly 50% of cases in the first 2 visits; low BTcP likelihood was found in < 20% of cases. Over 90% of participating physicians found the SS feasible and helpful in diagnosing and managing BTcP.
Conclusions: The IQ-BTP with its SS and with adequate feasibility enables the detection of potential-BTP and its likelihood. The latter has significant relevance to BTcP epidemiology and management.
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eP298

VALIDITY OF MEASUREMENTS OF PHYSICAL FUNCTIONING IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Background and aims: To examine validity of function related measurements in patients with chronic unspecific low back pain.
Methods: Prospective cohort study with measurements before and after a pain management program by Short Form-36 (SF-36), Multidimensional Pain Inventory (MPI), Oswestry Disability Index (ODI), Back Performance Scale (BPS), and 6 Minute Walking Distance (6MWD). Statistical analysis included bivariate correlations and factor analysis.
Results: Patients (n=142) were on average of 44.9 years (+/-11.8) and 61.0% female. Correlations of baseline scores ranged from r=0.05 to 0.81. SF-36 Physical functioning correlated highest with functional performance tests: r=0.53 BPS and r=0.66 6MWD. In the multivariate analysis, the factor "physical function" ranked only second (29.4% explained variance) behind the "psychosocial" factor (36.5%). On that, SF-36, BPS and 6MWD, but not the MPI nor the ODI showed high factor loads (>0.80). Correlations of change scores all were weaker (r=0.00 to 0.66). SF-36 Physical functioning correlated highest with MPI Interference with pain (r=0.38). Factor load analysis showed an explained variance of 25.0% (strongest load: factors "pain and interference"), 20.3% ("psychosocial factors") and 16.1% ("function": BPS and 6MWD).
Conclusions: Overall, construct overlap of function scales was moderate to weak. The construct of physical

function explained limited variance of state and change of health. The simultaneous inclusion of function, pain and impairment in condition-specific instruments blurs the construct of specific function content. In contrast, the generic SF-36 (physical functioning) showed highest functional specificity and construct overlap to the functional performance tests.

eP299

RESTING STATE EEG BEFORE AND AFTER HFS-INDUCED CENTRAL SENSITIZATION

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Background and aims: High frequency electrical stimulation (HFS) of the skin is an experimental method to induce and study the mechanisms underlying secondary hyperalgesia in humans. Animal studies have shown that HFS of the sciatic nerve triggers long-term potentiation within spinal nociceptive circuits and long-lasting changes in thalamocortical networks, such as a slow-wave EEG pattern among the 0.5-8 Hz bandwidth (1). The aim of this study was to characterize, using EEG, changes in resting state activity after HFS in humans.
Methods: HFS was delivered to the volar forearm of 21 healthy participants (6 males, aged 23 ±3), using a multi-pin electrode designed to preferentially activate nociceptive afferents. 1 minute of resting EEG (32 channels) was recorded eyes closed before HFS and 30 minutes after HFS. Spectral content was assessed using half-overlapping 2 seconds segments which were subsequently averaged. Point-by-point paired-sample t-tests were used to compare the obtained spectra across participants.
Results and conclusion: We did not observe any significant change of the EEG frequency spectrum 30 minutes after HFS. Further studies could evaluate the impact of the pain induced by the HFS, right after its intervention.
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eP300

PAIN ASSESSMENT OR PAIN REGISTRATION, WHAT'S THE REAL PROBLEM?

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Background and aims: Most quality guidelines concerning pain recommend regular reassessment of pain. In practice however, these reassessments are often not registered. The purpose of this study was to explore how nurses experience pain assessment and registration, and whether they indicate barriers to assess or register pain.
Methods: This qualitative study used focus groups. A random selection of nurses, working on a hospitalization ward in a university hospital in Belgium were invited to participate. Thirty nurses were included in 5 focus groups, with 4 to 8 participants in each group. The average duration of a focus group was 90 minutes.
Results: Nurses consider pain assessment and registration as a routine task, especially at specific moments, e.g. when checking other parameters. At other moments, e.g. after medication administration, nurses often re-evaluate the pain, but they will only register the pain if the score remains high. Registration of low pain scores is not considered as an added value to quality of care.
In general, nurses feel comfortable asking the patient about his pain. However with patients who have difficulties to communicate about their pain, nurses feel less confident to assess the pain. Another barrier arises when nurses experience discrepancies between the pain score of the patient and their own perception of the patient's pain.
Conclusions: Although nurses consider pain assessment and registration as something obvious, both assessment and registration are limited by some barriers. More in-depth research is needed on how to improve the attitudes of nurses.

eP301

ASSESSEMENT OF PAIN AND ITS INFLUENCE ON ELDERLY DEMENTIA PATIENTS WITH INTERTROCHANTERIC HIP FRACTURE - INITIAL EXPERIENCE WITH BULGARIAN-LANGUAGE VERSION OF TWO NONVERBAL SCALES

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Background and aims: Pain assessment is essential for patient care but it is difficult to do when the patient is cognitively compromised. Several non-verbal scales for pain assessment are available, but none of them have a validated Bulgarian-language version. The aim of the study is to evaluate the presence of pain and its influence by using two non-verbal scales translated into Bulgarian.
Methods: For twenty patients, fifteen women and five men, 81 ± 6 year old, with communicative problems due to dementia, are used two scales - Checklist of Non-verbal Pain Indicators (CNPI) and Pain Assessment in Advanced Dementia (PAINAD) Scale. Information on dementia is available in patients´ medical records. All patients had aintertrochanteric hip fracture and were proposed for planned operative treatment by metal osteosynthesis. In all patients, surgery was performed under spinal anesthesia. In order to facilitation the positioning a femoral block was performed before anesthesia. Pain assessment was performed twice- before and after the ultrasound guided femoral nerve block. Local anesthetic for both regional techniques is ropivacaine.
Results: The two scales show similar results, with CNPIs being slightly higher in the assessment of the pain before the femoral nerve block. The difference in values is not statistically significant.
Conclusions: Nonverbal scales allow the pain and the effect of her treatment to be assessed. Further studies with more patients and different clinical situations are needed to validate the scales in Bulgarian.

eP302

THE EFFECT OF UNILATERALT AND BILATERAL PAINFUL STIMULI ON COGNITIVE FUNCTION

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Background: Attention can lead to pain inhibition (cognitive analgesia) but little is known about the effect of pain on attention.
Methods: During a Stroop-numbers task participants must attend to the number of words on a screen while at the same time ignore incongruent visual stimuli. In 25 healthy males a Stroop-numbers task (60s) was followed by a 5s cuff-pressure stimulus on the dominant calf three times in each session (no-pain, unilateral-pain, bilateral-pain). Stimuli on the dominant leg was 90% of pain detection (no-pain) or equal to pressure-pain tolereance threshold (PTT) measured at baseline. Pressure on the non-dominant leg was equal to 70% of PTT measured at baseline. Perceived cuff-pressure pain was continousely measured on a visual analugue scale (VAS; 0-10cm). Stroop-task outcomes were reaction time (ms), number of correct answers, and perceived attention assessed on a numerical rating scale (NRS, 0-10).
Results: No differences in the Stroop-task outcomes (attention, reaction time or accuracy) were found between the three sessions (P>0.3). As expected, pain VAS scores were lower in the no-pain session (P< 0.0005), but no differences were found between unilateral and bilateral pain (P>0.9).
Conclusion: These results indicate that neither unilateral nor bilateral painful stimuli influences attention, reaction time or accuracy during Stroop-numbers task. Clinically this indicates that these cognitive functions are not influenced by ‚carry-over' effects after brief, intense episodes of painful stimuli.

eP303

WITHIN-SUBJECTS VARIABILITY OF EXPERIMENTAL PAIN AND ITS RELATIONS WITH PAIN SENSITIVITY AND PAIN MODULATION IN FIBROMYALGIA

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Background: Recent findings highlighted the clinical relevance of within subject‘s variability of pain scores in response to both experimental and clinical pain. Fibromyalgia (FM), a chronic pain condition which is characterized with impaired pain descending modulatory system and larger within-subject pain variability, offers an opportunity to further investigate this topic. The aim of this study was to investigate relationships between experimental pain variability and pain sensitivity and pain modulation in FM.
Methods: FM patients underwent a battery of experimental pain tests, comprised of various noxious modalities (electrical, thermal, pressure) and assessing pain sensitivity (threshold, tolerance), modulation (Temporal Summation and Conditioned Pain Modulation) and experimental pain variability (FAST). Information related to symptoms and psychological characteristics was also collected.
Results: Twenty-nine FM patients completed the study. There were no consistent relations between FAST and sensitivity, nor relations between experimental pain variability and pain modulation measures.
Conclusion: In summary, as seen in a recent healthy subjects‘ study, in FM population there are no relations between the within-subjects variability in response to experimental stimuli and the sensitivity to pain or pain modulation.

eP304

CHRONIC PAIN IN PRIMARY CARE - A PATWAY

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Background and aims: Over the years Chronic Pain has become a scourge of disability for individuals of every age who haven´t an adequate response to health care, particularly in Primary Health Care (PHC). The first step to responding this problem was the creation, in 2015, of a chronic pain consultation in PHC in the authors´ unit. The authors have made a review of available evidence to validate a chronic pain assessment protocol that can be replicated in any Primary Care Unit.
Methods: In July 2018 a bibliographic research was made through PubMed. The Mesh terms were used: („Chronic Pain“ [Mesh]) AND „Pain Measurement“ [Mesh]. The authors selected the studies in duplicate, and to include them, two of three reviewers would have to be in consensus.
Results: The review showed a small number of articles published about the evaluation of Chronic Pain. Globally, the authors found that there aren´t adequate scales for PHCs. It has been verified that the most used methods of evaluation of pain are the Visual Analog Scale (VAS) and the Numerical Pain Scale (NPS). In evaluation of neuropathic pain the most used method was the DN4 questionnaire. Regarding the evaluation of anxiety and depression in these patients, the articles selected presented great disparity and it wasn´t possible to determine the best evaluation scale.
Conclusions: The protocol created based on this bibliographic research is indispensable to clinical practice because, without it, it isn´t possible to have a 360º view of the patient with pain.

eP305

EVALUATION OF PAIN AND DISABILITY IN POSTTRAUMATIC PATHOLOGY OF SHOULDER

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Background and aims: Pathology of the shoulder through the algo-dysfunctional sequelae represents an important public health issue. A large number of these traumas affects young or young adults who are involved in professional activities, so the management of pain and disability is one of the main requirement of rehabilitation programs.The purpose of this analysis is to reveal the link between pain intensity and disability in the rehabilitation of shoulder trauma.
Method: We evaluated the patients in our clinic for a period of 4 months who presented shoulder injuries. We excluded patients with pathology older than 2 months and associated uncontrolled diseases (hypertension, malignancies, infectious diseases in acute stage).
Patients were evaluated at baseline and at the end of 10 days of treatment. All patients were re-evaluated at 1-month post-treatment. They received physical therapy and individual kinetotherapy. They were evaluated using VAS scale and DASH questionnaire for disability.
Results: There was a decrease in the pain threshold (VAS) after the end of the treatment that correlated with improvement in function. It was found that patients who initially presented a painfully lower threshold had a favorable evolution. Patients who also had nerve damage had a degree of higher disability.
Conclusion: Patients with nerve injuries in the posttraumatic shoulder trauma have a slower evolution in functional rehabilitation and may lead to long-term disabilities. They may also be associated with chronic neuropathic pain, which also determine disability and disfunction.

eP306

CONSTRUCTION AND VALIDATION OF THE PAIN_INTEGRAL SCALE

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Background and aims: Chronic pain is characterized as a personal, sensory, and emotional experience, composed of biological, psychological, and socio-cultural processes. The objective was to build and to carry on the content validity of a new instrument that assesses chronic non-cancer pain comprehensively.
Methods: There were 2 phases of this study. A systematic review was carried out in PubMed, SCOPUS, WOS and CINAHL to detect the instruments that evaluate the aspects that influence pain and that have the best psychometric properties. Once the instruments were selected, a committee of experts in pain carried out two rounds of evaluation of the items, scoring the sufficiency, coherence, relevance and clarity. The contact with the experts was done by email and the scores were completed using a Google form.
Results: Scales included: Pain Self-Perception Scale, Social Support Questionnaire MOSS; Oviedo dream questionnaire; the Connor-Davidson scale; the Pain Coping Questionnaire and the Pain Catastrophizing Scale, the Deterioration and Functioning Inventory, the Socio-Emotional Wellbeing Index and the Morisky-Green. It was started from a total of 159 items that scored from 1-4 the experts in the first round. The mean, median, mode and maximum and minimum values for each of the items were calculated, leaving a total of 80 items for the second round.
Conclusions: It is recommended to complete the validation process. This instrument would facilitate a comprehensive approach to chronic non-cancer pain, thus improving feasibility and usability in the measurement of this construct.
Keywords: *adult, chronic pain, comprehensively assessment*

eP307

ARE PAIN RELATED PATIENTS REPORTED OUTCOME MEASURES ASSESSED EARLY AFTER TOTAL KNEE ARTHROPLASTY RELATED TO FUNCTIONAL OUTCOME 3 MONTHS POSTOPERATIVELY?

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Introduction: Postoperative pain has an important impact on the patient´s recovery after total knee arthroplasty. The assessment of pain-related patient-reported outcome measures are increasingly used in recent clinical practice.
Materials and methods: We examined the correlation of different pain-related patient-reported outcome measures assessed on PO1 and PO5 after total knee arthroplasty, and KOOS measured at 3 months follow-up in 60 consecutive patients operated at the Institute of Orthopedic Surgery and Traumatology, Clinical Center Serbia.
Results: There was a strong correlation between percentage of pain relief, worst pain, time spent in intense pain, interference of pain with sleeping assessed on PO1, as well as participation in decisions related to pain treatment on PO5 with KOOS 3 months later.
Conclusion: The results of this study show that pain-related patient- reported outcome measures assessed on PO1 and P05 are significantly related to functional outcome up to 3 months postoperatively.

eP308

FROM WHAT TO MEASURE TO HOW TO MEASURE - EXPERIENCES FROM THE VAPAIN INITIATIVE

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Background and aims: VAPAIN works on a Core Outcome Set (COS) for Interdisciplinary Multimodal Pain Therapy (IMPT). An international, multidisciplinary panel (patient representatives, physicians, psychologists, physical therapists and methodologists) has achieved consensus on a domain COS for IMPT, following common guidelines Since internal validity of Outcome Domains (OD) was of high priority, definitions were either chosen from literature or established by summarizing key issues from previous discussions and finally consented by the VAPAIN panel.
Methods: A systematic review was used to identify measurement instruments (MI) . To operationalize the VAPAIN consented ODs for developing a new MI a multifaceted design (consensus processes via online surveys and workshops; item generation) was planned/ applied. Inviting the same participants was supposed to maintain internal validity.
Results: Subcategorizing ODs is completed, referring either to existing models or to new built models, having taught us:
1) Internal validity refers to the step of defining ODs as well as to operationalize them for future item generation. Especially the importance of clear definitions cannot be sufficiently emphasized.
2) It is helpful to refer to existing models to be modified regarding target population and treatment.
Conclusions: The conduction of operationalization processes by online exercises has advantages (e.g.easy to reach the panel) but also disadvantages (e.g. no chance of discussing backgrounds, misunderstandings cannot be avoided).
Discussion about issues will lead to change of understanding: some decisions arousing from the debate might have considerable impact on the previous COS recommendation.

eP309

THE EFFECT OF KINESIOTAPING TECHNIQUE APPLIED IN DIFFERENT TENSION ON HEALTHY INDIVIDUAL'S PRESSURE PAIN THRESHOLD

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Purpose: The aim of this study was to investigate the effects of kinesiotape technique applied in different tensions on pressure pain threshold (PPT) of healthy university students.
Methods: 100 healthy male university students who volunteered to participate were included in the study after giving their informed consent. Study protocol was approved by the ethics committee of Mugla Sitki Kocman University. The study was designed as a randomized, controlled, double-blind study to be performed on 4 groups consisting of 25 individuals in each group (No tension(Plasebo), and 50%, 75%, 100% tensions of KinesiotapeÓ). Kinesiotape was applied over lateral epicondyle of the dominant extremities with diamond shape technique by a KTAI®certified physiotherapist. PPT's were measured with J-Tech algometer before, immediately and 30 minutes after taping by a different physiotherapist who was blind to taping tension.
Results: The results presented in this abstract are the preliminary results of the ongoing study and were obtained from only 10 subjects. In placebo group, the mean PPT before, immediately and 30 minutes after the taping were 15.1±2.56 lb/cm^2, 14.25±0.83 lb/cm^2 11.92±2.19 lb/cm^{2}respectively. In the 50% tension group, the mean PPT values were 12.44±2.74 lb/cm^2, 14.36±5.1 lb/cm^2, 16.91±3.27 lb/cm^2. In the 75% tension group mean PPT values were 6.43 lb/cm^2, 6.86 lb/cm^2, 9.7 lb/cm^2. In the 100% tension group PPT values were 19.67 lb/cm^2, 15.33 lb/cm^2 and 17.13 lb/cm^2 respectively.
Conclusion: According to the limited data obtained from the ongoing pilot study, kinesiotapeÓ seems to increase the pain threshold.

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THE EFFECT OF KINESIOTAPING TECHNIQUE APPLIED IN DIFFERENT TENSION ON HEALTHY INDIVIDUAL'S PAIN TOLERANCE

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Purpose: The aim of this study was to investigate the effects of kinesiotape technique applied in different tensions on pain tolerance (PT) of healthy university students.
Methods: 100 healthy male university students who volunteered to participate were included in the study after giving their informed consent. Study protocol was approved by the ethics committee of Mugla Sitki Kocman University. The study was designed as a randomized, controlled, double-blind study to be performed on 4 groups consisting of 25 individuals in each group (No tension(Plasebo), and 50%, 75%, 100% tensions of KinesiotapeÓ). Kinesiotape was applied over lateral epicondyle of the dominant extremities with diamond shape technique by a KTAI®certified physiotherapist. PT's were measured with J-Tech algometer before, immediately and 30 minutes after taping by a different physiotherapist who was blind to taping tension.
Results: The results presented in this abstract are the preliminary results of the ongoing study and were obtained from only 10 subjects. In placebo group, the mean PT before, immediately and 30 minutes after the taping were 24.19±0.86 lb/cm^2, 24.45±0.86 lb/cm^2 24.44±0.68 lb/cm^{2}respectively. In the 50% tension group, the mean PT values were 20.06±5.08 lb/cm^2, 21.09±5.08 lb/cm^2, 23.60±1.69 lb/cm^2. In the 75% tension group mean PT values were 11.40 lb/cm^2, 11.06 lb/cm^2, 15.86 lb/cm^2. In the 100% tension group PT values were 25.30 lb/cm^2, 25.30 lb/cm^2 and 25.30 lb/cm^2 respectively.
Conclusion: According to the limited data obtained from the ongoing pilot study, kinesiotapeÓ seems to increase the pain tolerance in 50 and 75% tension groups.

eP311

MEASURING KNOWLEDGE AND ATTITUDE OF MODERN PAIN NEUROSCIENCE IN UNDERGRADUATE PHYSIOTHERAPY STUDENTS

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Background: Research shows physiotherapists' biomedical attitudes and beliefs about MSK pain have a negative influence on patients' beliefs and health outcomes. In a biopsychosocial attitude, based on modern pain neuroscience, improvement of physical functioning is possible despite pain. Unclear is to what extent physiotherapy students possesses knowledge and attitudes related to modern pain neuroscience to apply the biospychosocial model in MSK pain.
Aims:
1. To further validate a 34-item questionnaire to assess KNowlegde and Attitude of Pain (KNAP).
2. To assess on modern pain knowledge and attitude in physiotherapy students.
Methods: Design: Cross-sectional survey executed in all 4 years of the physiotherapy program at the Hanze University of Applied Sciences Groningen, the Netherlands.
Measures:
1) Sociodemographics
2) KNowlegde and Attitude of Pain (KNAP)
3) 14 items Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT)
4) 12 items Neurophysiology of Pain Questionnaire (NPQ)
Main analyses: Measures for validation were calculated. Differences between years were determined using analyses of variance.
Results: Validation KNAP: The smallest detectable difference: 14 points (8,2% of 170)
Minimal important difference: 11 points Two factors were identified
Test-retest reliability: ICC 0.79(95% CI: 0.73; 0.84)
Construct validity: KNAP vs PABS-PT biomedical subscale Pearson: -0.50, PABS-PT biopsychosocial subscale: 0.52, KNAP vs NPQ Pearson: 0.55
Differences between years: y1-2 9(95% CI 5-13), y1-3 15(95% CI 11-18), y1-4 23(95% CI 17-29), y2-3 6(95% CI 2-10), y2-4 14(95% CI 8-20), y3-4 8(95% CI 2-15)

Conclusion
Validation of KNAP was confirmed. An increase in knowledge and attitude of modern pain neuro-science was observed.

eP312

INTRAOPERATIVE MONITORING OF NOCICEPTION DURING LAPAROSCOPIC CHOLECYSTECTOMY: METRODOLORIS (R) VS MAPSTATION (R)

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Background and aims: Good management of intra-operative nociception and post-operative pain control contribute significantly to the improvement of perioperative morbidity.Our trial investigated whether the use of devices for the measurement of nociception(Metrodoloris® and MapStation®)would allow a better control of intra-operative pain with a saving of opioids and if they provided a predictive value of postoperative analgesia.
Methods: This is a prospective observational trial.The sample used includes 40adult patients who underwent

laparoscopic cholecystectomy.The patients were divided into 2groups:a“control-group”(CG-administration of opioids managed on haemodynamic changes)and a“device-group“(DG-analgesia carried out on the Metrodoloris and MAPstation values).Exclusion criteria:BMI>35,chronic treatment with psychotropic drugs/opioids,alcoholism,allergy to analgesics used,eye diseases,intake of anticholinergic drugs.inability to understand/communicate,underage patients.Primary outcome:comparison of pain in the postoperative period between the”CG”and”DG”using the numerical rating scale(NRS).Secondary outcomes:difference in opioid consumption during surgery and discharge time from the operating room.
Results: A statistically significant difference was not found(primary outcome):the mean NRS values in the 2groups were respectively 4.3±2.5 and 3.9±1.2.A statistically significant difference was detected between the two groups($p < 0.1$)in particular the consumption of Remifentanil in the”CG”appeared greater(0.09±0.02)mcg/kg/min compared to the DG(0.07±0.03)mcg/kg/min.Discharge from the operating room:the times were reduced in the”DG”compared to the”CG”(20±4;25±6).Emerged no correlation between the ANI/MAPstation pre-extubation and postoperative pain assessed using the NRS:y=-4.43*x+67.35andy=0.39*x+1.35
Conclusions: Our study showed the usefulness of these devices in terms of savings of Remifentanil and consequently a reduction of the side effects related to opioid overdose,but we did not highlight a reduction in postoperative pain nor a predictability of the values provided by these devices with respect to postoperative pain.

MEASUREMENT OF PSYCHOSOCIAL ASPECTS OF PAIN

eP313

ASSESSMENT OF MUSCULOSKELETAL SYSTEM PAIN AND PSYCHOSOCIAL STATUS OF THE ATHLETES OF DIFFERENT BRANCHES

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Background and aims: Evaluation of musculoskeletal pain is importance in athletes. Mental, spiritual and social conditions also have impact on sporting performance. The aim of the study was to analyze the psychosocial status of athletes in different disciplines.
Methods: The study has been conducted with a total of 160 athletes from football, basketball, volleyball, athletics, table tennis, court tennis, kickboxing, and archery branches. Extended Nordic Musculoskeletal Questionnaire, algometer, Visual Analogue Scale (VAS) have been used for pain determination. Continuous Sportive Trust Inventory and Beck Depression Scale has been used to determine level of sport confidence and level of depression.
Results: In the evaluation made between genders, it has been found that women have lower pain thresholds and high levels of depression. Amongst the sports branches; volleyball players have the highest pain threshold, kickboxing, football players have the lowest pain threshold and there is a significant difference between the branches. The depression level is the highest in volleyball players and thus it has been determined that there is a significant difference between the groups. By means of VAS pain assessment, it has been seen that the level of depression increased significantly as the pain in the hip area increased related to depression-sportive trust and the pain in shoulder and neck region had a significant negative effect on sportive trust.
Conclusions: When assessing the pain in athletes, an assessment should be made considering the gender differences and sports branch. In addition; physiological and psychological well-being of athletes should be evaluated together.

eP314

POTENTIAL MODERATORS FOR OUTCOME AFTER ROTATOR CUFF REPAIR: A PILOT STUDY

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Background and aim: There is a growing body of evidence, that central pain processing (CPP) and psychosocial factors may maintain or drive shoulder pain. In patients undergoing rotator cuff repair (RCR), findings report that patients' expectations may predict outcome after surgery [1]. Yet, there is a lack of evidence on modifiable factors that potentially moderate outcome after RCR.
The aim refers to identify such moderators for outcome after RCR.
Methods: The longitudinal study will investigate 141 datasets of adult patients undergoing RCR at Kantonsspital Winterthur, Switzerland. Mean change of three measurement points, 1. pre-operative, 2. 12 weeks post-operative, 3. 12 months post-operative of primary (Western Ontario Rotator Cuff Index (WORC)) and secondary outcome measures (Constant - Score, maximum pain and quality of life) will be analysed by mixed-effects regression model for repeated measures. Stepwise inclusion of six potential moderators will be conducted using linear and logistic regression models. Potential moderators are obtained by quantitative sensory testing and central sensitisation inventory (CPP), pain catastrophizing scale, illness perception questionnaire, perceived stress scale and questions about expectations and sleep.
Results: Assessments started in September 2018. Preliminary results from the pilot study will be available in summer 2019 and may provide insight in short-term prognosis for outcome 12 weeks postoperative.
Conclusion: Results may disclose moderators for outcome after RCR and foster a more patient-centred treatment approach with the aim to tailor the course of care towards a beneficial outcome.
Funding acknowledgement: Acknowledgments refer to the staff of Kantonsspital Winterthur. Ethical approval ID: 2018-02089.

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SOCIAL SUPPORT, PERCEIVED STRESS, AND FUNCTION IN INDIVIDUALS WITH CHRONIC PAIN

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Background and aims: The aim of this study was to investigate the role that social support and perceived stress play as predictors of physical and psychological function in individuals with chronic pain.
Methods: One-hundred sixty-five adults with chronic pain completed an online survey that included measures of pain intensity, perceived social support, perceived stress, physical function, and psychological function. We performed two hierarchical multiple linear regression analyses to evaluate the contributions of social support, perceived stress, and their interaction as predictors of physical and psychological function.
Results: Perceived stress but not perceived social support made a significant and independent contribution to the prediction of physical function; both perceived social support and perceived stress made independent contributions to the prediction of psychological function. The Social Support x Perceived Stress interaction did not make a significant contribution to the prediction of either criterion variable.
Conclusions: As a predictor of both function domains, perceived stress appears to play a larger role in overall function than social support. However, social support does appear to play a direct role in psychological function, although it does not appear to moderate the impact of stress on function. The findings are more consistent with a

main-effects model than a stress-buffering model of social support. Research is needed to determine if interventions that effectively reduce perceived stress improve physical and psychological function, and if interventions that effectively improve perceived social support improve psychological function in individuals with chronic pain.

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CHRONIC PAIN MODULATE COGNITIVE PERFORMANCE IN YOUNG ADULTS

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Background and aim: The presence of chronic pain is associated with impaired memory and processing speed, accelerating age-related cognitive decline. We studied the relationship between the number of chronic pain sites and cognitive performance depending on age and the presence of multiple chronic pain conditions.
Method: Three hundred sixty-three adults (aged from 40 to 65 years) participated in a research project about brain health of which one hundred thirty-five reported pain. Participants reported the numbers of pain sites (e.g., headache, back pain, joint pain) and pain onset. We explored the effects of age (< 55 and >55) and the number of pain sites (no pain, 1 chronic pain, ≥2 chronic pain) on working memory and processing speed using a spatial-updating and a number of comparison tasks previously used in the Cognition, Brain and Aging study (Nevalainen et al., 2015).
Results: Our results showed that performance in working memory was poorer in older middle-aged chronic pain groups compared to young controls without pain. In numerical comparison, we found a main effect of age and post-hoc analyses revealed that young people with more than two chronic pains performed like older middle-aged groups.
Conclusion: A high number of chronic pain conditions decreases cognitive performance in young adults making them perform old-like. Early biopsychosocial management of pain, especially on multiple pain sites, will be important to promote healthy aging.

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CHRONIC NON-CANCER PAIN (CNCP) AND ADULT ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD). TRIAL AND TRIBULATION. PRELIMINARY RESULTS

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Aim of Investigations: Approximately 4 % of adults have ADHD. This condition remains underdiagnosed as only 10. 9% of adults with ADHD receive treatment. Small studies suggest that there is an association with analgesics consumption, CNCP and ADHD. This possible association is what motivated us to create a research protocol and screen ADHD in adults with CNCP.
Methods: After ethics approval by the Human Research Ethics Committee at CRCHUM, (Protocol 18.288), we started the research protocol. We present the preliminary results of a part of our protocol. six electronic questionnaires were used. We present here the analysis of 2 questionnaires: Demographic questionnaire; Self-

Report Scale (ASRS-v1.1) for ADHD. Results were compiled using the Survey Monkey software.
Results: A total of 65 patients were invited 10 don‘t participate and 55 accept to participate (29 female and 26 male) age between 18-65 years old. The different types of pain were: chronic spine pain, chronic post-surgical pain, CRPS, neuropathic pain and fibromyalgia. The average score of pain was 6,59. 22 of 55 (40%) was positive to the ASRS-v1.1. 7 of 55 patients were diagnoses and treated for ADHD.
Conclusions: Our preliminary results demonstrate a close relationship between CNCP and a positive screening of ADHD, but the high number of positive ADHD makes us to believe that the ASRS-v1.1 as screening tool might not be best screening for a CNCP population. Additional use of family history of ADHD and the evaluation of history of ADHD during adolescence are necessaries to improve the screening.

eP318

KINEMATIC ANALYSES USING FINGER-TAPPING TASK FOR PATIENTS WHO HAD KINESIOPHOBIA AFTER SURGERY WITH DISTAL RADIUS FRACTURE AT ACUTE PHASE

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Background: After distal radius fractures (DRFs) occur, serious problems including severe pain, disabilities, and pain-related phycological problems can arise. The disabilities sometimes remain until about 1 year after the DRF. However, previous studies evaluated these disabilities with a questionnaire but not with a kinematical evaluation. Thus, it is not unclear which kinematic features can predict disability at 1 month after surgery for DRF. The study objective was to investigate the kinematic features of DRF patients, and reveal correlations between having a disability at 1 month after surgery and the results of the finger-tapping (FT) task.
Methods: Twenty patients who had DRF after surgery were enrolled. We recorded their FT using a magnetic sensor, and calculated the velocity, magnitude, and movement-initiation hesitation. we compared the kinematic characteristics of DRF patients between two subgroups: a “good improvement group” and a “slight improvement group”.
Results: Our kinematic analyses revealed significant differences in velocity at 7 days after surgery ($p < .05$) and in hesitation at 1 day after surgery ($p< .05$) between groups. Additionally, disability at 30 days after surgery was significantly correlated with hesitation at 1 day ($r =.66$, $p < .0071$) and with velocity at 7 days ($r =-.54$, $p < .0071$).
Conclusions: Our kinematic and clinical measurements objectively and quantitatively evaluated patient disability using FT task with DRF after surgery in clinical settings. Since assessment using range-of-motion measurement or a questionnaire is thought to not be sufficient to evaluate a patient‘s movement disorder, kinematic analysis is important for quantitative assessment.

eP319

SLEEP-RELATED PROBLEMS IN CHRONIC PAIN PATIENTS TREATED WITH OPIOIDS

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Patients with CNCP frequently experience concomitant sleep-related problems and there has been controversy on whether opioids have a beneficial or deleterious effect on sleep quality, duration and efficiency. The aim was to evaluate sleep problems in opioid naïve CNCP patients, before and after opioid titration, analyzing the influence of *OPRM1* gene variants. A prospective, cohort, observational study, at the Pain Unit of the Alicante University General Hospital. Pain and Medical Outcomes Study Sleep questionnaire (MOS-Sleep) were assessed at baseline and 3 months after opioid titration in 231 opioid naïve CNCP patients. Sleep data was compared with a matched-control group without CNCP (n = 64). Morphine equivalent daily doses (MEDD), adverse events, and drugs prescribed

for pain were also registered. OPRM1 (c.118G>A, rs1799971) polymorphism was analyzed by RT-PCR. Ethics Committee approved the study and results were analyzed by R software. After 3 months of opioid titration, patients with CNCP (63 ± 14 years, 64% female, VAS 74 ± 17 mm) significantly decreased pain intensity, anxiety and depression, and increased quality of life. Sleep problems were significantly more frequent in females. Age, quality of life, anxiety, and depression all influenced sleep disturbances and problems indices, which were significantly different from the control group. Furthermore, the *OPRM1* 118-GG genotype was also associated with significantly lower sleep adequacy, and more sleep problems. Opioids decreased CNCP severity, improving patients´ psychological areas, and quality of life. However, patients with OPRM1 118-GG genotype indicated an increase in sleep problems and worsening sleep pattern while taking opioids.

eP320

THE INFLUENCE OF PAIN ON THE QUALITY OF LIFE OF PATIENTS WITH AMYOTROPHIC LATERAL SCLEROSIS

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Background and aim: Amyotrophic Lateral Sclerosis (ALS) is a neurodegenerative and incurable disease. Because it is a disease without cure, efforts should be directed toward symptom relief and quality of life (QoL) preservation. Pain is one of the symptoms that can be experienced in all phases of the disease, and it may have a major impact on the QoL of these patients. This study aims to investigate how much the pain influence in QoL of patients with ALS. **Methods:** This is a cross-sectional study, carried out in two Brazilian hospitals. Was used the Amyotrophic Lateral Sclerosis Specific Quality of Life - Short Form (ALSSQOL-SF) instrument, which is composed of 20 questions, of 0 to 10 points, and higher final scores indicating a higher level of QoL. To assess the pain of the participant it was used the first question of ALSSQOL-SF, „I have experienced pain", in which higher scores mean a worse pain. Pearson´s correlation coefficient was used to analyze the correlation between the variable QoL and pain. The research was approved by the research ethics committee.
Results: 130 patients were included in the study. The correlation coefficient between the final QOL scores and the pain intensity scores was -0.53. This result exhibits a moderate correlation; and the fact that it is negative shows that when the pain intensity variable is low, the quality of life variable is high.
Conclusion: Pain is capable of negatively influencing the QoL of patients with ALS. **Acknowledgements:** Sao Paulo Research Foundation Grant #2016/22437-0, CAPES.

STRUCTURAL AND FUNCTIONAL IMAGING IN PAIN

eP321

ALTERED CENTRAL PAIN PROCESSING IN FIBROMYALGIA - A MULTIMODAL NEUROIMAGING CASE-CONTROL STUDY OF THE PAIN MATRIX

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Background: Fibromyalgia is characterized by chronic, widespread pain and a striking discrepancy between objective signs of tissue damage and severity of pain and disability. Alterations in function and structure of brain areas defining the pain matrix may explain this clinical feature. Although the pain matrix was identified in acute pain models, it may also act as neural correlate of ongoing, stimulus-independent pain. Studies investigating this assumption are lacking. We conducted a multimodal neuroimaging study comparing resting state perfusion (rsCBF), resting state functional connectivity, grey matter density and cortical thickness of fibromyalgia patients and pain-free controls. We assumed increased rsCBF in areas of the pain matrix of fibromyalgia patients.
Methods: We performed an age matched case-control study and acquired rsCBF with arterial spin labelling. To calculate group-differences in rsCBF and other neuroimaging markers, we performed whole-brain and Region of Interest analyses. We adjusted all analyses for depression and anxiety and corrected them for multiple comparisons.
Results: We included 32 patients and 32 controls. Neither whole-brain nor ROI-analyses showed significant increases of rsCBF in the pain matrix in patients. Instead, we found significant lower rsCBF in patients in the left Inferior Middle Temporal Gyrus (T=-6.01, p_{corr}=0.002). We were also unable to find group-differences in functional connectivity and structural markers.
Conclusion: We found little evidence for functional or structural alterations within the pain matrix of fibromyalgia patients representing neural correlates of stimulus-independent pain. Our results challenge the hypothesis of alterations of the pain matrix as the core explanation for ongoing pain in fibromyalgia.

eP322

THE RELATION OF PAIN DURATION AND CORTICAL THICKNESS IN PATIENTS WITH CERVICOGENIC HEADACHE

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Background and aims: Cervicogenic headache (CEH) is defined as a secondary headache and is frequent among patients subjected to a cervical trauma. Nociceptive and proprioceptive signals, conveyed by cervical afferent nerves, are considered to interfere with the lower trigeminal, vestibular and optokinetic system connecting sensorimotor cortical areas S1. In temporomandibular and other neck pain states increased cortical thickness is found in S1 and prefrontal cortex and left precuneus.
Methods: Clinical features and structural MRI measures from 24 patients (Clinical Trial: NCT02908984) with a probable diagnosis of CEH according to the Antonaci's criteria, were compared with 24 gender and age-matched controls (HC). MRI scans were performed in a 3Tesla MRI and morphological analyses of cortical thickness and cerebral volumes were carried out with FreeSurfer (FS) version 6.0.
Results: We found no significant differences between CEH patients and HCs in cerebral volumes. However, there was a significant association between duration of headache attacks and cortical thickness of both hemispheres, including the areas anterior and posterior to the central sulcus, corresponding to the sensorimotor area (M1/S1), parietal lobe, right cingulate cortex, and left temporal lobe.
Conclusions: The areas with increased cortical thickness in CEH patients are involved in pain modulation and sensorimotor regulation and could reflect an adaptive mechanism to increased nociceptive and proprioceptive stimuli, as suggested for other longstanding, intermittent pain conditions.

eP323

HUB DISRUPTION IN PATIENTS WITH CHRONIC NECK PAIN: A GRAPH ANALYTICAL APPROACH

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Chronic pain is known to alter the brain's network dynamics. These dynamics are often demonstrated by identifying alterations in the brain network topology. A common approach used for this purpose is graph theory. To date, little is known about these potentially altered networks in chronic pain, and neither about their relation with symptoms reported by these patients. Here, we applied a novel graph theoretical approach, i.e. the hub disruption index (HDI), to identify functional network changes in patients suffering from chronic neck pain, a group that is often neglected in chronic pain research. Participants with chronic traumatic and non-traumatic neck pain were compared to healthy pain-free controls. Patients showed higher levels of self-reported symptoms of sensitization, higher levels of disability and impaired sensorimotor control. The brain suffering from chronic neck pain furthermore showed altered HDI properties, and altered local network properties in the posterior cingulate cortex, amygdala and pallidum compared to the healthy pain-free brain. These regions have been identified as brain hubs (i.e. regions that are responsible for orchestrating communication between other brain regions) and are therefore known to be more vulnerable in brain disorders including chronic pain. We were furthermore able to identify associations between altered brain network dynamics and both motor impairments and self-reported symptoms of central sensitisation in patients. These findings indicate that chronic neck pain patients might reflect brain network alterations and that targeting the brain dynamics in the treatment of these patients might be of utmost importance.

eP324

ULTRASONOGRAPHIC FINDINGS OF THE ULNAR NERVE FOLLOWING ELBOW FLEXION IN PATIENTS WITH CUBITAL TUNNEL SYNDROME

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Introduction: The aim of this study was to evaluate the ultrasonographic findings obtained following various degrees of elbow flexion in patients with ulnar neuropathy at the elbow (UNE).
Methods: Ultrasonography was performed on 21 elbows with UNE following 0°, 60°, and 90° elbow flexion.
Results: In UNE, the distance between the medial epicondyle (ME) and ulnar nerve was lower than that in healthy patients at all elbow flexion angles (0°, 60°, and 90°). This difference was statistically significant at 0° and 60° elbow flexion ($p < 0.05$).
Discussion: Measurement of the distance between the ME and the ulnar nerve in full elbow extension may be helpful in the diagnosis of patients with UNE.

eP325

DYNAMIC CHANGES OF FUNCTIONAL CONNECTIVITY BETWEEN DACC AND THALAMUS DURING CONDITIONED PAIN MODULATION IN HUMANS

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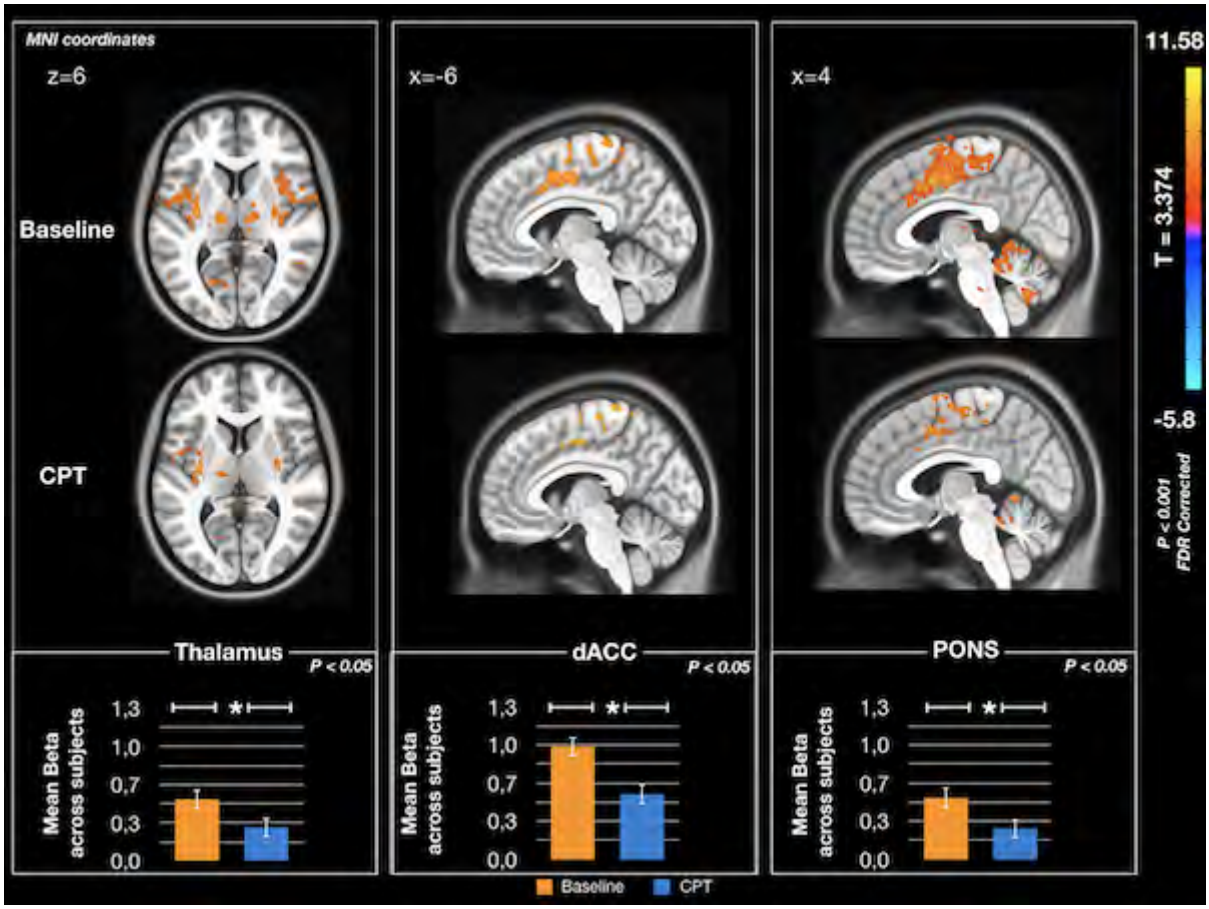
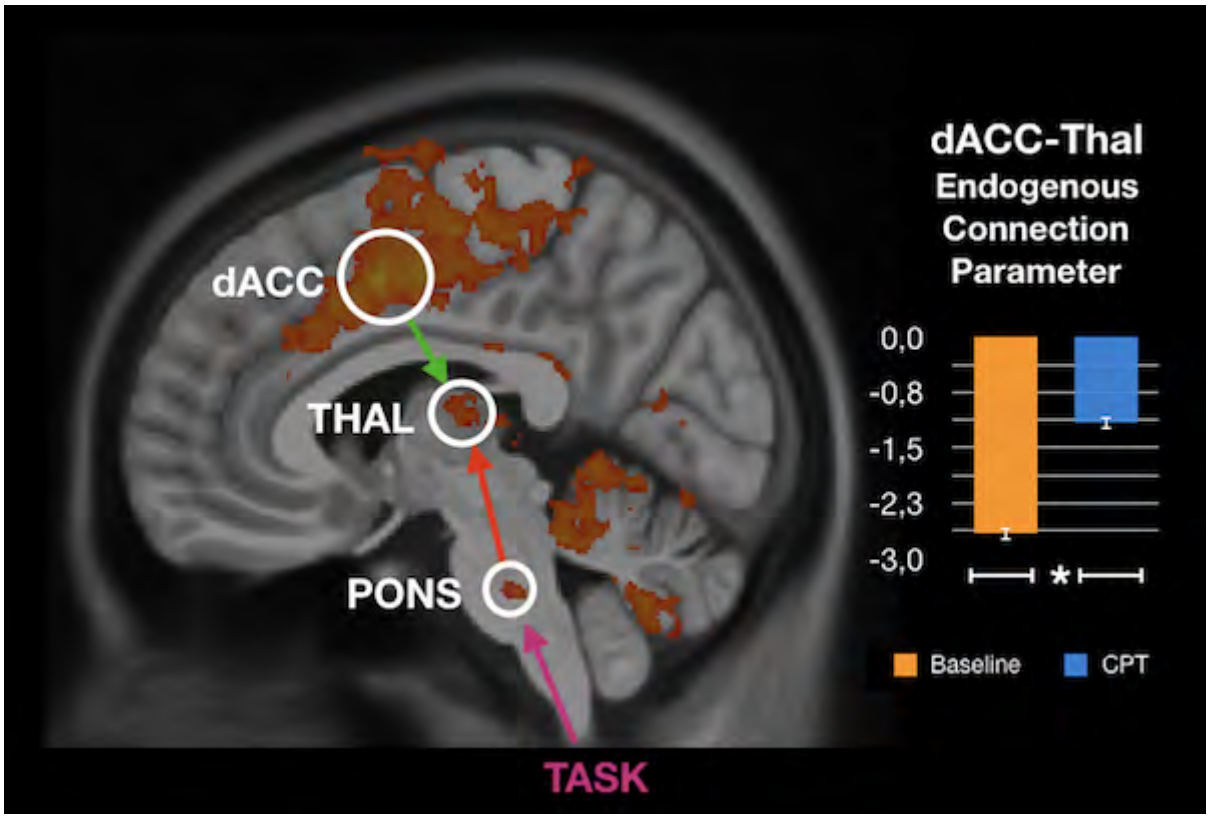
The endogenous pain modulation represents a physiological mechanism to control pain incoming from spinal and trigeminal nociceptive stimulation. In humans, conditioned pain modulation (CPM) reflects the effectiveness of the endogenous pain modulation system. A defective functioning of CPM has been demonstrated in several pain conditions, suggesting that a defective functioning of the endogenous pain modulation could be involved in pain chronification. However, the functional role of cortical and subcortical structures in CPM remains unclarified. In this fMRI study, we used Dynamic Causal Modeling (DCM) to assess effective connectivity patterns involved in CPM by investigating the influence of the cold pressor test (CPT) on the temporal summation of pain.
During fMRI (3T, voxel size 2.0x2.0x2.5mm^3) electric stimuli eliciting the temporal summation threshold (TST) of the nociceptive withdrawal reflex were delivered before (control condition) and during the CPT inducing the CPM. Thirty-seven healthy subjects were studied (age 18-32, 20 females). TST induced activation in dorsal anterior cingulate cortex (dACC), Thalamus and Pons was significantly reduced during CPM. Furthermore, DCM analysis of this circuit revealed that directed regional influence between dACC and Thalamus was reduced during CPT, suggesting that the endogenous inhibition of pain processing induced by the CPM could be driven by dynamic changes of functional connectivity between cortical and subcortical areas such as dACC and Thalamus.



[Group activation maps during Baseline and CPT (left is left). Beta: normalized fMRI activation.]



[Effective connectivity analysis of the Pons-Thalamus-dACC circuit.]

eP326

THE ROLE OF SPATIAL ATTENTION ON "COROLLARY" EFFECTS OF CENTRAL SENSITIZATION

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Background and aims: Human experimental studies using high frequency stimulation of the skin (HFS), a robust method for the induction of secondary hyperalgesia, have shown that the increased perception elicited by mechanical pinprick stimuli after HFS is accompanied by increased event-related potentials (ERPs) to a variety of sensory stimuli, including tactile ones. The mechanisms underlying this multimodal enhancement of brain responses remain elusive. This study was designed to test the effects of orienting spatial attention towards the stimulated or control arm before (T0) and after (T1) HFS.
Methods: Standard and deviant tactile stimuli were applied on the two forearms, before (T0) and after (T1) applying HFS to one of the two forearms. Attention was directed towards the sensitized or control forearm in separate blocks by asking participants (N=19) to detect the tactile deviant stimuli at one of the two forearms. This resulted in a 2 (time) x 2 (arm) x 2 (attention) model.
Results: The magnitude of the N1 and P2 elicited by standard stimuli was not affected by any of the factors. Instead, we observed a *Time x Arm* interaction for the N1 elicited by deviant stimuli that was significantly decreased for stimuli applied to the control, but not the HFS arm after HFS. Moreover, a larger positive peak (P3) was observed for deviant stimuli presented within the focus of attention.
Conclusion: The present data provide no evidence for a modulatory role of spatial attention on the corollary effects of HFS on the brain responses to tactile stimuli.

COMPLEMENTARY MEDICINE

eP327

EFFECTIVENESS OF OSTEOPATHIC TREATMENT ON PAIN AND DISABILITY IN PATIENTS WITH MIGRAINE

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Background and aims: Migraine pain has a multidimensional dimension affecting the central nervous system (CNS) primary and secondary somatosensory cortices, thalamus, insula, anterior cingulate cortex and parietal and prefrontal cortices.
It is a chronic disease that reduces the quality of life (QoL) presenting nausea, vomiting, and/or photophobia. The origin of migraine is argued but there is evidence about a vegetative nervous system (VNS) especially in relation to the central sensitization for an alteration of the trigemino-vascular-nuclei and meninges' inflammation. Migraine occurs in about 15% of the general population with a total cost per year estimated of €18 billion in Europe, more than neurological disorders (multiple sclerosis, Parkinson's disease and stroke or brain tumour). Migraine is usually managed by medication, but nonpharmacological management could be an alternative treatment option to reduce pain, disability, increase QoL and reduce costs.
The aim is to identify and critically evaluate the available literature regarding the effectiveness of osteopathic treatment (OMT) in patients affected by migraine with regards to pain and disability.
Methods: A systematic review has been conducted, screening and reviewing more than 10 among databases and journals to answer the aim.
Results: OMT may be considered a valid procedure for the management of migraineurs.
Conclusions: OMT through spinal manipulation technique or craniosacral therapy aims to influence the CNS altering somatosensory processing at the cortical level neuromuscular-autonomic regulatory mechanisms to reduce pain.
Although debate about the cause of migraine is still open, osteopathy would allow to address the pathology with a non-drug and non-invasively therapy.

eP328

YOGA & PRANAYAMA: A VEDIC PERSPECTIVE IN PAIN MANAGEMENT

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Chronic pain is growing and public health burden affects 20% of the global population. While acute pain is protective, chronic pain is maladaptive physiologic response to injury. Side effects and risks of long term opioid and analgesic use has Increased the reliance on non-pharmacologic chronic pain relief. Offering non-pharmacologic options to mitigate chronic pain and minimize analgesic use is the need of the moment. A whole person mind-body approach addresses pain in a more comprehensive way, interfacing between the brain and body silos to give patients and clinicians drug-free options for pain management.
Yoga - a 5,000-year-old popular mind-body Indian intervention, has gained popularity over the last decade in management of chronic pain. The integrated practices of breathing, gentle physical movement, mindfulness, concentration, and meditation act at cellular level in management of pain syndromes. Studies have shown yoga to be useful in the management of nociceptive pain, musculoskeletal pain, inflammatory pain and improves quality of life.

Yogic Behavioral interventions like breathing, gentle movement, mindfulness, and meditation are evidence-based, safe, and effective therapies to mitigate pain and suffering. Clinicians can learn to effectively integrate nonpharmacologic approaches into patient care to help support self-management as an important part of overall treatment strategy for acute and chronic pain addressing the psychological, social, and spiritual needs of the patients besides taking care of their physical condition, according to the concept of “total pain.”
The cutting-edge research on yoga being simple and inexpensive method without any sophisticated equipment producing good result will be discussed.

eP329

ART THERAPY AND ARTWORK FOR EMPOWERMENT PEOPLE WITH FIBROMYALGIA

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Art therapy is a complementary health approach that combines art media, creativity, and artwork produced by patients to help restore them to a more normal functionality. While art therapy is part of the mental health profession, it is a mind and body technique that is also useful in other medical applications, such as helping those with chronic pain,as fibromyalgia. Pain can be mild or severe, everything from a dull ache to shooting and burning pains, and it could occur on a daily basis or come and go. There may be other symptoms, such as mood changes, and all of them could negatively impact physical, emotional and mental aspects of daily life.
There are two main art therapy approaches: process intensive and conscious and subconscious expression. With a process intensive approach, art is an emotional journey that helps patients discover something personal. The second approach is less concerned with the art-making process and more concerned with what the patient expresses with the art. Therapists can use the art to understand the patient‘s subconscious, which helps get to underlying problems.

INTERVENTIONAL BLOCKADE THERAPIES

eP330

COMPARISON OF TIME AND SUCCESS RATE BETWEEN CONVENTIONAL ANTEROPOSTERIOR AND OBLIQUE APPROACH IN S1 TRANSFORAMINAL EPIDURAL INJECTION(TFESI) - A PILOT STUDY

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Background and aims: Among the ESI techniques, the TFESI is considered as a preferred method for effective delivery to the ventral epidural space, close to the dorsal root ganglion. Several approaches are developed, however, there are few study of TFESI especially S1 level. This was conducted to compare the neural foramen passage time of S1 level TFESI performed using the Anteroposterior and Oblique approaches as a primary outcome.
Methods: Thirty-five patients scheduled S1 TFESI were randomly allocated into two groups; Anteroposterior approach (group AP) or Oblique (scotty dog) approach (group O). In group AP, slight cephalad-caudad tilt (image intensifier caudad) was used to maximize the fluoroscopic anatomy of the neural foramen. In group O, caudal tilt was adjusted to line up the L5-S1 endplates. The C-arm is rotated ipsilateral oblique 20° to view the L5 vertebral segment as a Scotty dog. Both groups received injection of steroid mixed with local anesthetics after confirming appropriate image. We recorded procedure time, presence of vascular injection of contrast agent, pain score for 1 month and

complications.
Results: Foramen passage time was similar between the two groups (20.01sec vs. 46.87sec, P=0.107). And total procedure time in group O was reduced than group AP (101.90sec vs. 167.67sec, p=0.02). However, there were no significant differences in pain score, vascular injection, complication rates between the two groups.
Conclusions: Oblique approach might be easier and faster method than traditional anteroposterior approach for TFESI of S1. This allows both patients and practitioners to reduce radiation exposure time.

eP331

CRYOABLATION - THE FIRST EXPERIENCE OF TREATMENT OF SCAR NEUROMA PAIN AND POSTHERPETIC NEURALGIA

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Background and aim: Scar neuromas and postherpetic neuralgia are usually very poorly responsive to conservative treatment. Cryoablation allows you to eliminate the cause of pain without fear of a new neuroma.
Materials and methods: Treated 8 female patients: 4 with scars neuromas, 4-postherpetic neuralgia. History of pain from 3 to 10 years. Pain intensity VAS 7-9. Postherpetic neuralgia scars were greater than 2% of body surface. Received conservative treatment using NSAIDs, gabapentinoids, antidepressants, opioids and lidocaine patches. The treatment had little or no efficiency. For all patients the pain was radiated far from the damaged. All patients had been subjected to the test block with 1% lidocaine to find out where and how deep is pain generator.
Based on the results of the test block, the cryoablation was performed by Metrum CryoFlex.
Results: In all patients three weeks after cryoablation, there was no pain (VAS 0-1) in the primary lesion area. For today the painless period is six and more months. Patients do not need medication, or the treatment is associated with other signs of chronic pain.
We have not seen any side effects or complications.
Conclusion:
1. Cryoablation allows to treat patients in such situations where other methods are not available
2. Experience with this method is modest, literature limited.
3. Cryoablation deserves to be introduced and the material collected.

eP332

ULTRASOUND GUIDED PAIN INTERVENTIONS USING THE LOUGHBOROUGH GUIDES: NOVEL GUIDES FOR PRE-PUNCTURE AND REAL TIME PROCEDURES

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Background and aims: Traditionally many pain interventions (acute and chronic) were performed using peripheral nerve stimulation, fluoroscopy or landmark techniques . This resulted in high failure rate and complications. The advent of ultrasound has revolutionised this. Yet, ultrasound requires additional psychomotor skills requiring variable periods of training and time dependent ‚learning curve'.
Also, variations in technical accuracy exist despite the use of ultrasound. Assist devices are suggested to improve this.
Our aim was to design a simple, versatile, portable, and reliable ultrasound needle guide device that would allow better image optimisation, aid training, facilitate procedures and improve success rate.
Methods: A collaboration between mechatronic engineers from Loughborough University and a group of medical

experts from University Hospitals of Leicester developed the Loughborough guidance system composed of pre-puncture and real time guides. It aids pre puncture scans and subsequent adjustment of needle and allows improved performance of real time in-plane and out-of-plane procedures. Unique to it is the development of a mobile application software that calculates the needle depth and angle of insertion.
Results: Usability tests among established clinicians established ease of use. A cadaveric study comparing experienced clinicians and trainee doctors confirmed this, both achieving 100% first time hit rate for in-plane and out-of-plane real time procedures with the latter taking 37% more time. Average number of attempts for pre-scan epidurals was 1.14 seconds for experienced and 1.35 seconds for trainees.
Conclusion: Loughborough guides are innovative guides that allow accurate performance of a variety of ultrasound guided pain procedures.

eP333

A RETROSPECTIVE EVALUATION OF OPIOID INTAKE REDUCTION AFTER COOLED RADIOFREQUENCY DENERVATION FOR SACROILIAC JOINT PAIN

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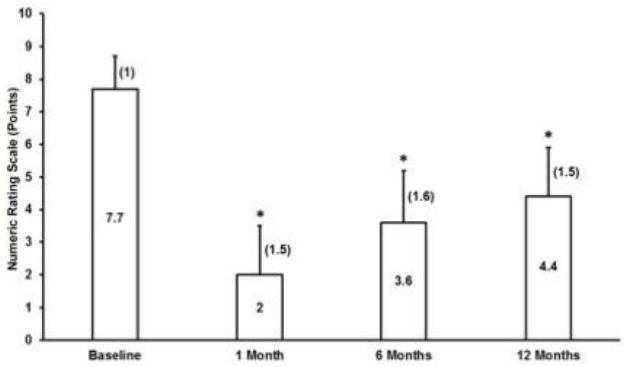
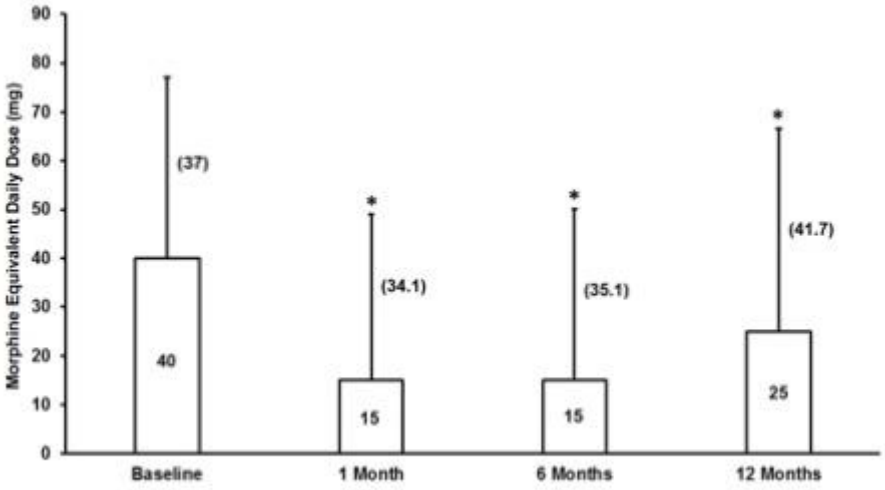
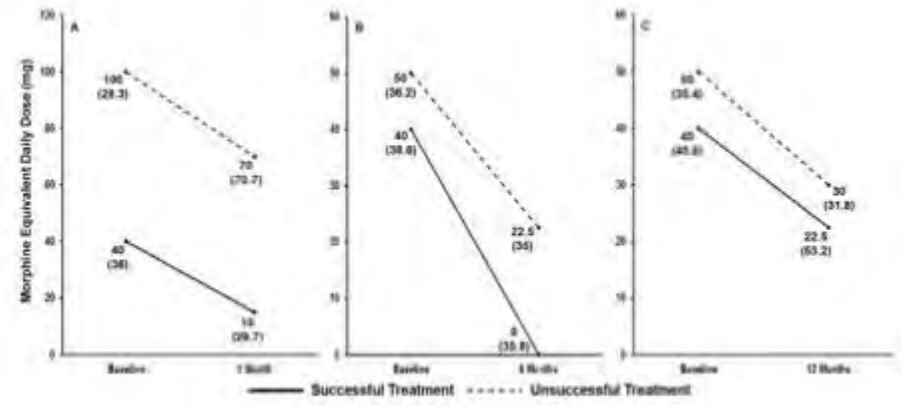
Background and aims: Opioids can present intolerable adverse side-effects to patients who use these analgesics to mitigate chronic pain. Cooled radiofrequency (CRF) denervation was evaluated to provide pain and disability relief, and reduce opioid use, in patients with sacroiliac joint (SIJ)-derived chronic low back pain (LBP).
Methods: Twenty-seven (27) patients with SIJ-derived LBP refractory to conservative treatments, and taking opioids chronically (> 3 months), were included. Numeric rating scale (NRS) and Oswestry Disability Index (ODI) scores were collected at 1 month, and 6 and 12 months post-procedure. Opioid use between baseline and each follow-up visit was compared for the entire group, and for those who experienced successful (NRS point reduction ≥ 50% of baseline value) or unsuccessful CRF.
Results: Mean pain (7.7±1) and disability (50.1±9), and median opioid use (morphine equivalent daily dose = 40±37 milligrams) were significantly reduced up to 12 months post-intervention. Cooled RF denervation was successful in 44.4% of the study group at 12 months. Regardless of procedure success, patients demonstrated similar opioid use reductions, and changes in opioid use at 12 months.
Conclusions: Cooled RF denervation of the SIJ can safely elicit pain and disability relief, and reduce opioid dependence, regardless of intervention success. CRF should be considered as a dependable therapy to alleviate opioid use in patients with SIJ-derived LBP.



[Mean pain (NRS scores) experienced by the study group over time]



[Median MEDD (mg) used by the study group over time]



[Median MEDD of patients who had successful or Unsuccessful treatments at each follow-up visit.]

eP334

PERCUTANEOUS LUMBAR NUCLEOPLASTY IN THE MANAGEMENT OF LUMBAR DISCOGENIC PAIN

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Background: Percutaneous lumbar nucleoplasty (PLN) is an effective treatment for internal disc disruption (IDD). In this retrospective study, we evaluated the effectiveness of PLN to manage discogenic low back pain (LBP) and predictive factors associated with the successful outcome of PLN.
Methods: PLN guided by fluoroscopy was conducted for discogenic LBP by one pain physician. Successful outcome was defined as more than 50% pain relief on the numerical rating scale (NRS) pain score, no increase in analgesics, and no additional treatment during the 6-month follow-up period. The relationship between outcomes and independent variables, including patient demographics, comorbid diseases, pain duration, numbers and level of the affected disc, the Modified Dallas Discogram Scale, and preoperative MRI findings were investigated using multivariate analyses.
Results: Of 80 patients, 56 experienced a successful outcome after PLN. Higher Modified Dallas Discogram Scale and the L3/L4 level treatment were related with the positive outcome. There were no other statistically significant between-group differences in the other factors. No serious complications related to PLN occurred.
Conclusions: In this study, 70% of the included patients showed more than 50% pain reduction without any complications during the 6-month follow-up period. The high-grade Modified Dallas Discogram Scale and L3/L4 level treatment were positive predictors for successful PLN.

eP335

A PROSPECTIVE RANDOMIZED COMPARISON OF THE EFFICACY BETWEEN ULTRASOUND- AND FLUOROSCOPY-GUIDED GENICULAR NERVE BLOCK FOR CHRONIC KNEE OSTEOARTHRITIS

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Background: Recently, genicular nerve block and radiofrequency ablation had been introduced to alleviate knee pain in the patients with chronic knee osteoarthritis. Both ultrasound- and fluoroscopy-guided genicular nerve block have been used. However, whether one is superior to the other remains unknown. The present study compares the efficacy between ultrasound- and fluoroscopy-guided genicular nerve block.
Methods: From July 2015 to September 2017, a randomized controlled study had been performed to analyze the difference in the efficacy between ultrasound- and fluoroscopy-guided genicular nerve block. The Numeric Rating Scale (NRS), Western Ontario and McMaster Universities Arthritis Index (WOMAC), Global Perceived Effect Scales (GPES), and complications were evaluated pre-procedure, and 1 and 3 months after genicular nerve block.
Results: A total of 80 patients had been enrolled and randomly distributed to groups U (ultrasound-guided, n = 40) and F (fluoroscopy-guided, n = 40). Those who had been lost to follow-up or had undergone other interventions were excluded, ultimately analyzing 31 and 30 patients in groups U and F, respectively. No differences in NRS and WOMAC had been observed between both groups at baseline and during the follow-up period. GPES and complication rates were also similar between both groups.
Conclusions: Pain relief, functional improvement, and safety were similar between ultrasound- and fluoroscopy-guided genicular nerve block. Therefore, either of the two imaging devices may be utilized during a genicular nerve block for chronic knee pain relief. However, considering radiation exposure, ultrasound guidance may be superior to fluoroscopic guidance.

eP336

FACTORS ASSOCIATED WITH SUCCESSFUL RESPONSES TO GANGLION IMPAR BLOCK: A RETROSPECTIVE STUDY

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Background and aims: Coccydynia is defined as pain in and around the coccyx. Ganglion impar block can be a good alternative treatment to the patients who did not respond to conservative treatments for coccydynia. However, the factors associated with successful responses to ganglion impar block are unknown. Therefore, in this study, we aimed to identify the independent factors related to successful responses to ganglion impar block in patients with coccydynia.
Methods: From January 2013 to December 2017, we performed a retrospective review of 192 cases of coccydynia patients who underwent ganglion impar blocks. Patients were considered successful responders if they showed a decrease of more than 50% or 4 points on the numerical rating scale. Logistic regression analysis was performed to determine the factors associated with successful responses to this surgical procedure.
Results: After ganglion impar block, 36 (18.75%) of patients were considered successful responders. Univariate logistic regression analysis showed that coccydynia related to cancer was independently associated with successful responses after this surgical procedure (odds ratio = 3.236; 95% confidence interval = 1.368 - 7.665; P = 0.008).
Conclusions: These results suggest that ganglion impar block can be more effective on cancer-related coccydynia than other causes.

eP337

CONTINUING ANTICOAGULANTS AND ANTIPLATELETS FOR PATIENTS UNDERGOING LUMBAR SYMPATHETIC GANGLION BLOCK

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Background and aims: Guidelines have been published that recommend discontinuing anticoagulants and antiplatelets in patients undergoing interventional pain procedures. Although the guidelines categorize lumbar sympathetic ganglion block (LSGB) as an intermediate-risk therapy under medication of anticoagulants and antiplatelets, continuation of them is inevitable in some cases. The present study examined the complications induced by LSGB under continuation of them were examined.
Methods: LSGB was performed in 91 patients with peripheral vascular disease, ages 33 to 89 years, who had either anticoagulants, antiplatelets or both. They had between one and four kinds of these drugs. Hematocrit value (Ht), platelet count, prothrombin time (PT) and activated partial thrombin time (APTT) were checked before LSGB. When Ht decreased, it might be associated with concealed hemorrhage. The patients who were suspected of hemorrhage were followed by abdominal CT examination to check the development of hematoma.
Results: Two patients who showed sinus tachycardia and severe hypotension after the procedure didn‘t show Ht decrease. Nineteen patients who showed Ht decrease (3 % or more) didn‘t develop hematoma. No correlation between platelet count, PT, and APTT nor Ht decrease was observed. A patient who developed acute myocardial infarction next morning and died later didn‘t show Ht decrease.
Conclusions: Although no obvious hematoma was observed, more than 20 % patients showed unidentified Ht decrease. Relationship of Ht decrease with continuing the drugs is not clear, but it should be concluded that LSGB procedure is more dangerous under continuation the drugs. Patients should be observed after the procedure.

eP338

THE ROLE OF SPINAL ANAESTHESIA WITH AND WITHOUT INTRATHECAL OPIOID COADMINISTRATION IN IMPROVING ONCOLOGIC OUTCOMES AFTER ENDOSCOPIC TRANSURETHRAL CANCER SURGERY

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Introduction: Spinal anaesthesia (SA)(compared to general) improve postoperative oncologic outcomes in transurethral resection of the bladder (TURB) for non-muscle invasive bladder cancer (NMIBC). Intrathecal coadministration of opioids doesn't affect NK cells, and improve postoperative opioid sparing as well.There are no comparative data on oncologic outcomes of SA with/without intrathecal opioid in TURB, which is the aim of our study.
Methods: Seventy patients with NMIBC, aged ≥ 43, who underwent 1/more TURB under SA were examined retrospectively. Of them, 36 received levobupivacaine 15 mg (L group) and 34 levobupivacaine 12,5 mg + fentanyl 12,5 mcg (LF group) intrathecally. All patients received scheduled Paracetamol 1,0 g/6 h, optional NSAIDs and as needed Tramadol as well. Data regarding demographics, ASA and CCI scores, analgesics consumption, urethrotomies, tumor-related factors (size, number, grade, stage, prior disease-recurrence, adjuvant therapy), tumor risk (low, intermediate, high), oncologic outcomes (recurrence rate/free time after TURB during the regular cystoscopy every 3 months/first year, every 6 months/thereafter) were explored as well.
Results: LF patients were older, with less analgesics consumption and with a tendency towards longer recurrence-free time compared to L patiens (p=0,074). The recurrence at 3 months along with prior and new disease-recurrences comprise our minority (n=27) with aggressive course of the disease. Among the rest majority, LF subgroup had lower recurrence rate than L subgroup (p=0,03).
Conclusions: As part of multimodal analgesic strategy, SA with intrathecal opioid coadministration may play a role regarding oncologic outcomes after TURB for NMIBC. The type, grade, stage, and location of tumor do matter.

eP339

ULTRASOUND GUIDED PECS BLOCK: AN EMERGING TECHNIQUE FOR PROVIDING PERIOPERATIVE ANALGESIA AFTER BREAST SURGERY

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Background: Ultrasound guided pectoral nerves (PECS) block types I and II are novel techniques to block the pectoral, intercostobrachial, third to sixth intercostals, and the long thoracic nerves[1-5]. They may provide good analgesia during and after breast surgery. This study aimed to compare prospectively the quality of analgesia after modified radical mastectomy surgery using general anesthesia and PECS blocks versus general anesthesia alone.
Methods: Sixty adult female patients scheduled for elective unilateral modified radical mastectomy under general anesthesia were randomly allocated to receive either general anesthesia plus PECS block (PECS group, n = 30) or general anesthesia alone (control group, n = 30).
Results: Statistically significant lower visual analog scale pain scores were observed in the Pecs group than in the control group patients. Moreover, postoperative morphine consumption in the Pecs group was lower in the first 18 hours after surgery than in the control group. In addition, statistically significant lower intraoperative fentanyl consumption was observed in the Pecs group than in the control group. Overall, patient satisfaction higher in the Pecs group than in the control group.
Conclusions: Ultrasound guided combined PECS I and II block is a simple, easy-to-learn emerging technique that produces good analgesia for breast surgery.

eP340

COOLED RF ABLATION EXTENDS PAIN RELIEF VIA SUPERIOR MODIFICATION OF THE ABLATED NERVE

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Background and aims: Clinical studies show patients suffering from chronic osteoarthritic knee pain experience longer lasting pain relief following cooled radiofrequency (CRF) ablation, compared to those who receive standard RF (SRF) ablation. The mechanism underlying this extended pain relief in CRF patients, however, is largely unknown. The primary aim of this study was to assess the physiological changes following SRF or CRF treatments.
Methods: This was a preclinical rodent study. One group of rats was exposed to clinical doses of SRF or CRF at the sciatic nerve (SN) and changes were assessed immediately after. Another group was exposed to lower doses of SRF or CRF to allow for long-term evaluation. Endpoints assessed include nerve function (EMG) and lesion volume (MRI). Nerves were also harvested for histological analysis (H&E). Total energy output for SRF or CRF was also assessed.
Results: Nerves treated with CRF were observed to have significantly lower nerve function immediately after ablation and for upto 4-6 weeks post-ablation as compared to SRF. MRI scans immediately post-ablation also showed significantly larger lesion volumes in CRF-treated groups vs. SRF-treatment. Additionally, histological assessment of CRF-treated nerves showed longer lesion lengths compared to SRF. Finally, CRF ablations delivered ~3.7 times greater energy than SRF.
Conclusions: We show that greater energy delivered during a cooled RF ablation leads to larger lesion volumes and longer lesion lengths, which in turn attenuates nerve function to a greater degree. This elucidates the potential mechanism underlying the longer-lasting pain relief provided by CRF to chronic pain patients.

eP341

PERI-NEURAL DEXMEDETOMIDINE AS AN ADJUVANT TO BUPIVACAINE INDUCED THORACIC PARAVERTEBRAL BLOCK IN PATIENTS UNDERGOING THORACOTOMY

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Background: Recently there has been renewed interest in this block to provide long lasting unilateral anesthesia and for the treatment of acute and chronic pain. Paravertebral block has been successfully used to provide analgesia for multiple thoracic and abdominal procedures in both adults and children.
Aim: The aim of the study was to assess the efficacy of continuous Bupivacaine / Dexmedetomidine in thoracic paravertebral block in controlling thoracotomy induced pain.
Material and methods: We studied 30 patients. 15 patients in each group, undergoing thoracotomy in the lateral decubitus, thoracic paravertebral catheter was inserted prior to induction of general anesthesia, and hemodynamic profile and consumption of anesthetics and analgesics were recorded at different intervals in addition to visual analogue score post-operatively.
Results: There was more hemodynamic changes on incision in group B-peri-Dex and more efficient pain control compared to group B and accepted visual analogue score values post-operatively in these patients.
Conclusion: Continuous Bupivacaine/Dex thoracic paravertebral block is an effective method of controlling thoracotomy induced pain.
Keywords: Thoracotomy-paravertebral- pain- visual analogue score.

eP342

ULTRASOUND GUIDED ERECTOR SPINAE BLOCK FOR POST THORACOSCOPY PAIN SYNDROME

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Background and aims: The Erector Spinae plane (ESP) block consists in the injection of drugs deep to the Erector Spinae muscle, it has been used to treat some chronic and neuropathic pain conditions.
The drugs injected with ESP block may reach the paravertebral and epidural space and block of the dorsal and ventral rami of spinal nerves.
Methods: We present a case series of 5 patients undergone video-assisted thoracoscopic lobectomies, they suffering by post thoracoscopy pain syndrome (PTPS) for more than 3 months not relieved by systemic administration of pregabalin amytriptiline and opioids.
We performed an ultrasound-guided ESP block at T5 transverse process, we injected levopupivacaine 25 mg and triamcinolone 40 mg within 15 ml of normal saline. We weekly repeated the injection 2 more times. We recorded NRS and DN4 questionnaire before and 14 days after the end of the treatment.
Results: The mean NRS decreased from 8.8±0.84 to 2.4±0.55 ($p < 0.0001$, 95%CI= 5.37-7.43) and the DN4 decreased from 4.4±0.55 to 0.2±0.45 ($p < 0.0001$, 95%CI=3.47-4.93). We analyzed data with a paired student's *t* test.
Conclusion: The local anesthetic and corticosteroid injected allow the abnormal central processing that maintains the neuropathic component of pain to revert to normal and improves a continuous inflammatory condition that may happen in PTPS.
PTPS can also have a myofascial component that increases the pain and a fascial plane block as ESP block could be helpful.
In conclusion, our report suggests that ESP block may be effective in reducing PTPS.

eP343

AUDIT OF INDICATIONS FOR AND EFFICACY OF SYMPATHETIC GANGLION BLOCKS PERFORMED IN OUR HOSPITAL

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Background and aims: We performed a retrospective audit to review how often and for which conditions in our patient population sympathetic ganglion blocks were being performed. We also reviewed the extent our patients benefited and rates of serious complications
Methods: Pain theatre lists during the period December 2016 to December 2017 were retrospectively reviewed and patients who underwent sympathetic ganglion blocks were identified. These blocks included stellate ganglion, coeliac plexus, and lumbar sympathetic blocks. A standard mixture of local anaesthetic and steroid was used for the blockade. Patient procedure notes, subsequent patient clinic letters and communications were reviewed to gather data.
Results: There were 25 patients who received sympathetic ganglion blocks during the time period audited. The most common indications were visceral pain (13) and CRPS(6). The age range was 17 to 86. There were 16 female and 9 male patients. There were 8 patients who were lost to follow up. 12 of 17 patients reported an improvement in their pain after the block. 9 of 11 patients with visceral pain reported improvement. There were no serious complications reported.
Conclusions: Our data confirms sympathetic ganglion blocks can be effective as part of the bio psycho social approach to different chronic pain conditions. The benefit was most marked in patients with a diagnosis of visceral pain. Further research should focus of analysing patient factors affecting likelihood of benefiting from a procedure.

eP344

COMPARISON OF INTRAVASCULAR INJECTION RATE BETWEEN BLUNT AND SHARP NEEDLES DURING CERVICAL TRANSFORAMINAL EPIDURAL BLOCK

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Background: Cervical transforaminal epidural block (CTEB) is a useful option in the diagnosis and treatment of cervical radicular pain. However, inadvertent intravascular injection can lead to severe neurologic complications. Blunt needles are considered to displace instead of penetrate vessels due to their dull needle tip.
Objective: To investigate whether there is a difference between blunt and sharp needles in intravascular injection rates during CTEB
Methods: After Institutional Review Board approval, 108 participants undergoing CTEB for treatment of radicular pain resulting from spinal stenosis and herniated nucleus pulposus were randomly assigned to one of two needle groups (blunt needle or sharp needle). The needle position was confirmed using biplanar fluoroscopy and 2 mL of nonionic contrast medium was injected to detect intravascular injection. Intravascular injection was defined as the contrast medium spreading out through the vascular channel during injection under real-time fluoroscopy. This study was registered in ClinicalTrials.GOV.
Results: The intravascular injection rate was not significantly different between the blunt-needle and sharp-needle groups (35.2% vs 33.3%, P > 0.05). The procedure time was longer in the blunt-needle group than in the sharp-needle group (101.00 ± 12.4 s vs 56.67 ± 8.3 s, P < 0.001).
Conclusions: In the present study, use of a blunt needle did not reduce the rate of intravascular injection during CTEB compared to use of a sharp needle. In addition, procedure time significantly increased with blunt-needle use compared to sharp-needle use.

eP345

ESP BLOCK IN POLYTRAUMATIC PATIENT WITH MULTIPLE RIB FRACTURES

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During 2017 in Spain around 140,000 persons were victims of a traffic accident, 10,000 required hospital admission. Since the type of injury occurring in this type of accident is of a polytraumatic nature, pain control is a priority. Recent publications on the effectiveness of the eco guided ESP block for chest wall pain control. We will describe below 1 case in which the ESP blockade was performed with catheter placement for pain control in a patient with multiple rib fractures following a motorcycle traffic accident. After the primary and secondary evaluation of the polytraumatic patient, we proceeded to make the ESP blockade and the catheter was placed in the same plane of the spinal erectors. During the admission, the patient maintained an adequate analgesia level with VAS > 3 without the need for opioid-type rescues.
The possibility of canalization of a catheter in the plane of the erector adds now one more advantage to this novel blockade that allows us to use continuous infusion of local anesthetic thus disconnecting the analgesia time to the life of the local anesthetic. With an early blocking we managed to cut the painful stimulus in a first instance and with the placement of the catheter we keep the levels of analgesia controlled during the admission thus shortening the hospital stay times. Our experience with ESP has been able a very acceptable degree of analgesia, achieving a significant decrease in the need for opioids and limiting their use for pain control only as a rescue.

eP346

PULSED RADIOFREQUENCY OF DORSAL ROOT GANGLIA AN ALTERNATIVE FOR DIABETIC TRUNCAL NEUROPATHY RELIEF

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Diabetic Truncal Neuropathy (DTN) is a common form of Painful Diabetic neuropathy (DNP). Symptoms include painful sensations of dysesthesia and/or hypoesthesia, in upper or lower thoracic dermatomes distribution, with allodynia exacerbated at night or during daily activities that involved the affected area; the patients also refers herniated abdomen wall corresponding to affected dermatomes. Despite treatment that includes metabolic control of Diabetes with DM medications, neuromodulators, analgesics, neural blockade, the neuropathic pain still persists. The aim of the study is to demonstrate the efficacy in pain relief of Pulsed Radiofrequency (PRF) of Dorsal Root Ganglia (DRG) of dermatomes affected in DTN.
Results: Eight patients (n=8) with persistent unilateral or bilateral DTN, with allodynia and hyperesthesia of 3-6 dorsal dermatomes and abdomen wall bulged out, underwent unilateral GRD-PRF obtaining a significant pain relief during the first 14 days (87.5%, n=7) after the procedure, lowering VAS in more than 60% compared to baseline and progressively improve in the next two months, reaching VAS reduction of 90%, except one patient with moderate relief 60%, and a persistent relief for more than 6 months in subsequent control appointments. The abdomen wall bulged out was visibly reduced since the second appointment, two months after procedure in 87.5% of patients (n=7). Lowering doses of Pregabalin and tramadol prescribed several months before procedure, were progressively possible two months after PRF to 50-75% of baseline doses.
Conclusion: Dorsal Root Ganglia Pulsed Radiofrequency of dermatomes affected is an effective alternative for pain relief in patients with Diabetic Truncal Neuropathy (DTN).

eP347

FEASIBILITY OF LUMBAR PERI-RADICULAR AND MEDIAL BRANCH BLOCK THROUGH MID LATERAL INTER-TRANSVERSE LIGAMENT NEEDLE PLACEMENT

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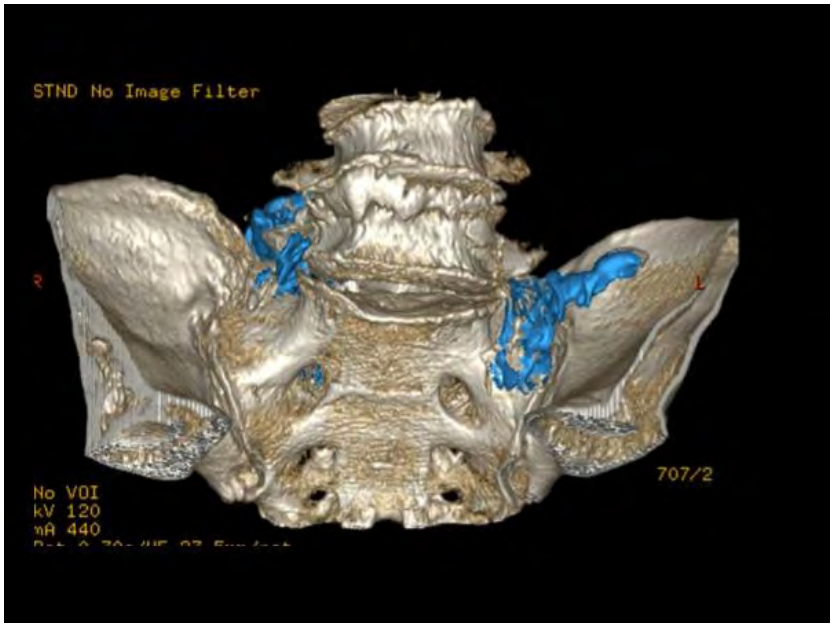
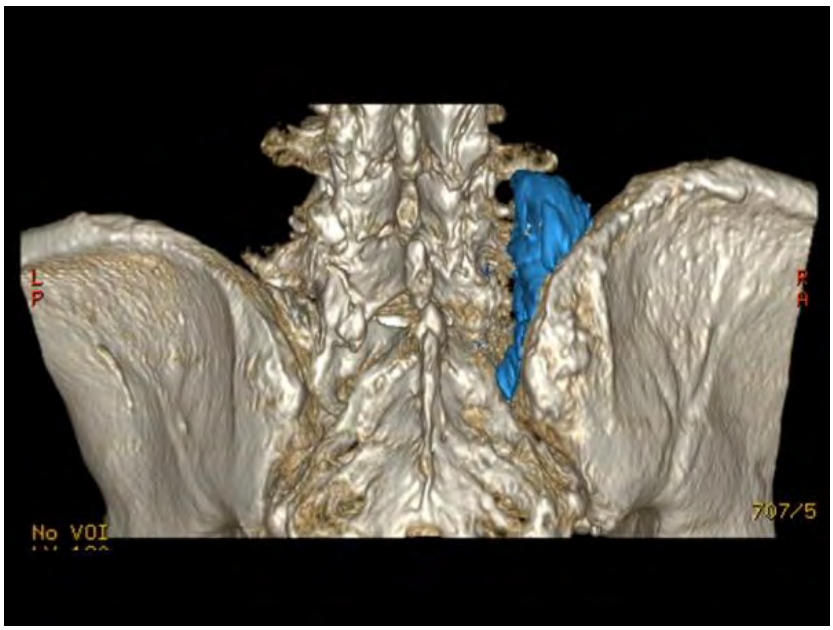
Nerve root pricking and intra-vascular injection during Kambin's triangle and subpedicular approaches of Lumbar Transforaminal Epidural Injection, are common (1). Furthermore, artery spasm, is known to be related to needle-artery contact or intra-vascular injections.
The aim of the study was to assess whether iodine contrast injection at the level of the mid L4-L5 or L5-S1 inter-transverse ligament, in a lateral transverse position, allows its diffusion to peri-radicular area and / or posterior medial branches. This would minimize the chances of these complications.
In two patients with L4-5 and L5-S1 bilateral symptomatic spinal stenosis respectively, needles were placed in three different positions under CT scan:
1) at the posterior mid-level of the L4 transverse process and both
2) superficially and
3) deep into the inter-transverse ligament of L4-5 and L5-S1.
A 3 cc iodine contrast solution was administered along with 7 cc of 0.125% bupivacaine with 2 mg of dexamethasone at each site. CT-3D contrast segmentation was performed to analyze injectate diffusion.
In both needle positions (L4-5 and L5-S1) deep into the inter-transverse ligament, the solution reached both peri-radular L4 and L5 areas (fig 1). Injectable solution spread mainly to posterior areas, including MB, when needle was

placed posterior to the inter-transverse ligament or superficial to the transverse process.

1. Park JW, et al. Triangle Approach of Lumbar Transforaminal Epidural Injection with Spinal Stenosis. Ann Rehabil Med. 2011 Dec;35(6):833-43.



[Anterior spread]



[Posterior spread]

eP348

ENDOSCOPIC ELECTROTHERMIC (ESIJ) PROCEDURE OF THE SACROILIAC JOINT 24-MONTH FOLLOW UP STUDIES

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Introduction: In this study, we utilized endoscopy for the precise microsurgical and ablation (ESIJ) of the potential pain generators associated with the SIJ and evaluated the clinical efficacy of this new technique.
Material and methods: The medical records of 30 consecutive patients who underwent ESIJ for SIJ arthropathy and pain in CLBP between January 2016 and February 2018 were reviewed.
In order to confirm the SIJ pain as the main source of CLBP, three separate intraarticular SIJ and medial branch blocks of the lower facet joints (L4-S1) were performed under C-armcontrol at least 3 weeks before the ESIJ-procedure. If patient experienced 50% or higher improvement less than two weeks in pain from baseline according to visual analogue scale (VAS) after this block, SIJ complex was considered to be the main pain generator, and ESIJ was scheduled.
Results: More than 350 endoscopic procedures of SIJ (ESIJ) were performed from January 2016 till February 2018.30 patients with SIG arthropathy in CLBP over 6 month were included by precise criteria (s.e.). At baseline the VAS was 7,23, ODI 44,8 and age of 56 (11 male, 19 female). After the ESIJ procedure the patient had an significant improvement in pain relief (measured by VAS) and functional ability (measured by ODI) at 3 to 24 months..
Conclusion: This new easy to perform endoscopic electrothermic procedure of the SIJ (ESIJ) shows good to excellent results in SIJ arthropathy in relation to pain relief and functional capacity in long term analysis.

eP349

RELATIONSHIP BETWEEN THE GRADE OF LUMBAR CENTRAL CANAL STENOSIS AND CATHETER ADVANCEMENT IN EPIDURAL SPACE DURING PERCUTANEOUS EPIDURAL NEUROPLASTY

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Percutaneous epidural neuroplasty (PEN) is a minimally invasive intervention in chronic back pain that is refractory to other coventional block. The procedure is performed with coccygeal or transforaminal approach. In this study, we aim to investigate whether catheter advancement can be affected by the grade of lumbar central canal steosis in coccygeal approach.
Fourteen patients treated by PEN with coccygeal approach were enrolled. We reviewed lumbar spinal magnetic resonance imaging to evaluate the grade of central canal stenosis (grade 0=none, grade 1=mild, grade 2=moderate, grade 3=severe). We also reviwed fluorosocpy recordings of the procedure to confirm whether a catheter was able to be advanced up to the most stenotic lumbar level. The area under the curve (AUC) was used to obtain the maximal degree of lumbar central canal stenosis.
Each grade of the most stenotic lesion was composed of 3, 4 and 7 patitents, respectively. Catheter advancement was feasible in 3 patients of grade 1. Among 4 patients of grade 2, the catheter was reachable only 2 of them. Finally, among 7 patients of grade 3, the catheter was able to be advanced in only 2 patients. The cut-off value of catheter advancement was grade 2 (sensitivity=62.5%, specificity=83.3%, AUC=0.760). We founded that it may be more difficult when the central canal stenosis is more severe (above grade 2). Althought further study is needed, we suggest that it could be acceptable to perform PEN with transforaminal approach rather than coccygeal approach when a patient has moderate or more central canal stenosis

eP350

PAIN RELIEF FOLLOWING ARTHROSCOPIC ROTATOR CUFF REPAIR: PERIOPERATIVE PREGABALIN ADMINISTRATION VS. INTERSCALENE BRACHIAL PLEXUS BLOCK. PROSPECTIVE, RANDOMIZED, UNBLINDED SINGLE CENTER TRIAL

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Background and aims: Rotator cuff repair (RCR) is a common procedure with significant postoperative pain. Interscalene brachial plexus block (ISBPB) is associated with reduced postoperative opioid use. Pregabalin has been shown to reduce pain and opioid consumption in multiple surgical procedures. Our aim was to examine whether pain treatment with Pregabalin similarly control pain and reduce opioids consumption after RCR surgery.
Methods: 79 patients undergoing RCR surgery were randomized to either Pregabalin administration (Pregabalin group, 75mg the evening before and 150mg one hour, 12 and 24h after surgery) versus ISBPB (Block group). IV PCA was administered for both groups during 24h. Strong and weak opioids were given for supplementation during 24h and until POD-10. Primary outcome was daily self-report pain score till POD-10. Secondary outcomes: Postoperative opioid consumption; Postoperative adverse events; Opioid-related symptoms distress scale; Quality of recovery following 24h; Pain satisfaction score (24h postoperative, POD-2 and POD-10).
Results: Twenty patients were excluded in the final analysis due to technical problems. Among the 59 randomized patients we found significantly higher pain scores one hour after surgery in the Pregabalin group (n=29) vs. the Block group (n=30) with no significant differences in pain scores later on 24h till POD-10. On POD-1 opioid consumption was significantly higher in the Pregabalin group. All other parameters including satisfaction score were not significantly different among the groups.
Conclusions: Our findings demonstrate the superiority of block in the first hour following surgery with respect to pain relief and opioid consumption in the first 24h.

eP351

A STUDY OF THE EFFECT OF TOLPERISONE TRIGGER ZONE INJECTIONS IN PATIENTS WITH CHRONIC MYOFASCIAL PAIN

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Background and aims: To ascertain the efficacy and safety of tolperisone hydrochloride (100 mg) and lidocaine (2,5 mg) trigger zone injections in alleviating myofascial pain.
Methods: Fifty patients with myofascial pain, mean age 41,67 years (SD 11,86) were included in the study. The intensity of pain was evaluated using the visual analogue scales and McGill pain questionnaire. Visualization of area in spasm and understanding the vascular environment of trigger zone was carried using ultrasonic imaging of target muscle. To evaluate hypotensive and sedative effects of tolperisone we used the orthostatic test, Schulte‘s test and Munsterberg‘s test.
Results: The analgesic effects and muscle relaxation of tolperisone become apparent by day 3 post-injection, and the muscle relaxation effect is reaching its maximum on day 10 post-injection. Cardiovascular function following administration of tolperisone was evaluated using the orthostatic test which revealed good orthostatic tolerance. Single injection of tolperisone possessing a central muscle relaxant activity has no sedative effect and does not influence patient response time. The ultrasound examination data demonstrated the improvement of blood circulation in the myofascial trigger zone.
Conclusions: The myofascial trigger zone is a densely contracted band of muscle with ischemic and hypoxic

that can be seen on ultrasound imaging. Clinical study in patients with myofascial pain has demonstrated a positive muscle relaxant and analgesic effect of tolperisone that resulted in restoration of peripheral circulation in the myofascial trigger zone confirmed by ultrasound examination. An important benefit of this drug product is the absence of sedative effect and arterial hypotension

eP352

HYDRODILATATION FOR PRIMARY ADHESIVE CAPSULITIS: FLUOROSCOPICALLY ASSISTED VERSUS ECO-GUIDED FOR REDUCED PAIN IN SHOULDER

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Objective: to compares two hydrodilatation techniques in primary patients: fluoroscopically assisted versus eco-guided.
Methods: retrospective study :two groups(48 primary adhesive capsulitis patients each) treated with fluoroscopically-contrast guided hydrodilatation -anterior portal(group S) and patient treated with eco-guided hydrodilatation-posterior portal(group E).
Patients were evaluated: VAS(visual analogue scale) for pain, passive mobility range(PROM) and Constant score at 1,3 and 6 months and data were compared with pre-hydrodilatation values. We monitored: Techniques´s duration, pain during hydrodilatation and patients needing artroscopic arthrolisis for unsuccessful hydrodilatation.
Results: patients in both groups(comparable in terms of sex and age distribution) have less pain and better PROM at 1 month, even better at 3 months and stabilized at 6 months, comparing with pre-hydrodilation($p < 0,01$)without differences between the groups($p=0,63$). The average Constant in group S went from 40 pre-hydrodilatation to 69 at month, 75 to 3 months and 80 to 6 months ($p < 0,001$). In group S Constant´s averages were similar, without significance comparing Group E. The average techniques´s duration in Group E decreased by 0,35 ($p < 0,001$). Patients in Group E experienced less pain during hydrodilataion comparing to Group S($p < 0,004$). In Group S, four patients required arthroscoic arthrolisis and in Group E two patients.
Conclusions: The two hydrodilatation techniques provides good and comparable results, reduced pain, provide good and comparable results, reducing pain, improving progressively PROM and constant at one, 3 months and stabilizing at 6 months. The technique is performed faster, patients report less pain during the ecoguided hydrodilatation and required less arthroscopic arthrolisis

eP353

RADIOFREQUENCY NEUROTOMY FOR SACROILIAC JOINT PAIN; TWELVE MONTH OUTCOMES AND COMPARISON BETWEEN TWO TECHNIQUES

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Background: The Sacroiliac Joint (SIJ) is an acknowledged pain generator. Various descriptions of the variable joint innervation inform radiofrequency ablation (RFA) practices. Some practitioners target S1-S3 lateral branches (LBs) with a “strip lesion” RFA technique while others include the L4 medial branch (MB) and L5 dorsal ramus (DR).
Objectives: Investigate whether SIJ RFA results in a durable (twelve month) benefit and evaluate impact of including L4 MB and L5 DR on outcomes.
Methods: N = 182 consecutive patient charts reviewed. Patients presented with clinical findings consistent with SIJ pain. Intraarticular SIJ injection and confirmatory lateral branch blocks if indicated. 70% relief of index pain

was threshold to proceed. Ninety-three patients underwent RFA of S1-S3 LBs with a multi-tined electrode bipolar technique. Eighty-nine patients underwent RFA of L4 MB and L5 DR and bipolar RFA S1-S3. Pain VAS and global PDQQ-S scores were analyzed at baseline and twelve-months.
Results: Baseline VAS was 7.2+/- 1.1 PDQQ-S was 79.6 +/- 11.2. Twelve-month VAS decreased to 2.8 +/- 1.2 and PDQQ-S to 35.2 +/- 14.8. (P < 0.001). S1-S3 only RFA group showed pain VAS of 3.3 +/- 1.3 and PDQQ-S of 38.2 +/- 14.2. S1-S3 RFA plus L4 MB and L5 DR produced VAS of 2.4 +/- 1 and global PDQQ-S of 32 +/- 14 (P < .05).
Conclusions: RFA of S1-S3 sacral LBs using a validated bipolar strip lesion technique provides definite pain reduction and improvement in PDQQ-S at twelve months. Adding RFA of L4 MB and L5 DR provides added benefit.

eP354

RADIOFREQUENCY LESIONING IN REFRACTORY TRIGEMINAL NEURALGIA USING NON WAKE UP BETWEEN LESIONS

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Background and aims: Radiofrequency lesioning (RFL) is a minimally invasive procedure used for Trigeminal Neuralgia (TN) refractory to drug therapy.
This study assesses efficacy and complication rates for RF for TN, using a series of lesions performed without patient wake up between lesioning.
Methods: A retrospective review of RFL procedures performed by a single practitioner was undertaken for patients with refractory TN in Causeway Hospital. Under GA thermal lesions of 60°, 65°, 70° +/- 80°C, for 90 secs each were performed without wake up after satisfactory electrode positioning and sensory testing. Outcome measures included percentage pain relief, adverse effects, drug reduction and patient satisfaction at review.
Results: 66 patients underwent 97 procedures. Complete post operative pain relief was 40% (39/97), good 32% (31/97), moderate 10% (10/97) and some 6% (6/97) and none 3% (3/97) with 8% (8/97) no data were available.
22 (22.7%) cases completely stopped medication, 52 (53.6%) cases reduced doses post-procedure, 12 (12.4%) cases continued unchanged and 1(1.03%) patient increased their dose, 10 (10.3%) medication was unknown.
23 patients had repeated RFL after 86.5 weeks (24.4-112.1), 4(4.1%) patients had recurrence returning within 6 months of the RFL. Mild transient facial numbness post procedure noted in 32 (33%) with 4(4.1%) having persistent facial numbness still present at follow-up. 2(2.1%) patients suffered corneal reflex loss, and no cases of keratitis.
Conclusions: The non wake up RFL technique is useful in refractory TN reducing procedure times and anxiety associated with intraoperative retesting, despite the relatively high rate of transient facial numbness.

eP355

GENICULAR RADIOFREQUENCY ABLATION FOR TREATMENT OF PERSISTENT POST-SURGICAL KNEE PAIN, A CASE SERIES

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Knee surgery is heterogeneous and ranges from minimally invasive arthroscopic procedures to open partial or total arthroplasties. Persistent post-operative pain is common following knee surgeries , chronic pain may persist in over 40% of patients who undergo knee replacement and could be characterised as severe in 15% of cases.
Genicular Radiofrequency Ablation (RFA) is a relatively new intervention that can be safely done in the presence of an artificial joint, and may offer an alternative to surgery or surgical revision.
We present a series of 3 cases of persistent post surgical knee pain following multiple complex knee surgeries. After Genicular RFA , all 3 patients reported significant pain relief (60-95%) for a period of 6-9 months, they all reduced

their pain medications and reported improvement in joint range of movement and quality of life.
Conclusion: Genicular RFA could provide effective and prolonged pain reduction for post-surgical knee pain. More studies on larger numbers of patients are required to prove efficacy and safety

eP356

PULSED RADIO FREQUENCY ABLATION OF GESERIAN GANGLION FOR THE TREATMENT OF INTRACTABLE MIGRAINE: CASE REPORT OF TWO PATIENT

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Background and aims: Intractable migraine is one of the chronic debilitating conditions severely affecting quality of life of individuals. We are describing two patients with severe intractable migraine whom got a significant relief in their their symptoms after the radio frequency ablation of geserian ganglion.
Methods: The two patients were having chronic refractory migraine for more than 7 and 8 years and have already tried all the availiable treatment options with futility. The two patients with intractable migraine had underwent fluoroscopy guided pulsed radiofrequency ablation of gasserian ganglion for two pulses of 300 seconds. The patients were assessed post procedure at 3 , 6 , 12 and 24 months respectively .
Results: There were significant decrease in the number and severity of migraine episodes after the pRFA. There was significant improvement in the disability and quality of life as assessed by migraine disability assessment test and migraine specific quality of life.
Conclusion: Pulsed radiofrequency of gasserian ganglion can be an alternative for patients with chronic refractory migraine which are not controlled with the available treatment options.

MULTIDISCIPLINARY PROGRAMS

eP357

PREVENTING RELAPSE AFTER SUCCESSFUL INTERDISCIPLINARY REHABILITATION: A FEASIBILITY STUDY OF TWO PROTOTYPE INTERVENTIONS

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Background and aims: To enhance current pain rehabilitation programs with strategies to prevent relapse, we developed two interventions that facilitate the transfer of important treatment insights to the personal context of each individual patient. In this study, we explored (a) how patients and healthcare providers (HCPs) evaluate the form and content of these interventions (i.e. acceptability) and (b) how the interventions can be successfully implemented in existing treatment programs (i.e. implementation).
Methods: We conducted a prospective feasibility study. For a period of 6 months, printed workbooks containing either one or both interventions were made available in two interdisciplinary rehabilitation programs. Subsequently, we collected data by means of a focus group and interviews. We used Braun and Clarke's (2006) step-by-step guide to analyze the dataset and adopted a deductive thematic content approach.
Results: 18 patients and 4 HCPs were interviewed. All transcriptions were coded and organized by four themes, providing an in-depth account of stakeholder experiences related to acceptability of intervention form and content,

as well as implementation in existing treatment programs. Among important findings were expectations that one intervention would be beneficial for patients, whereas the other intervention was more difficult to comprehend and required more therapist instructions.
Conclusions: Overall, the interventions were perceived as useful, easy to use and in line with the treatment programs. Further testing should indicate if these interventions lead to a change in specific health behaviors and subsequently support long-term maintenance of therapy improvements for patients with chronic pain.

eP358

MULTIDISCIPLINARY BACK PAIN TREATMENT VIA MOBILE APP IS SUPERIOR TO STANDARD OF CARE - A RANDOMIZED CONTROL TRIAL

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The multidisciplinary therapy concept is seen as gold standard for treatment of non-specific low back pain (LBP) and comprises educational, physical, and psychological interventions. Yet, such multidisciplinary treatment opportunities are limited. Mobile health and digital interventions may be suitable to close this gap and provide multidisciplinary treatment elements to patients with LBP independent from time and space. So far, evidence regarding effectiveness of digital interventions for LBP has remained ambiguous. In the present study, we therefore investigated the clinical effects of a medical multiplatform application (Kaia) in a randomized controlled trial.
Our results demonstrated less pain after 12 weeks in the Kaia group compared to the control patients who received physiotherapy and online pain education. Our findings support the assumption that effectiveness of multidisciplinary mobile solutions for the management of LBP. These results may pave the way for mobile solutions as evidence-based treatment into regular treatment.

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OPIOID WITHDRAWAL AND MULTIMODAL REHABILITATION IN PAIN PATIENTS - A TWO-PHASE INPATIENT PROGRAM

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Background and aims: The number of chronic pain patients with high-dose opioid consumption is increasing worldwide. Withdrawal is a challenge for patients who suffer from the combination of pain and addiction. Our aim is to assess the feasibility of a new two-phase inpatient opioid withdrawal program with separation of withdrawal and multimodal rehabilitation.
Methods:
Phase 1: Opioid withdrawal in an internal medicine ward with stepwise morphine reduction over 10 days. Pain treatment including auricular acupuncture, clonidine, optional ketamine and other medications on an as-needed basis. Afterwards, discharge lasting 3 days.
Phase 2: Multimodal rehabilitation in a psychosomatic ward, including physical and occupational therapy, group and individual therapy, and psychological treatment.
Primary outcome: Number of patients completing the program without opioids.
Secondary outcomes: Number of opioid-free patients after discharge from internal medicine, at admission, and 3

months after discharge from multimodal inpatient rehabilitation program, change in pain level on a numeric rating scale before and 3 months after completion of the program.
Results: 8 patients included, 7 patients without opioids after discharge from Internal Medicine, 8 after discharge from Psychosomatic Medicine, number of patients without opioids 3 months after discharge (ongoing).
Conclusions: All patients were opioid-free after the program. Discharge between withdrawal and rehabilitation does not lead to opioid relapse within a two-phase inpatient opioid withdrawal program.
Long-term results of opioid abstinence and change in pain have to be evaluated to rule out that opioid withdrawal leads to increased pain.

eP360

INTERPROFESSIONAL PAIN THERAPY FOR CHRONIC PELVIC PAIN SYNDROME (CPPS) - SUCCESSFUL TREATMENT OPTION EVEN FOR NON - GERMAN SPEAKING PATIENTS. A CASE REPORT

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About 15% of the women suffer from CPPS, which often shows multifactorial and overlapping painful symptoms. For a successful treatment it is necessary to differentiate pain mechanisms and treat them in an individually tailored and interprofessional way.
A 35 year old Ukrainian reported chronic pain left gluteal and urogenital as well as dyspareunia, painful defecation and radiation into the left leg for several years. The gynecological and urological examination and the MRI of the lumbar spine were unremarkable.
Preliminary invasive treatments like embolization of the ovarian vein, multiple infiltrations and radiofrequency denervation of several sacral nerve roots did not reduce the pain.
The interprofessional examination (algesiologic assessment) was completed by the German Pain Questionnaire for a standardized identification of different pain sources. The clinical investigation was normal except positiv provocation tests for a sacroiliac joint pain and muscular hypertonicity and activated trigger points. Psychological examinations showed psychosocial and partnership problems.
The interdisciplinary pain therapy included manual therapy of the left sacroiliac joint, trigger point release, relaxation techniques, psychodynamic therapy combined with behavioral therapy, intensive patient education and drug therapy which only included amitriptyline 10mg in the evening.
After an interprofessional pain therapy as a daily inpatient treatment for 3 weeks and with the help of a translator there was a radical reduction of the pain intensity, an improvement of mood and functionality. Dyspareunia disappeared.
There is a need for a sufficient interprofessional pain diagnostic and pain therapy of CPPS to identificate the different pain mechanisms, even in non-German speaking patients.

eP361

METAPHORS IN FEEDBACK- GUIDED MULTIDISCIPLINARY PAIN MANAGEMENT PROGRAM

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Pain Management Program at Rigshospitalet, Copenhagen consisting of 10-week 10 sessions has been offered to 9 groups of chronic non-cancer pain (CNCP) patients. The primary aim of this study was to evaluate understanding and acceptance of program contents for CNCP patients.
Case: Control study
Setting: Multidisciplinary Pain Centre, Rigshospitalet

Participants: 67 outpatients enrolled in and 62 completed the program from 2015 to 2019, attending at least 7 out of 10 sessions.
Interventions: Classic CBT program was gradually adjusted over 4 years according to patients' feedback. In its final version program goals included psychoeducation, body awareness, breathing exercises, pacing, goal setting, normalization, accept, motivation, communication with significant others/community, coping strategies, group feedback and support and networking. A multidisciplinary team consisted of physician, registered nurse, psychologist, social worker. Group leaders extensively user visual and oral metaphors.
Main Outcome Measures: Participants participated in post-program interview and completed questionnaire at week 10 assessing understanding and retention of material, satisfaction with the main topics and program in general.
Results: Analysis demonstrated significantly better retention of material supported with relevant metaphors in comparison to formal didactic instruction. Satisfaction with the program was 3.8 on 4-point scale.
Conclusions: Feedback- guided Multidisciplinary Pain Management Program is a feasible treatment for CNCP patients.

eP362

THE PLASMA IMMUNE SIGNATURES AFTER AN INTERDISCIPLINARY MULTIMODAL REHABILITATION PROGRAM IN PATIENTS WITH CHRONIC PAIN

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The aims of this study were to investigate if a multimodal rehabilitation program (MMRP) was associated with significant alterations in the plasma pattern of cytokines/chemokines, lipids, and if such changes were associated with changes in clinical aspects.
Blood samples, self-reports of pain, psychological distress and physical activity of 27 real patients being referred to the Pain and Rehabilitation Centre at the University Hospital were collected before and after completing a 6-weeks of MMRP as well as 6 months and 12 months after the rehabilitation program. The concentrations of 71 cytokines/chemokines were analyzed using a customized immunoassay from Meso Scale Discovery (MSD, Rockville, MD, USA).
Significantly changes of several pro inflammatory and anti-inflammatory proteins could be detected after the MMRP compared to pre-MMRP. The plasma immune profile pre-MMRP was associated with changes in physiological distress but not with pain intensity.

NEUROMODULATIVE THERAPIES

eP363

OUR ATTITUDE TO THE BEST PATIENT SELECTION BEFORE NEUROMODULATION TREATMENT

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Background and aims: Chronic pain has been known to be often resistant to conventional medical management. Physicians are now on the constant lookout for opioid sparing therapies, and also neuromodulation treatment may

be the answer. The field of neuromodulation has seen growth over the course last decade with many new methods, instruments and new chronic pain indication.
Methods: Patient selection for any neuromodulation treatment method is a critical step in the decision-making process and takes into consideration a patientś history, psychological status, social support and capability of adherence with neuromodulation therapy requirements. The basis of this examination is a patient education and realistic expectation, adequate social support, willingness and ability to comply with this therapy, exclusion contraindications and successful trialing. Patients should have an accurate diagnosis of a specific pain chronic state that would likely respond to neurostimulation or intrathecal drug delivery.
Results: We have described our experience with nearly 400 patients to select the most suitable candidates to neuromodulation therapy. Recommended part of patient testing is intrathecal analgesia trialing before pump implantation, use of epidural catheter, regional block or transcutaneous electrical nerve stimulation before indication to spinal cord stimulation or peripheral nerve stimulation.
Conclusions: Patients must be apprised of neuromodulation treatment risks and benefits, and physicians must work to achieve both safety and efficacy for their patients. Cooperation between physician and patient is crucial. There is very important cooperation between many specialists to right and responsible decision to neuromodulation. Correct patient selection means successful long-term result of neuromodulation treatment.

eP364

PROSPECTIVE RANDOMIZED SINGLE-BLIND, PLACEBO-CONTROLLED STUDY OF ELETROCONVULSIVE THERAPY (ECT) IN DRUG-FREE RAPE VICTIMS WOMEN WITH CHRONIC PAIN AND POST TRAUMATIC STRESS DISORDES WITH PREDOMINANT DEPRESSION

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Introduction: PTSD, trauma-related and stress-related disorders in DSM-5 and CID-10, develops later in 20% trauma victims. First choice treatment is Cognitive Therapy (CT) or Behavioral Therapy (BT) and Selective Serotonin Reuptake Inhibitors (SSRI). Chronic pain (over 6 months) is a broad range disease entity with physical, psychiatric and environmental maladaptations.
Treatments aren‘t always efficient. ECT, though not yet a recognized indication, has sometimes been used.
Objective: This prospective study was intended to evaluate effects of ECT on women (raped once only in adult life in the street, by unknown man) with PTSD, pain and depression who had no remission after two years treatments.
PATIENTS: 51 women aged 21-56, treated for sexually transmitted diseases, out-patients, drug-free, with PTSD developed 3 weeks after rape and later pain and depression.
Methods: Simple randomized patients assigned to receive either active (A) ECT (24 women) or placebo (P) ECT without electric stimulus (26 women) were treated during 6 weeks (12 treatments, twice a week), two bifrontal electrodes placed on the scalp.
Pain was measured by numeric rating scale, PTSD by DSM-5 and depression by Ham-D, 17 items at baseline (TO), after 6th treatment (T1) and after 12th treatment (T2).
Results:
Active ECT - all patients (24) presented partial symptoms remission after 6th treatment and at after 12th treatment (T2); 20 patients presented total remission.
Placebo ECT - 1 patient presented total remission after 6th treatment; kept at the end of study.
Conclusion: ECT was effective in relieving 20 women‘s pain, PTSD with predominant depression.

eP365

PULSED RADIOFREQUENCY OF THE OCCIPITAL NERVES FOR CHRONIC HEADACHE MANAGEMENT. PRELIMINARY RESULTS

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Background and aims: Pulsed radiofrequency (PRF) of the occipital nerves (greater & lesser GON & LON) is used for chronic headache management. The aim of this study was to evaluate the short-term effectiveness of the technique on patients with chronic headaches.
Methods: Patients, not responding to systemic pharmacotherapy were studied, after a positive (>50%) diagnostic occipital nerve block. PRF was applied on GON and LON, billaterally, using a standardized protocol (needle 22G, 54mm,4mm active tip, 40-60 V, 2Hz, impedance 150-400 Ω, plateau temperature 42°C, time: 6 min each). Primary outcomes included pain intensity (Numeric Rating Scale, NRS 0-10) and the number of days with headache per month, before, after 1 and after 3 months post-treatment. Results were analysed using the chi-square test, with a significance of $p< 0.05$.
Results: 30 patients, 52.5±12.4 years old, sufferring from migraine (n=24), cluster headache (n=3), occipital neuralgia (v=1) and mixed headache (n=1), of 17±13.6 years duration, were studied. The baseline mean number of crises per month was 14.8±10, with an intensity of 8.4±1.2 (NRS, 0-10). 1 and 3 months post-treament the number of headache days per month was significantly reduced to 8.7±9.1 and 8.1±6.8, as well as pain intensity to 5.2±3.3 and 5.3±2.6 respectively ($p< 0.05$). No adverse effects were recorded.
Discussion: Pulsed radiofrequency of the occipital nerves billateraly, was effective in chronic headahce management, especially on chronic migraine. The long-term effectivenes of the technique is to be further evaluated.

eP366

ANALGESIC EFFICACY OF HIGH FREQUENCY SPINAL CORD STIMULATION AT 1KHZ: ADJUST STUDY

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Aim: The aim of this pilot study was to investigate the potential for pain relief using sub threshold stimulation (i.e. paraesthesia free) within the envelop of the current CE marking of the Medtronic Implantable Pulse Generators (Amplitude 0-10.5 volts, Frequency 10-1,200Hz and Pulse width of 10-450µsec) administered to the spinal cord.
Methods: Participants were recruited from the outpatient's department of The James Cook University Hospital. Phase I (for 14 weeks) was a prospective case cohort pilot study in which SCS clinical screening trial was conducted. In Phase II, those Responders at the 14 week point i.e. subjects reporting ≥50% pain relief had their pulse width reduced by 20% (of original setting) per visit every 2 weeks. (Scheme 1).
Results: 15 participants were recruited to the study, 2 participants withdrew and only 10 (76.9%) of the remaining 13 patients had a successful trial, 7 provided primary outcome data at week 14 of phase I. The proportion of patients reporting >50% back pain reduction was 3/7 = 0.43 (95% CI, 0.06 to 0.80).
Since only 3 patients progressed to Phase II, further analysis was not conducted.
Discussion: We observed a modest improvement in the outcomes of FBSS subjects treated with HD stimulation. The number of responders as defined by 50% reduction in LBP at 14 weeks was 3/7 (0.43). The number of responders at trial was however much higher at 10/13 (0.77). This is consistent with the findings of other studies where response to trial was much higher than eventual response.

eP367

RANDOMIZED, DOUBLE-BLIND TRIAL COMPARING EVOKED COMPOUND ACTION POTENTIAL (ECAP)-CONTROLLED CLOSED-LOOP SPINAL CORD STIMULATION (SCS) TO CONVENTIONAL, OPEN-LOOP SCS

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Background and aims: Spinal cord stimulation (SCS) is a well-established treatment for chronic pain. Advancements in SCS systems have focused on eliminating paresthesias, but long-term success rates remain suboptimal. Variability in spinal cord (SC) activation with open-loop (OL) systems results in unpredictable inhibition of pain processing pathways and may limit the efficacy of SCS. We report the first randomized, double-blind, pivotal study of SCS and the first therapy to measure real-time in vivo SC neurophysiology using **E**voked **C**ompound **A**ction **P**otentials (ECAPs). This study provides comparative efficacy and safety of closed-loop (CL) feedback stimulation compared with OL stimulation.
Methods: 134 subjects were randomized into OL or CL. Subjects and the clinical staff were blinded to the treatment assignment. A pain assessment and other patient-reported outcome measures per IMMPACT were collected. ECAPs were collected in both groups to compare the magnitude of SC activation and percentage of time within the therapeutic window.
Results: The primary composite endpoint demonstrated superior results in overall pain responders (P=0.005) for CL-SCS (82.3%) compared to OL-SCS (60.3%). In addition, all pre-specified hierarchical endpoints demonstrated better outcomes in the CL group, with back pain reduction (P=0.015) and back pain responders (P=0.003) demonstrating superiority. The magnitude of SC activation was 7 times greater for CL-SCS, and CL subjects spend 50% more time within the therapeutic window. In both groups, subjects showed improvements across secondary outcomes.
Conclusions: ECAP-controlled CL-SCS has demonstrated superior overall pain relief compared with OL-SCS. The study has just completed the primary outcome data analysis.

eP368

ANALGESIC THERAPY OF COMPLEX REGIONAL PAIN SYNDROME THROUGH SPINAL CORD STIMULATION: A NEW STEP FORWARD

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Background and aims: Complex regional pain syndrome (CRPS) is a clinical entity that produces continuous and disproportionate pain, usually affecting one limb and limiting its functionality. Medical treatment often fails in advanced stages of CRPS. Spinal cord stimulation (SCS) appears as a useful therapeutic option. The main objective of this study was to assess the analgesic and functional effectiveness and tolerability of SCS in CRPS, as proposed by a transdisciplinary analgesic team of neurosurgeons and anaesthesiologists.
Methods: A retrospective analysis of a case series of CRPS treated with SCS, either by percutaneous electrodes or surgically implanted, was performed. After a trial phase (2-4 weeks), patients who reported a reduction in perceived pain intensity of 50% or more were subject to definitive implantation of the generator. The variables evaluated were analgesia, functionality assessed by the Brief Pain Inventory (BPI), analgesic usage and tolerability of SCS.
Results: Out of the 25 patients, 22 received the definitive implant. A mean reduction in pain intensity of 48% (95% CI: 4.59 to 4.80) was observed. Improvements in physical functioning were also observed as changed from 8.5 to 6.33. Mood also changed from 7.94 to 5.72 in BPI. Eighty percent of patients were satisfied. In only 5 patients, the effectiveness of the system was affected by the presence of painful paraesthesia, progressive loss of effect and discomfort related to the implant, requiring its removal.
Conclusions: The analgesic effectiveness and functional improvement achieved with SCS support its use in cases of CRPS with chronic refractory pain.

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CLINICAL OUTCOMES IN CHRONIC PAIN PATIENTS USING A NEW SPINAL CORD STIMULATION SYSTEM CAPABLE OF SIMULTANEOUS DELIVERY OF MULTIPLE WAVEFORMS: INITIAL REAL-WORLD EXPERIENCE IN EUROPE

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Background and aims: Spinal cord stimulation (SCS) systems equipped with several available modalities of neurostimulation such as multiple advanced waveforms, customized field shape programming, and simultaneous or sequential pulse trains are designed to provide for robust customization of treatment for chronic pain using SCS. This capability is particularly relevant given the dynamic nature of chronic pain. Recent real-world observational data reported a mean 5.2-point reduction ($p< 0.0001$) in a cohort of over 200 subjects at their last follow-up (mean 3-months.) utilizing a recently launched SCS system. Here, we describe our collection and analysis of clinical outcomes in patients implanted with an SCS system capable of delivering multiple modalities and/or waveforms.
Methods: This is an observational case-series conducted in Europe as part of an ongoing retrospective chart review evaluation of SCS outcomes for chronic pain (Clinicaltrials.gov identifier:NCT01550575). Patients were implanted with an SCS system (Precision Spectra WaveWriter, Boston Scientific) capable of combination therapy (sequential or simultaneous), multiple waveforms and advanced field shapes, and waveform automation for treatment of low back and/or leg pain. Assessments collected include (but not limited to) baseline characteristics (demographics, medical history, pain diagnosis), procedural information (lead configuration, programming parameters), and pre- and post-implant pain and quality-of-life scores.
Results: To date, data analysis is ongoing. Results from the initial cohort of included patients will be presented.
Conclusions: This European-based, observational case-series seeks to assess real-world clinical outcomes of patients implanted with an SCS device capable of providing multiple neurostimulation modalities for use in the treatment of chronic pain.

eP370

CT-GUIDED, PERCUTANEOUS RADIOFREQUENCY ABLATION OF THE GASSERIAN GANGLION FOR TRIGEMINAL NEURALGIA

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Background and aims: Trigeminal neuralgia (TN) is a severe paroxysmal facial neuropathic pain with a significant impact on the quality of life and physical function of patients. The purpose of this pilot study was to provide preliminary data on the safety and efficacy of CT-guided, percutaneous radiofrequency ablation of the gasserian ganglion, for trigeminal neuralgia non responsive to conservative management.
Materials and methods: From 09/2016 to 12/2018 we treated 41 patients with intractable trigeminal neuralgia with CT-guided, percutaneous continuous radiofrequency ablation of the gasserian ganglion. All procedures were performed under CT guidance with local anaesthesia and sedation. A 22 gauge hybrid cannula with 5mm active tip was placed with its tip within the foramen ovale ipsilateral to the affected site. Motor and sensory test was performed to confirm the right placement of the needle. A post procedure CT was obtained to exclude any complications.
Results: Forty-one patients (28:13, F:M) were enrolled in the study. 33/41 patients mentioned significant immediate

and sustained pain relief (>80% pain relief) after the procedure. 8/41 patients mentioned moderate pain relief (30-50%) while one patient had only minimal clinical improvement (< 20% pain relief). This particular patient refused reintervention. The rest 8 patients underwent a second session of pulsed radiofrequency with >80% pain relief. No complication was observed. In all 40 patients responding to treatment no further medical treatments were applied.
Conclusions: CT-guided gasserian ganglion continuous radiofrequency ablation is an effective treatment for trigeminal neuralgia non responsive to medical treatment. Risk profile is low.

eP371

THE EFFECT OF SPINAL CORD STIMULATION ON OPIOID USE

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Background and aims: Recent literature reports a correlation between chronic opioid use and an unfavorable SCS outcome for failed back surgery syndrome (FBSS). However SCS can also successfully reduce or stabilize opioid use [1-3]. We investigated the effect of SCS on the opioid use in a single pain center.
Methods: The record files of 125 patients were retrospectively evaluated. Daily morphine milligram equivalents (MME) were calculated. Patients were regarded as receiving a high dose if they used more than 90 mg MME a day (HM), all others were regarded as receiving low dose (LM)
Medication use was assessed at three points in time: 12 months before SCS implantation (T0), on the day of SCS implantation (T1) and one month after SCS implantation (T2). A double-sided repeat ANOVA measurement was performed on the dataset.
Results: Out of the 46, who were using strong opioids at the time of SCS implantation, 14 were able to cease using opioids one month after implantation.
A significant reduction on medication use after SCS was noted over all groups over time ($p< 0,0001$).
In the LM group a reduction from 23,8 mg MME at implantation to 10,7 mg MME after implantation was seen. The largest effect was observed in the group on high dose opioids (HM), a significant reduction in dose was noted from 178,4 mg MME (T1) to 103,3 mg MME (T2).
Conclusions: There was a significant reduction in opioid usage after implantation. The greatest reduction was recorded in het HM group.

eP372

CUSTOMIZATION OF NEURAL DOSE: REAL-WORLD DATA DEMONSTRATING THE RELATIONSHIP BETWEEN FREQUENCY, PULSE-WIDTH AND AMPLITUDE IN ACHIEVING SUB-PERCEPTION SCS PAIN RELIEF

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Background and aims: A recent randomized controlled trial demonstrated that sub-perception Spinal Cord Stimulation (SCS) at different frequencies requires titration of pulse-width and amplitude to enable optimal pain relief. This putative relationship between stimulation frequency, pulse-width, and amplitude is termed “neural dose”. Additionally, initial evaluation of a new device algorithm demonstrated that patient-specific customization of stimulation field shape can provide effective sub-perception SCS pain relief with reduced requirement for charging. We describe validation of the proposed neural dose relationship between frequency, pulse-width, and amplitude using pain relief and device charging outcomes in previously-implanted patients using energy efficient sub-perception SCS (≤1.2 kHz) in combination with a novel stimulation field shaping algorithm designed for specific targeting of the dorsal horn.

Methods: This is an observational study of permanently implanted patients (up to N=30) at 2 sites located in Europe assessed as part of an ongoing retrospective chart review of SCS outcomes for chronic pain (Clinicaltrials.gov identifier:NCT01550575). Pain relief scores (NRS) were collected at baseline and at follow-up after utilization of a customized field shape and titration of stimulation frequency with individualized adjustment of pulse width and amplitude to optimize neural dose. Patient charging burden is also being evaluated.
Results: Data collection and analysis is ongoing. Final results will be presented.
Conclusions: This study uses real-world clinical evidence to verify the relationship between stimulation frequency, pulse-width and amplitude (i.e. “neural dose”) in achieving analgesia. In addition, using the optimized neural dose, combined with a customized field shape algorithm, may significantly decrease charge burden.

eP373

PAIN, DEPRESSION AND QUALITY OF LIFE OUTCOMES IN A UK NEUROMODULATION CENTRE

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Background and aims: Spinal Cord Stimulation (SCS) is an effective therapy for patients with chronic intractable neuropathic pain. Studies report significant reduction of pain which is sustained for >2years.
However, long term outcome data remains limited from a routine clinical setting. In our centre all patients complete outcome questionnaires pre and post-implant. We aim to investigate patient pain, depression and quality of life outcomes over two years post-implant.
Methods: Brief Pain Index (BPI), Hospital Anxiety Depression Scale (HADS), Pain Self Efficacy Questionnaire (PSEQ) and EQ-5D were given to patients attending their pre-implant and 1, 3, 6, 12 and 24 month post-implant appointments.
Results: Data from 239 SCS patients have been analysed. The mean age was 53 and 57% were female.
Pain severity scores decreased by 45.2% at 12-months vs. baseline. Similar reductions are seen at 12-months in anxiety and depression scores (42.9% and 54.1% respectively).
The average score from PSEQ and EQ-5D VAS have positively improved by 75% and 54% at 12-months when compared to baseline.
Conclusions: The prospective follow up of this cohort of patients demonstrates marked improvements in pain severity, depression, anxiety, self-efficacy and quality of life parameters in patients with intractable neuropathic pain and improvements were maintained at 12 months. We will present our up-to-date 2-year data at EFIC.

eP374

EFFECT OF HIGH DEFINITION TRANSCRANIAL DIRECT CURRENT STIMULATION OF THE SOMATOSENSORY SYSTEM - PRELIMINARY FINDINGS

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Background and aims: Anodal high definition transcranial direct current stimulation (HD-tDCS) of brain areas related to pain processing may provide analgesic effects. This study aimed to investigate the outcome of different stimulation configurations on the somatosensory system.
Methods: Nineteen healthy volunteers (7 females) were randomly assigned to one of three HD-tDCS protocols applied on three consecutive days: 1) anodal stimulation of primary motor cortex (M1) (N=8); 2) anodal simultaneous stimulation of M1 and dorsolateral prefrontal cortex (DLPFC) (N=4), and 3) sham stimulation (N=7). Subjects were blinded to the different tDCS protocols and were asked to identify which protocol they believed they received. The

somatosensory changes were assessed at baseline and after each stimulation protocol by pressure pain thresholds (PPT) and heat pain threshold (HPT).
Results: More than two-third of the sham-stimulation group guessed that they received active tDCS stimulation whereas 78% of the groups that received active tDCS guessed correct. Across all days PPTs increased by 3±27% with the active tDCS protocols and 7±33% for the HPT. There was no systematic increases in pain sensitivity with the active tDCS compared with the sham condition.
Conclusions: The sham-controlled protocol for assessing the effects of HD-tDCS on the somatosensory system seems to be appropriate although findings are too subtle for this study to detect any differences between the sham and active stimulation groups. Future data collection is needed to demonstrate specific effects of HD-tDCS.

eP375

THE SEDATION-ANALGESIA REGIMEN DURING NEUROSTIMULATION AMONG DUTCH PAIN SPECIALISTS

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Background and aims: During the lead implantation of most neurostimulators, the patient needs to provide adequate feedback, and be with as little pain as possible. Sedation-analgesia can induce this situation. The aim of this study was to provide an overview of the sedation-analgesia regimens among Dutch pain specialists. To this end a questionnaire was sent to them focusing on the sedative agent dexmedetomidine. This sedative has an attractive pharmacological profile and prior research into this drug yielded promising findings during awake procedures.
Methods: The questionnaire was sent to the 65 Dutch pain specialists involved in neurostimulation. The questionnaire consisted of questions concerning different aspects of sedation-analgesia during neurostimulation: the current regimen, the experience with dexmedetomidine and the preferences regarding these different aspects i.e., production of arousable sedation, pain management, quality of patient´s feedback and overall preference.
Results: Forty-five pain specialists (69%) completed the questionnaire. The most commonly used agents were propofol (91%) and remifentanil (78%). Twenty-one respondents (47%) considered the use of dexmedetomidine during neurostimulation, where 13 (29%) had experience with it during this procedure. Easy production of arousable sedation was the most frequently mentioned positive aspect of dexmedetomidine among the latter group. The majority of respondents who used dexmedetomidine preferred dexmedetomidine sedation over propofol sedation regarding all requested aspects.
Conclusions: Propofol-remifentanil is the most common used sedation-analgesia regimen during the implantation of a neurostimulator among Dutch pain specialists. The proportion of respondents who had experience with the use of dexmedetomidine was relatively small, despite favorable findings from earlier research.

eP376

ANODAL TRANSCRANIAL DIRECT CURRENT STIMULATION (TDCS) OF THE PRIMARY MOTOR CORTEX REDUCES PAIN IN FIBROMYALGIA PATIENTS

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Background and aims: Transcranial direct current stimulation (tDCS) is increasingly used in the treatment of chronic pain conditions. Special interest is focused on the successful therapeutic application of this procedure in patients with fibromyalgia. The objective of this study was to determine if repeated sessions of anodal tDCS could offer clinical benefits in pain reduction in chronic fibromyalgia patients.
Methods: Eight individuals (mean age 30±8 years; six women) suffering from chronic pain as a consequence of fibromyalgia were treated with anodal tDCS, applied over the primary motor cortex (2 mA, 20 minutes), for 10

consecutive days (incl. weekend days pause). The pain was measured with Visual Analog Scales, and Widespread Pain Index, as well as Symptom Severity Score at baseline, then immediately after the stimulation performed on the last day and a month after completing the stimulation.
Results: Compared with the condition prior to initiation of tDCS, patients were shown along with pain reduction and general improvement of clinical manifestations of fibromyalgia, which in our view can be related to a significant reduction in the anxiety and depression, immediately after the stimulation. Clinically relevant pain reduction, after a follow-up period of one month after the stimulation performed, was observed in 3 patients (37.5%). One episode of mild and transitory headache has been recorded.
Conclusions: The presented results are consistent with other studies of similar design to this patient population and represent a confirmation of the efficiency of the method.

eP377

EFFICACY AND SAFETY OF LONG-TERM ADMINISTRATION OF DIFFERENT AGENTS VIA IMPLANTED INTRATHECAL PUMPS FOR THE TREATMENT OF PERSISTENT CHRONIC PAIN AND SPASTICITY

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Background and aim: The aim of this study was to evaluate the efficacy and safety of long-term administration of different doses of morphine, baclofen, fentanyl, clonidine and ropivacaine via implanted intrathecal pumps for the treatment of persistent chronic pain and spasticity.
Material and method: Eighty patients were included in the study. All were suffered from chronic pain with VAS > 6 after administration of high oral doses of opioids, antidepressant and antiepileptic drugs or they had a spasticity greater than 2/5 of the Ashworth scale. Assessment of pain, spasticity and quality of life was performed 15 and 30 days after implantation and for a 15 months period. We also recorded the doses of morphine, fentanyl, baclofen, clonidine and ropivacaine.
Results: Forty-four male and 36 women were enrolled. There was a statistically significant reduction in pain score in 15 days after implantation (VAS 7,34 vs 5,32($p< 0.001$), while the mean value of Asworth scale was reduced from 3,70 to 2,52 ($p< 0.001$) and the mean value of APCA scale increases from 4,2 to 7,35($p< 0.001$), showing reduction of spasticity and a better quality of life.
Mean VAS score in 15 months was 3 while in first month was 5. The changes in Asworth scale were relatively stable with a mean value 2.
Conclusions: The co-administration of different doses of morphine, baclofen, fentanyl, clonidine and ropivacaine results in a significant reduction of pain, better quality of life and significant reduction of spasticity in comparison to the monotherapies.

eP378

SPINAL CORD STIMULATION IMPROVED MOTOR DYSFUNCTION IN TWO PATIENTS WITH COMPLEX REGIONAL PAIN SYNDROME

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Background: Complex regional pain syndrome (CRPS) is a painful condition that most often affects one limb with various other symptoms such as changes in skin color and nail growth, muscle atrophy, and stiffness of affected

joints. CRPS patients suffer from intractable pain as well as severe functional impairment, which deteriorate the quality of life. Several therapeutic modalities such as physical therapy, rehabilitation and medications have been reported to be effective for CRPS. Spinal cord stimulation (SCS) is also listed as a choice of treatment for refractory CRPS. It has been shown that SCS provides a tingling sensation in the painful area leading to pain relief, but there is a lack of enough information regarding the effect of SCS on functional improvement.
Method: We report two cases of CRPS, whose functional impairment could be satisfactorily improved by SCS.
Result:
Case 1: A 44-year-old man suffered from CRPS at the right upper limb for two years. He could only slightly move his right hand due to stiffness of the joints. After SCS implantation at the cervical cord, the movement has improved and his right grip strength has significantly increased.
Case 2: A 62-year-old woman developed CRPS at the left lower limb two years ago. She had marked disturbance on walking due to bone demineralization and muscle atrophy. After SCS implantation at the thoracic cord, her lower limb function has significantly improved until she could walk.
Conclusions: SCS trials would have a possibility to ameliorate the motor dysfunction of CRPS.

eP379

IMPROVEMENT IN BLADDER FUNCTION FOLLOWING HIGH-FREQUENCY SPINAL CORD STIMULATION AT 10 KHZ: A CASE REPORT

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Background and aims: A 47-year old female patient with failed back surgery syndrome (FBSS) resulting in chronic low back and bilateral leg pain of 7-8/10 on the numeric rating scale (NRS) was treated with 10 kHz spinal cord stimulation (HF10-SCS) and coincidentally reported improvement in bladder function from this therapy. At presentation, she was experiencing incontinence and self-catheterizing 4-5 times a day due to overactive bladder refractory to Botox injections. The Incontinence Impact Questionnaire (IIQ-7) and Urogenital Distress Inventory (UDI-6) scores at baseline were 80/100 and 67/100, respectively.
Methods: Observational case study.
Results: A successful 2-week HF10-SCS trial with percutaneous leads resulted in 80% pain reduction, NRS improvements for low back (2-3), bilateral buttock (0) and leg (0), ability to sleep through the night, mood improvement and reduced need for self-catheterization. During the 5 weeks between trial and permanent implant, both pain and bladder function returned back to baseline. Once implanted, symptoms improved again to end-of-trial values. At the last follow-up (10 months) 70% pain reduction was reported with NRS of 2, 1 and 1 for low back, bilateral buttock and leg, respectively. IIQ-7 and UDI-6 scores improved substantially to 9 and 21, respectively. Self-catheterization frequency was reduced by over a half, accompanied by a sharp decrease in urinary tract infections.
Conclusions: We report a case of HF10-SCS for FBSS not only yielding significant back and leg pain reduction as a primary outcome, but also substantial improvement in urinary function in overactive bladder as a coincidental secondary outcome.

eP380

EXERCISE INDUCED HYPOALGESIA PROFILE IS ASSOCIATED WITH PAIN INTENSITY, MEDICATIONS EFFECTIVENESS AND CYTOKINES FOLLOWING NERVE INJURY

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Exercise is one of the methods used to activate and assess the inhibitory pain modulation system, and the analgesic effect induced by exercise is termed Exercise Induced Hypoalgesia (EIH). The aim of this study was to investigate, in a rat model, the predictive value of EIH profile neuropathic pain intensity and to study the association between EIH profile and pharmacotherapy effectiveness. EIH was assessed and rats were classified into Low or High EIH based on the difference in response between the scores before and after exercise. Reduction of ≤ 33.3% was considered Low EIH and > 66.7% as High EIH. Low and High EIH rats underwent left sciatic nerve Chronic Constriction Injury. Responses to mechanical and thermal stimuli were assessed prior to 3 and 7 days following the nerve injury. Two doses of diclofenac (1mg/kg, 5mg/kg), duloxetine (10mg/kg, 30mg/kg), or pregabalin (10mg/kg, 30mg/kg) were administrated to the Low and High EIH rats for 4 consecutive days following the nerve injury. Results of the present study suggest that EIH profile in rats is associated with mechanical and thermal sensitivity in naïve rats, pain medication effectiveness, and is predictive of pain severity following nerve injury. Less efficient (low) EIH may predict more significant pain and possible mirror image pain following injury. Pregabalin or duloxetine is a more efficient treatment for Low EIH neuropathic rat pain than for High EIH neuropathic rat pain. This study‘s findings may support further research on personalized treatment for neuropathic pain based on an EIH (pain modulation) profile.

eP381

ANALGESIC EFFICACY AND SENSORIAL EVALUATION IN PATIENTS WITH PERIPHERICAL NEUROPATHIC PAIN TREATED WITH TRANSCUTANEOUS ELECTROMAGNETIC SIGNALS

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Background and aims: Peripheral neuropathic pain (PNP) is associated with significant morbidity, complex pharmacological management. and poor adherence to treatment. Transcutaneous electromagnetic signals (Physicalm® device) could be a complementary option in the management of PNP. The aim of this study was to analyse the efficacy of this device as a co-adjuvant to PNP treatment, as well as to study sensorial changes.
Methods: The device was applied to subjects with PNP in addition to their usual medication. Pain intensity (VAS scale), pain interference (BPI questionnaire) and neuropathic component of pain (DN4 scale) were evaluated. The quantitative sensorial evaluation (QST) was also performed. Sleep quality (MOS scale), anxiety and depression (HAD scale), health quality of life (SF12 questionnaire), tolerability and patients‘ impression of improvement (PGI-I scale) were measured. Pre-treatment, post-treatment and two follow-up assessments were carried out.
Results: A per protocol analysis including 16 subjects (62% women) was performed. The average duration of PNP was 85±12.8 months. A significant decrease in pain intensity (initial VAS score: 6±1.5 vs final VAS score: 4±3) was observed (p< 0,001). The DN4 scale showed that allodynia, hyperalgesia and dysesthesias improved significantly (p< 0.05). The QST showed a significant decrease in cold pain perception threshold (p< 0.05). Furthermore, pain interference in daily life (mood, walking ability and normal work), as well as depression and anxiety levels significantly decreased. The adverse effects registered were headache and heaviness.
Conclusion: The results of this study support the use of the Physicalm® device as a co-adjuvant treatment in PNP.

eP382

INVASIVE NEUROMODULATION OF THE SPINAL CORD OR DORSAL ROOT GANGLION IN CHRONIC NEUROPATHIC PAIN SYNDROMES OF THE LOWER EXTREMITIES

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Background and aims: Chronic neuropathic pain syndromes of the lower extremities might occur or develop of different origin or diseases. In cases of refractory pain to conservative, pharmacological or multimodal treatment options, invasive neuromodulation might be considered. Spinal cord stimulation (SCS) is available for many decades, but European experience with dorsal root ganglion stimulation (DRGS) is limited. Patient cohorts with SCS and DRGS and chronic neuropathic pain of the lower extremities are presented.
Methods: Indication for invasive neuromodulation was debated in patients with refractory pain syndromes of the lower extremities and high pain intensities, concomitant with high doses of pain related medications. Patients were selected considering pain after spinal procedures (e. g. failed lumbar back surgery syndrome, FBSS) or peripheral nerve lesions. In all patients lead implantation was followed by a test-trial of one week with an external stimulation device.
Results: A total number of 110 patients were selected from 2013 to 2018. SCS was implanted in 90, DRGS in 20 patients. During the test trial a significant pain reduction was observed in 82/90 (91%), respectively 19/20 (95%) patients and withdrawal of analgesics was initiated. In all responders a permanent stimulation device was implanted.
Conclusions: The clinical results of strictly selected patients undergoing SCS or DRGS are very encouraging. DRGS was preferred for patients with pain following inguinal repair, knee-procedures or CRPS of the foot. The main indication for SCS was FBSS with predominant neuropathic leg pain. Restrictions regarding the full-body MRI-conditionality of the DRGS devices must be respected.

eP383

SAFETY PROFILE OF HIGH FLOW NASAL OXYGEN DURING SEDATION FOR SCS IMPLANTS IN PRONE PATIENTS WITH HIGH BMI

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Objectives: Chronic pain and obesity are both on the rise. Spinal cord stimulation is an established treatment modality for management of neuropathic pain. Patient BMI is a key factor when deciding to implant a spinal cord stimulator. Conscious sedation in overweight patients can be challenging potentially leading to airway complications and aspiration pneumonia.
Methods: We present a case of sedation in prone position in a patient with high BMI and previously documented difficult airway who was scheduled for SCS implantation using the novel technique of high flow nasal oxygen therapy. Advantages of this technique were the ability to provide continuous positive airway pressure, alleviating upper airway obstruction and providing apnoeic oxygenation.
Results: The patient had a favourable outcome and went on to be implanted safely while administering HFNO.
It is important to highlight high-risk patients, including those who are overweight or obese. Over sedation can compromise the patient‘s airway subsequently leading to premature abandonment of the procedure, associated health and financial implications. This case highlights the need for a thorough pre-assessment to formulate a patient specific safe sedation plan.
Conclusion: The case demonstrates the positive impact of high flow nasal oxygen therapy when sedating high BMI patients. HFNO therapy is widely available in most centres and should be routinely used in conscious sedation of patients in prone position for SCS implants to improve patient safety.

eP384

SUBDURAL CATHETER MIGRATION AFTER IMPLANTATION OF INTRATHECAL BACLOFEN INFUSION PUMP FOR SPASTICITY

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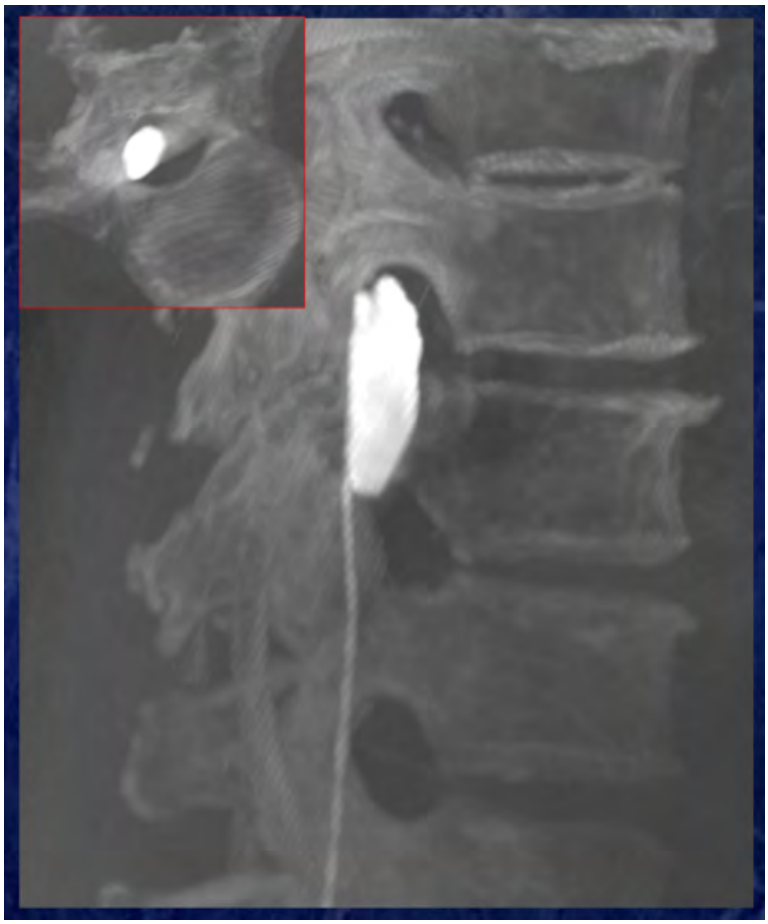
Spasticity after spinal cord injury is commonly managed with oral and intrathecal baclofen. Intrathecal baclofen was first proposed in the treatment of spasticity by Penn and Kroin in 1984. Use of intrathecal baclofen infusion pumps can often be met with complications. Device-related complications include both pump and catheter related problems occurring either at the time of placement or subsequent to implantation.
We present a case of subdural intrathecal catheter migration in a 45 year old female after implantation of intrathecal baclofen infusion pump for spasticity. The patient originally presented with a history of increasing left lower extremity pain and spasticity due to severe traumatic brain injury and myelopathy from an accident several years prior.
Her spasticity failed to respond to aggressive treatment with oral agents and botulinum toxin injections. In the weeks after implantation, the patient reported excellent improvement in her spasticity. Several months later however, her spasticity returned to baseline. A CT-guided dye study revealed pooling of contrast medium posterior to the intrathecal space. An MRI showed the catheter traveling within intrathecal space with the distal tip in the subdural space. We discuss the surgical revision necessary to correct this migration and the patient's subsequent clinical improvement.



[CT with contrast]

eP385

TRANSCUTANEOUS PULSED RADIOFREQUENCY TREATMENT IN PATIENTS WITH PAINFULL KNEE

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Background and aims: Pulsed radiofrequency is the application of a high-frequency current with microseconds pause so no heat over 42 grades are produced. This modality is a non-invasive one and it does not produce pain.
Methods: We describe 3 cases of knee pain and the efficacy in reducing the pain in elderly patients.
Results: 2 of them experienced a reduction of more than 90 % of the pain. The other one only experienced an improvement of 50 % of the pain.
Conclusions: Transcutaneous pulsed radiofrequency can be a non-invasive treatment for painful knee with a high effectivity. More research might be conducted.

eP386

CLINICAL EFFICACY OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS) FOR THE RELIEF OF PAIN: A SYSTEMATIC REVIEW (SR) AND META-ANALYSIS (MA) OF RANDOMISED CONTROLLED TRIALS (RCTS)

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Background and aims: The clinical efficacy of TENS for pain relief is long debated. Most SRs and MAs have proved inconclusive; however, many focus on specific types of pain, reducing the sample size. The two MAs with participant numbers approaching the threshold of acceptability recommended by the Cochrane Collaboration both report superiority of TENS vs placebo. There is no convincing evidence that a specific diagnosis predicts response to TENS. Therefore, using a larger pool of data than previous studies, this SR and MA aims to assess the clinical efficacy of TENS for reducing acute and chronic pain in adults, regardless of pain condition. It will also analyse the relationship of TENS settings (e.g. frequency, duration, intensity) to efficacy.
Methods: Cross-over and parallel-group RCTs will be identified by searching published SRs on the use of TENS for pain relief, as well as for additional relevant RCTs published in subsequent years. RCTs will be included if they employ TENS to deliver treatment via surface electrodes to adults with any type of acute or chronic pain. Data extraction and analyses will mirror Cochrane processes. The main MA will compare TENS vs placebo TENS, standard-of-care, and other treatments, and include a variety of subgroup analyses (e.g., optimal vs suboptimal TENS, acute vs chronic pain, pain conditions). If possible, a network MA will evaluate TENS against multiple comparison treatments. The primary endpoints will be the percentage of patients with ≥30% pain relief and reduction in pain intensity.
Results and conclusion: pending study completion

eP387

CASE-SERIES ASSESSMENT IN EUROPE OF A NEW PERCUTANEOUS SCS LEAD FOR MULTI-SITE AND/OR EVOLUTIVE PAIN PATTERNS

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Background and aims: Advancements in Spinal Cord Stimulation (SCS) lead designs, when used in combination with new neural targeting technologies, are thought to be capable of supporting improved clinical outcomes. In this study, SCS clinical outcomes are assessed in chronic pain patients using a newly available lead with increased span and minimal spacing between electrodes (versus other traditional linear designs).
Methods: This is a multicenter, observational clinical study utilizing retrospective chart reviews at selected sites in Europe. We examined a series of chronic pain patients using a 16-contact lead designed for coverage of up to 3 vertebral levels with a 67 mm active span and 1 mm electrode spacing (Infinion CX, Boston Scientific). All patients were treated per standard of care and implanted with SCS devices (Boston Scientific) using neural targeting algorithms and capable of multiple stimulation waveforms.
Results: To date, data analyzed in 15 patients demonstrates a 68% improvement (change in NRS from baseline = 5.7 ± 1.7) in overall pain as reported at last follow up (mean 4.2 ± 5.7 months; $p < 0.0001$). Additionally, a high responder rate (≥50% improvement in overall pain scores) was reported post-trial and at last follow up. Eighty-seven percent of all patients (13 of 15) reported a pain score of 3 or less at last follow-up aseline mean NRS = 8.3).
Conclusions: New lead designs offering greater adaptability with minimal contact spacing and longer vertebral span coverage represents another potential tool in the drive to achieve better and sustained SCS patient outcomes.

eP388

TONIC AND HIGH FRECUENCY SPINAL CORD STIMULATION WAVEFORMS AT THE SAME TIME IN THE SAME PATIENT: A CASE REPORT

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Introduction: Patient with Failed Back Surgery Syndrome (FBSS) and Superior Cluneal Nerve Entrapment (SCNE). A neurostimulation hybrid device was implanted with 10-kHz High Frequency (HF10) Spinal Cord Stimulation (SCS) and Conventional Tonic Frequency Subcutaneous Stimulation (CTFSS) at the same time.
Objective: Introduce a different approach for neuromodulation with a hybrid device.
Case report: A 55 years old man with FBSS. Neurostimulation hybrid device was implanted with two octopolar leads placed between T8-T11 vertebrae in HF10 stimulation modality with adequate pain relief in back and legs during five years. Later, the patient was complained of pain in the left Iliac Crest, corresponding to a zone of graft for the previous spine surgery. One electrode was replaced from epidural to subcutaneous over de Iliac Crest (SIC) in CTFSS and the other one remained on epidural in HF10.
Parameters: **Area 1**
· Frequency : 80Hz
· Pulse wave: 330 uS
· Amplitude: 5mA - 6,2mA
· Contact electrods: (-11, -12, -13 / +15)
· Stimulation zone: SIC left

Area 2
· Frequency : 10Khz
· Pulse wave: 30 uS
· Amplitude: 2,5mA - 3mA
· Contact electrods: (-4 / +5)
· Stimulation zone: T9-T10
Results: With the same device in two different waveforms programming for two different syndromes, the patient score 1-2 on Visual Analogue Scale for both of them.
Conclusion: The combination of different waveforms programming, HF10 and CTFSS with hybrid systems could be useful in some patients. CTFSS for persistent back pain after SCS is effective; In this case was successful.

eP389

SPINAL CORD STIMULATION FOR ISCHEMIC PAIN: MICROCIRCULATION IMPROVEMENT

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Background: Refractory angina pectoris (RAP) and peripheral vascular disease (PVD) is a chronic pain condition caused by occlusive artery diseases. Since 1976 spinal cord stimulation (SCS) appears to be an effective and safe treatment for these patients - many studies have shown an excellent effect of SCS on pain relief, as illustrated by the reduction in the need for oral analgesics and improvement in patients´ quality of life. Besides, it can improve microcirculatory function.
Methods: We conducted a prospective analysis of patients with non-reconstructable RAP (n=21) and PVD (n=58) who underwent SCS between 2012 and 2018. Preoperative and follow-up myocardium perfusion scintigraphy (MPS), transcutaneous oximetry (TCO) and laser-doppler flowmetry (LDF) were performed on admission and in 1 year after the procedure. Pain relief was assessed by visual analog scale (VAS) in all patients.
Results: The patients showed 9,37±0,13 marks according to VAS before the procedure and pain relief to 1,27±0,09 marks (p< 0,01) in the 1-year follow-up. All the patients in the RAP group demonstrated the rise of tolerance to physical activity. MPS detected the decrement of perfusion´s defect from 13,36±4,16 to 10,14±3,35 units (increase in coronary reserve up to 24%). TCO detected the microcirculatory improvement (n=56): tissue oxygenation increased from 10,5 to 39,5 mm Hg (p=0,045).
Conclusions: The duration of clinical manifestations of RAP and PVD is associated with the long-term results of SCS. Our experience confirms that SCS can reduce the pain and improve quality of life with vascular reserve enhancement in patients with ischemic pain syndrome.

eP390

TREATMENT OF NECK AND UPPER LIMB PAIN USING BURSTDR SPINAL CORD STIMULATION- PRELIMINARY RESULTS

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Introduction: The purpose of this study was to evaluate the safety and therapeutic efficacy of BurstDR stimulation for the treatment of chronic intractable neck pain with or without radiation down to arm/shoulder/upper back.
Methods: This ongoing prospective, open label, multicenter feasibility study aimed to evaluate BurstDR™ in subjects suffering from chronic neck pain (with or without upper extremity pain). Subjects were evaluated at baseline, after

SCS trial, and 3, 6 and 12 months post-permanent implantation. The primary endpoint evaluated the change in pain intensity using the Visual Analog Scale (VAS). Changes in quality of life (EQ-5D), neck disability (ONDI), headache (HIT-6), satisfaction (PGIC), and anxiety and depression (HADS) were assessed. During implantation, 2 leads were placed across the C2-C3 vertebral body
Results: Currently, 8 subjects have been enrolled with 6 subjects completing the trial. Neck pain VAS improved from 75.8 (±16.1) mm at baseline to 17.8 (±11.1) mm at the end of trial. Upper limb pain VAS improved from 48.6 (±24.2) mm at baseline to 11.5 (± 15.2) mm at the end of trial. Disability and quality of life also yielded significant improvement from baseline.
Conclusion: The results of this prospective open label trial will provide us insight on the effectiveness of BurstDR stimulation in patients suffering from chronic neck pain with or without upper extremity pain. Results of this study may suggest the use of BurstDR for cervical SCS can offer clinically significant paresthesia-free pain relief.

eP391

HIGH FREQUENCY SPINAL CORD STIMULATION AT 10 KHZ (10 KHZ SCS) FOR THE TREATMENT OF CHRONIC NEUROPATHIC PAIN RESULTING FROM SPINAL CORD INJURY

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Background/aims: There is not sufficient evidence supporting the use of spinal cord stimulation (SCS) in spinal cord injury (SCI)[1]. Retrospective studies showed promising results in SCI patients treated with high-frequency SCS at 10 kHz (10 kHz SCS)[2,3]. This prospective, feasibility study aims to evaluate the safety and effectiveness of 10 kHz SCS for chronic neuropathic pain in SCI patients.
Methods: Subjects with chronic, neuropathic pain of ≥5 cm (visual analog scale, VAS) in pain area directly related to SCI were enrolled. Subjects were trialed with 10 kHz SCS. Subjects with a successful trial (≥50% pain relief) were implanted with a Senza system (Nevro Corp., Redwood City, CA, USA). Safety and effectiveness endpoints were captured up to 12 months post-implant.
Results: Twelve out of the 18 enrolled subjects underwent a trial implant; scar tissue precluded lead placement in 2 subjects and 6 out of the remaining 10 had a successful trial.
Baseline mean (±SD) pain scores of 9.0±0.9 cm (N=5) improved to 2.3±1.7 cm (N=5) at the end of trial. Pain scores remained improved at 3.1±1.6 cm (N=5), 4.8±4.0 cm (N=5), 5.1±3.3 cm (N=5), 1.7±0.6 cm (N=4) and 3.2±1.4 cm (N=3) at 1, 3, 6 and 12 month post-implant follow-up. Two subjects were reclassified from ASIA A at baseline to ASIA B at their 3, 6 and 12 month visits due to improved sensory function.
Conclusion: This study provides promising preliminary results using 10 kHz SCS in SCI patients to alleviate chronic pain with a potential benefit of improved sensory function.

eP392

CHARACTERISATION OF THE EFFECT OF BURST SPINAL CORD STIMULATION ON CEREBROSPINAL FLUID CELLULAR AND PROTEIN CONSTITUENTS IN PATIENT RESPONDERS WITH CHRONIC NEUROPATHIC PAIN

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Introduction: Tonic and burst modes of spinal cord stimulation (SCS) have demonstrated changes in neuroimmune and inflammatory peptides correlating with improved pain scores in patients with neuropathic pain. Burst SCS is an evidence based mode of stimulation for neuropathic pain. This study examines the dynamic changes of T cells, cytokines, chemokines, neurotrophins and proteomic constituents of cerebrospinal fluid (CSF) after Burst SCS.

Methods: Patients with neuropathic pain selected for SCS had CSF sampled prior to implant of SCS and at 8 weeks afterwards with continuous Burst SCS applied. Baseline and 8 week pain scores with demographics were recorded. T cell frequencies were analysed using flow cytometry, proteomics by mass spectrometry and secreted cytokines, chemokines and neurotrophins by ELISA.
Results: 4 patients (2 female) with a mean age of 51 (SEM 2.74, SD 5.48) achieved a >50% reduction in pain after Burst SCS. There was a significant reduction in the proteomes: Scavenger receptor cysteine-rich type 1 protein M130 (p=0.004386), Calbindin (p=0.01992) and Heat shock cognate 71 kDa protein (p=0.046499). There were also significant increases in: Matrix Gla protein (p=0.027951), C-reactive protein (p=0.034506), Cadherin-11 (p=0.044017) and Low-density lipoprotein receptor (p=0.048264). The concentrations of secreted chemokines and cytokines and the frequencies of T cells were not significantly affected.
Conclusion: This study characterised in CSF, the proteomic response to Burst SCS in vivo. Calcium chelation and immune response were two prominent pathways identified. The affected proteome were predominately biosynthesised by glial cells.

eP393

CASCADE 10KHZ SPINAL CORD STIMULATION IN PATIENTS WITH FBSS AND CNLBP, A SINGLE CENTRE EXPERIENCE OVER 2 YEARS

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Introduction: 10kHz Spinal Cord Stimulation(SCS) is usually applied in a bipolar configuration over the T9/T10 disc space for neuropathic back and leg pain. Cascade is a duty cycling bi-polar configuration across an entire eight contact electrode lead. Potential advantages include a broader range of SCS coverage, mitigation against minor lead migration and a reduction in the need for re-programming.
Methods: Patients with neuropathic back pain(with or without leg pain) were implanted with an SCS lead covering T9/10. Patients were put on 10kHz SCS using cascade during the trial period and continued unless reporting inadequate pain relief. Over a 2 year period patients were followed up by telephone or outpatients at 6 months and 1 year to obtain average weekly Numerical Rating pain(NRS) and Patient Global Impression of Change(PGIC) scores. Up-to-date pain scores were obtained for patients over a year following implantation. Morbidity and deviations from cascade were also reported.
Results: There was a significant reduction in back NRS [8.3 vs3.9(SEM 0.285,p< 0.0001), N=97} and leg pain [7.53 vs3.83(SEM 0.364,p< 0.001),N=77] at 6 months and latest follow up (mean 15.1 months): back [7.53 vs 3.83(SEM 0.364,p< 0.001),N=72], leg [7.53 vs 3.534 (0.368,p< 0.001),N=58]. 70/97(72%) of patients had a PGIC score of 6 or 7 at 6 months and 49/72 (68%) at latest follow-up. At 6 months 87/97(90.6%) of patients were using cascade and 58/72(81%) at latest follow-up beyond a year.
Conclusion: Cascade is an effective programming methodology that may have benefits over a single bipole configuration for 10kHz SCS.

eP394

NON-INVASIVE NEUROSTIMULATION OF THE CEREBELLUM INCREASES OFFSET ANALGESIA

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Background and aims: Offset Analgesia (OA) is a form of endogenous analgesia whereby a large decrease in pain is experienced after the removal of a transient small increase in an applied pain stimulus. Here non-invasive brain stimulation (NIBS) techniques are used to probe the role of the cerebellum in OA.

Methods: 18 healthy participants were recruited in a single-blind, sham-controlled, within-subjects trial. An individualized OA paradigm was presented using the TSA-II (Medoc, Israel). Pain intensity ratings were continually recorded via a computerized visual analogue scale (co-VAS). Temporal and magnitude measures of the co-VAS were extracted. Sham-tDCS; 2mA cathodal cerebellar tDCS and 2mA cathodal cerebellar HD-tDCS (4X1 montage) were compared. Reproducibility of the pre-stimulation OA response was assessed using intraclass correlation coefficients (ICC). Pre-stimulation and post-stimulation co-VAS responses were then compared. Differences in the neuroanatomical current flow in tDCS and HD-tDCS were modelled using Soterix Explore software.
Results: The OA response had high reproducibility across sessions. Cathodal cerebellar tDCS and Cathodal cerebellar HD-tDCS significantly amplified the OA response relative to sham. HD-tDCS had additional significant effects in temporal measures of OA. Modelling analysis of HD and conventional tDCS of the cerebellum revealed that different neuroanatomical locations would be reached, with HD inducing maximal field intensities in the posterior cerebellar hemisphere whereas conventional tDCS produced more diffuse current flow that reached the brainstem.
Conclusions: OA is a robust protocol for assessing changes in pain report in individuals. This study has provided evidence for the role of the cerebellum in the OA response.

eP395

PREVENTING CSF LEAKAGE SYNDROME BY BIOGLUE APPLICATION DURING IDDS IMPLANTATION PROCEDURE: A RETROSPECTIVE STUDY

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Background and aims: Post Dural Puncture Headache (PDPH) is the most frequent complication after Intrathecal Drug delivery system (IDDS) implantation, 23% in a recent study. Impact on patients´ quality of life is significant, especially in oncology. Moreover, Cerebro Spinal Fluid (CSF) leakage can be responsible for serious complications. For neurosurgeons, Fibrin glue is an option to prevent and treat CSF leaks.
We developed an original technique to inject fibrin glue (BioGlue) into puncture path during the catheter placement, in order to prevent CSF leakage. This study observed results on PDPH.
Methods: We retrospectively observed patient's data after IDDS implantation to evaluate this technique in decreasing incidence, length and severity of PDPH.
After approval by local ethics committee, we conducted a comparative retrospective study of PDPHs between patients implanted before the implementation of the technique and those implanted with preventive glue injection. We assessed incidence, duration and severity of PDPH following the Lybecker scale by double lecture of electronic records.
Results: 199 patients were included, implanted between January 2017 and March 2019. 107 did not benefit from preventive Bioglue, 92 received Bioglue.
PDPH frequency decreased significantly from 32.7% to 10.87% (p=0.0002) . The mean duration of PDPH decrease from 5.2 days to 2.8 days (p =0.0153) and severity also decreases since there are no severe PDPHs and the moderate rate goes from 34.2% to 20% and Mild PDPH rate increase from 37% to 80%. We observed no AEs.
Conclusion: Preventive Bioglue significantly reduces of PDPH incidence and severity after IDDS implantation

eP396

MOTOR IMAGERY BRAIN-COMPUTER INTERFACE SYSTEM IN PAIN MANAGEMENT AFTER FAILED BACK SURGERY - A CASE REPORT

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Background and aims: Low back pain is a major cause of disability.[1] Success rate of surgery is low and failed back surgery syndrome (FBSS) is common.[2]
During the last decade brain-computer interface (BCI) -systems have been used increasingly in rehabilitation in stroke patient.[3]
Here we present a case report where a motor imagery BCI-system was used in treatment of severe FBSS pain.
Methods: In 1997 young male had three lumbar discectomies at L5-S1. Postoperatively he had chronic lower back pain and foot drop, and later paraesthesia in the left lower extremity than spread into the right lower extremity. He had two spinal cord stimulator implanted in 2005 and 2015. His paraesthesia symptoms spread to Th11-12 level. In clinical examination he had only a degenerative disc disease in lumbar level.
On 1/2019, at age 57 years, he had allodynia in left lower extremity, no proprioseption, and muscle strength was low. He had constant 8/10 pain in lower back and lower extremities. As his pain had nosiplastic characteristics, we decide to try motor imagery BCI-system (recoveriX, g.tec medical engineering GmbH, Schiedlberg, Austria).
Results: He had BCI treatments three times a week for 12 weeks. After the second session his pain decline and after few sessions pain was 1/10. Now, 12 weeks after the last motor imagery BCI his symptoms were still mild.
Conclusions: In consistent with reports in stroke patients on upper limb rehabilitation [4], in this case motor imagery BCI-ystem was highly effective on severe nosiplastic pain after FBSS.

eP397

TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION, TENS: A RETROSPECTIVE STUDY

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Background: The long-term effects of transcutaneous electrical nerve stimulation (TENS) on chronic pain patients are not well known. This study aims to document the success rates of TENS after one year.
Pain relief by TENS has central and peripheral underlying mechanisms. Since it is safe, non-invasive, inexpensive and can reduce the need for pharmacotherapy, an evaluation of long-term use is useful for clinical guidance of this technique.
Methods: This retrospective descriptive study examines the files of 496 patient who visited the TENS outpatient clinic at a large multidisciplinary pain center between 2011 to 2016. Pain intensity score were documented by visual analogue scale (VAS) prior to and after using TENS. They were classified into a positive or negative TENS trial outcome. 115 patients responded to a follow-up questionnaire after one year.
Results: The success rate over the six years was 13% over the total of patients as we suppose that the negative patients dropped off. Concerning only the responses we would have a success ratio of 57%. The highest pain relief was observed in the patients were TENS was applied to the upper and lower extremities.
Conclusion: The long-term use of TENS is limited. Only 13% of patients continue TENS use after 1 year.Most patients stop this technique because of lack of effect. However, TENS can be recommended for short term use (40% positive response) as part of a multimodal pain management approach.

PALLIATIVE CARE

eP398

SUCCESSFUL USE OF CONSCIOUS SEDATION WITH DEXMEDETOMIDINE TO EASE TOTAL PAIN IN END OF LIFE CARE

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Background and aims: A 63 years old lady was discharged from a tertiary hospital. She had received intensive treatment with complications for two malignant conditions over the last year, and developed brain metastases. Twelve days before her death she attended a specialist palliative care outpatient clinic in rural Ireland. Her main symptoms were:anxiety, panic attacks, pain, nausea, decreased appetite, weight loss, confusion, and cognitive impairment.
This palliative care service had previously accompanied her sister who died in complete denial of her condition leaving her entire family in total distress.
Methods: This case report describes how palliative care can be provided in a life limiting condition with total pain. It reveals how unexpected healing occurred in the patient and her family.
Results: As her symptoms escalated she was admitted to her local hospital three days later. Psychiatry diagnosed a delirium and advised to use neuroleptics and avoid benzodiazepines for their risk of causing a paradoxical reaction. However after successful treatment of the undiagnosed seizure activity with appropriate anticonvulsive medication and stopping the neuroleptics, her condition stabilized. Her pain could be settled with Fentanyl 200 µg/24h continuous subcutaneous infusion (CSCI). Her anxiety, agitation, confusion and cognitive impairment subsided with dexmedetomidine CSCI for her last four days at a dose ranging from 0.13 to 0.19 µg/kg/h.
Conclusions: Two days before she died a dramatic transformation happened. Via conscious sedation she could face her own dying and create a healing space for her family to deal with their own distress.

eP399

POLISH PALLIATIVE CARE PHYSICIANS ATTITIUDES TOWARDS CONDUCTING AND MODYFYING PAIN THERAPY IN CANCER PATIENTS

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The aim of the study was to recognize the attitudes towards conducting and modyfying pain therapy of Polish palliative care physicians.
13 focus group interviews were performed in sites across Poland for qualitative part, and 92 attending physicians fulfilled a questionnaire for quantitative part of the study.
In the opinion of surveyed physicians there are a lot of non-clinical obstacles to sufficient pain treatment as financial issues, lack of marketed drugs, poor management control in home care or resistance of patient and his family. Another issue is that other doctors (mostly GP) are undertreating patients with cancer pain and transfering them to palliative care late. In half of the cases the drug change is necessary and rotation is made for fentanyl (35%), morphine (34%), tramadol (16%) or oxycodone and buprenorphine. The doses and frequency of administration are being changed as well, and adiuvants are being added to improve treatment. 3 main factors, influencing the doctors choice for opioids can be distinguished: patient‘s condition, patient‘s socio-economic situation and psychological issues. The respondents are estimating that more patients are receiving oral (44%) than transdermal (37%) opioids and that they would choose morphine (76%) than oxycodone (17%) and for TTS drug fentanyl (84%) than buprenorphine (16%).

The study revealed that palliative care doctors in Poland are well prepared to adequate cancer pain treatment and are aware of many potential limitations which are out of physicians control and might be partially responsible for still far from optimal cancer pain control.

eP400

DIFFICULTIES IN PROVIDING PALLIATIVE CARE IN RURAL INDIA (WEST BENGAL) - EXPERIENCE OF AN NGO

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Introduction: As in any developing countries state of West Bengal in India has a huge burden of cancer patients in advanced stage coming from rural area where awareness regarding the usefulness of palliative care in rather poor.
Objective: Our goal is to give a pain free good quality of life in these advanced stage cancer patients. Objective of this study is to identify the main difficulties in achieving the above goal in a rural village setting in India.
Method: Advanced cancer patients in need of palliative care in various villages in of rural India were selected for this study. Their symptoms and managements in that rural surroundings were evaluated by an NGO (under the guidance of a senior palliative care specialist) working in that area. An attempt was made to identify the main obstacles in getting proper palliative care in a rural setting.
Results: Pain, fatigue are the main symptoms effecting these patients. In most patients pain and other symptoms control were grossly inadequate due to lack of properly trained manpower in the rural India. However regular homecare visits by a group of social workers were of immense help in the last few months of life. NGO team was well guided by a palliative care specialist.
Conclusion: There is a wide gap of trained manpower this filled in rural areas, India. Dedicated groups from rural area itself need encouragement and proper training, so that difficult symptoms can be managed locally along with necessary social and psychological support to these patients.

eP401

PALLIATIVE CARE MODEL FOR PAIN ALLEVIATION IN ONCOLOGY

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Objectives: To palliative-care issues/needs & their status in pain management in resource poor countries of south. To stress Need for policy paper for development of palliative-pain-care-model.
Method: Our NGO volunteers/nurses conducted this pilot study in six rural-Asian villages .7 nurses, 2 physicians & 1 counselor participated. 146 oncology Patients, 34 caregivers, 18 spiritual/Community Leaders participated. Relief of distressing-symptoms like pain reported in 86%. Responses on palliative-care analyzed using Questionnaires. 90% participants expressed need for better palliative-services.
Results/Findings: Poor-Wellbeing, Appetite, Pain and Fatigue most prevalent symptoms reported by cancer patients. 70% reported uncontrollable-Severe-Pain. Spiritual Pain control method had highest correlation to QOL [92%] in in terms of functional/emotional/physical/social wellbeing. We need to modify attitudes of caregivers towards palliative needs of cancer patients.
Conclusion: This study gives demographic picture of terminal cancer patients and caregivers in Asian Public Healthcare system in relation to pain management efforts. Resource-poor-nations need to develop such programs in absence of government-run-healthcare-setup.
Future recommendations: We patient-advocates need EFIC-platform to discuss our project ideas/concerns/ difficulties with senior researchers from USA/EUROPE. EFIC must take initiative in propagating such efforts in developing-nations. Development of comprehensive pain-care program for oncology-cases is distant dream in resource poor nations.

eP402

DESCRIPTIVE ANALYSIS OF THE EFFECTS OF COMPLEX PALLIATIVE CARE AND PATIENT SATISFACTION AT THE UNIVERSITY HOSPITAL HALLE (SAALE)

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Background and aims: Palliative care is an integral part of end-of-life treatment. Apart from the treatment in a palliative care unit, consultation offers an alternative when patients are hospitalized in a non-palliative department. The objective of this study is to assess symptoms and treatment satisfaction of patients treated with palliative consultation.
Methods: In this observational study, 163 cases were enrolled. We computed correlation coefficient using the Spearman rank statistics and non-parametric tests (Wilcoxon) for group comparisons. We used the MDASI-Core at the beginning and end of treatment to measure symptom burden. In addition patient satisfaction, was measured by the FAMCARE-6 at the end of treatment.
Results: The comparison of the MDASI-core items showed a significant improvement ($p< 0,05$) in 14 out of 18 symptoms after the conclusion of treatment, while the change in pain perception (=5 to 3) showed the biggest effect. The MDASI-items productivity (median=8) and emotional distress (median between 5 and 6. 6) were initially found to be particularly straining, but improved significantly after treatment. Changes during the treatment were not affected by patient characteristics such as age, type of diagnosis or time since diagnosis ($p>0,05$). The analysis of FAMCARE-6 demonstrated a good patient satisfaction (median for all items between 1 and 2). Correlations between the overall assessment of the FAMCARE-6 were weak (spearman´s correlation: 0,206 - 0,102, $p > 0,05$).
Conclusions: Palliative care consultation is mainly administered to patients in a reduced medical condition and a high psycho-emotional burden. Consultation offers an effective treatment for the majority of patients.

eP403

CHRONIC PAIN AND SLEEP DISORDERS IN PALLIATIVE CARE

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Objectives: Chronic pain (CP) and sleep disorders are highly prevalent in general population. Sleep disturbance experienced by patients with chronic pain can be characterized by longer sleep onset, more frequent and longer awakenings after sleep onset, shorter total sleep time, lower sleep efficiency and poorer sleep quality. Such pattern of disturbance is analogous to that of primary insomnia. Psychological and behavioral treatments demonstrated to be effective for both primary and comorbid insomnia may be a viable treatment alternative
Methods: Inquiry patients with various chronic pathologies under the supervision of family physicians licensed in Tbilisi. Patients were treated with licensed family doctors who had undergone a qualification program in psychosomatic and palliative medicine (including sleep and pain). After the initial information session all subjects were provided with questionnaires. The following questions were included: “Do you suffer from pain/sleep disorders?” If answered “yes”, subjects were asked to proceed answering relevant questions. In case patients did not know how to answer a question, nurses gave explanations.
Results: 452 patients were observed within 1 year (mean age: 60 ± 18.7) Sociodemographic data, Insomnia Severity Index (ISI), and parts of a self-report questionnaire for pain were recorded and additional medical information (pain medication, sleep medication) was gathered from the patient charts. Of the total sample, 43.8% (n = 198) suffered from SD and almost all of them from CP.
Conclusion: Almost a half of CP patients suffered from clinical insomnia. The suggested bidirectional relation should be considered during comprehensive assessment and treatment of patients.

PHARMACOLOGICAL THERAPIES

eP404

CURRENT TREATMENT PATTERNS AMONG PATIENTS IN EUROPE WITH CHRONIC LOW BACK PAIN: ANALYSIS OF REAL-WORLD DATA

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Background and aims: Chronic low back pain (CLBP) is a leading cause of disability globally, with prevalence and severity likely to rise with an aging population. Current treatments have demonstrated only modest benefits. The aim of this study was to understand how an increase in disease severity impacts patient treatment.
Methods: Data were drawn from the Adelphi CLBP Disease Specific Programme (2018-19), a point-in-time study of physicians who treat CLBP and their patients in France, Germany, Italy, Spain & UK. Physicians classified patients as currently having mild, moderate or severe disease severity and provided information on prescribed drug therapy and non-pharmacological treatments. Descriptive statistics were reported.
Results: Data was available for 3967 patients: 34% had mild (n=1356), 50% moderate (n=1996) and 16% severe CLBP (n=615). 74% patients received at least one prescribed drug for their CLBP (62% of mild; 79% of moderate; 82% of severe patients). Opioids (59%), NSAIDs (54%) and other analgesics, e.g. paracetamol (32%) were the most frequently prescribed drugs, and opioid use increased as severity worsened (43% of mild; 62% of moderate, 78% of severe patients). Overall, 42% of patients were using a non-pharmacological treatment in addition to their prescribed CLBP drug(s) (38% of mild; 51% of moderate; 51% of severe patients). For all patients the most popular treatments were: physiotherapy (62%), fitness/exercise (62%) and weight loss (46%).
Conclusions: Increasing opioid use, despite increased use of non-pharmacological therapies in moderate-severe CLBP patients, indicates likely sub-optimal treatment with existing management strategies.

eP405

LOW DOSE BUPRENORPHINE PATCH FOR CHRONIC NON-CANCER PAIN IN PATIENTS WITH PREVIOUS OPIOID THERAPY FAILURE: TOLERABILITY AND EFFICACY

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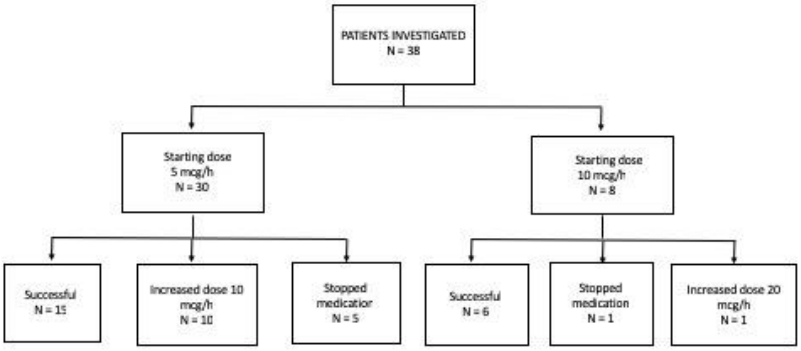
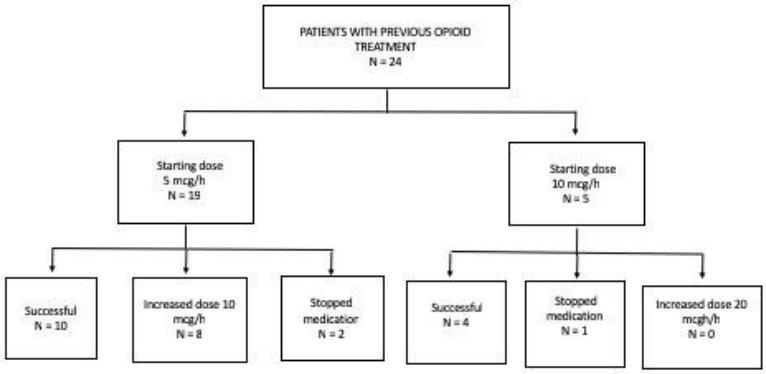
Background: Recently low-dose buprenorphine transdermal patch(LDBTP) has been introduced in Europe.We report the results of LDBTP on patients with chronic pain and previous opioid exposure.
Methods: We retrospectively analyzed LDBTP application on 38 patients with chronic non-cancer pain.
24 patients previously received opioids and discontinued their treatment for inefficacy or intolerable side effects and were switched to LDTBP; 14 patients received it as first opioid medication.We evaluated pain(NRS scale) and side effects at 1 month follow-up.
Results: Baseline mean NRS of all patients was 7.9±2.3, at 1 month follow-up it decreased to 4.7±2.3, 55% of patients reported pain relief >50%.
75% of patients with starting dose of 10 mcg/h were succesful compared to 50% of those who started with 5mcg/h (Figure 1).
6 patients discontinued the treatment for intollerable side effects(nausea and confusion).



[Figure 1: Patients investigated with starting dosages and outcome at 1 month follow up]

In the subgroup of 24 patients with previous opioid therapy (Figure 2) NRS at 1 month declined to 4.7±2.2 compared to 7.8±1.2 at baseline, 58% patients reported more than 50% of pain relief and just 3 (12%) stopped medication due to side effects(nausea).The most efficient dosage was 10 mcg/h with 80% of patients with pain relief>50%.



[Figure 2:Patients with previous opioid treatment with starting dosages and outcome at 1 month follow]

Conclusion: LDTBP was efficient in reducing pain, particularly at 10 mcg/h and was well tolerated:only 15% of all patients discontinued the medication.
Efficacy and tolerability make LDTBP a valid option for patients with chronic pain,specially for those who failed other opioid medications.

eP406

6-PRENYLNARINGENIN AND ITS DERIVATIVE, KTT45, ARE MIXED T-TYPE CA^{2+} CHANNEL INHIBITORS/CB_2 RECEPTOR AGONISTS: ANTINOCICEPTIVE ACTIVITY IN NEUROPATHIC AND VISCERAL PAIN MODELS

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Background and aims: We have reported that 6-prenylnaringenin (6-PNG), a hop component, and its derivative, KTt45, inhibit T-type calcium channels (T-channels) and exhibit antinociceptive activity. Interestingly, many of cannabinoids inhibit T-channels, while some of T-channel inhibitors stimulate cannabinoid receptors. Thus, we tested whether 6-PNG and KTt45 stimulate cannabinoid receptors, and examined their antinociceptive activity in distinct pain models.
Methods: T-channel-dependent currents (T-currents) were measured by a whole-cell patch-clamp technique in $Ca_v3.2$-transfected HEK293 ($Ca_v3.2$-HEK) cells. Cannabinoid receptor agonistic activity was assessed by determining inhibitory effect on forskolin-induced cyclic AMP (cAMP) accumulation in CB_1-transfected HEK293 and CB_2-trasfected CHO cells. In mice, neuropathic pain was induced by partial sciatic nerve ligation (PSNL) or repeated administration of bortezomib, a proteasome-inhibiting chemotherapeutic, and the evoked allodynia in the hindpaw was evaluated by von Frey test. Cystitis-related bladder pain was caused by a single administration of cyclophosphamide, and assessed by counting nociceptive behavior and evaluating referred hyperalgesia in response to stimulation of the lower abdomen with von Frey hairs.
Results: In $Ca_v3.2$-HEK cells, 6-PNG and KTt45 blocked T-currents [IC_{50} values (μM): 0.69 and 0.41, respectively]. 6-PNG at 1-3 μM and KTt45 at 0.1-3 μM exhibited agonistic activity toward CB_2, but not CB_1, receptors. In mice, i.p. administration of 6-PNG at 20-30 mg/kg and KTt45 at 10-30 mg/kg suppressed neuropathic and bladder pain.
Conclusions: 6-PNG and KTt45 are considered mixed T-channel inhibitors/CB_2 agonists, and useful for treatment of neuropathic and visceral pain.

eP407

BIOEQUIVALENCE OF TAPENTADOL PROLONGED RELEASE TABLETS 2X25 MG AND 1X50 MG UNDER FED CONDITIONS

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Background and aims: A tapentadol prolonged release (PR) 25 mg tablet has been developed for individual dose adjustments with small titration steps. Since the composition of this formulation is quantitatively not proportional to the higher approved dose strengths, bioequivalence trials were conducted under fasted conditions (previous trial) and fed conditions (this trial) according to the current guideline.
Methods: A randomized, open-label, 2-way crossover, single-dose Phase I clinical trial was performed in 40 healthy male subjects (PK set: 38 subjects). Blood sampling for PK evaluation was done at 17 predefined timepoints up to 48h post dose. Descriptive statistics were calculated for tapentadol serum concentrations at each sampling time and for all pharmacokinetic parameters. Bioequivalence was concluded if the 90% confidence intervals for the ratio of geometric means of C_{max}, AUC_{0-t}, and AUC_{0-inf} values of both formulations fell within the limits of 80% and 125%.
Results: Bioequivalence was demonstrated between 2 tablets of the tapentadol 25 mg PR formulation and 1 tablet of the tapentadol 50 mg PR formulation under fed conditions. Using analysis of variance, ratios (2x25 mg / 50 mg) of geometric means (90% CI of ratios) were 108.8 % (103.3, 114.7) for C_{max}, 104.7 % (100.9, 108.5) for AUC_{0-t} and 104.9 % (101.1, 108.8) for AUC_{0-inf}. Single dose administrations of both formulations were well tolerated and there

were no notable differences in safety profile between the 2 trial treatments.
Conclusions: Data from this trial continue to support the predictable pharmacokinetic profile of tapentadol across available formulations of tapentadol PR.

eP408

ROLE OF HEPARIN IN ENHANCING THE SKIN PENETRATION AND PAIN RELIEF FROM DICLOFENAC EPOLAMINE (DHEP) MEDICATED PLASTER

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Background and aims: Topical NSAIDs are effective in the treatment of musculo-skeletal inflammation/pain, while at the same time reducing the risk of systemic AEs. Among NSAIDs topical formulations, diclofenac epolamine (DHEP) medicated plaster was found amongst the most effective. Recently, the incorporation of heparin into the DHEP medicated plaster was developed with the aim to enhance diclofenac penetration to the site of inflammation.
Methods:
(1) Heparin residual content in the medicated plaster was measured after 24-hour application in healthy volunteers participating in a PK (BA) study;
(2) The release and permeation of DHEP from medicated plasters formulated with and without heparin were compared in a Franz cell diffusion system using different membranes.
Results:
(1) No pre-/post-application change in plaster heparin content was observed following 24-hour application in vivo, showing that heparin release from the plaster is negligible, if any, while at the same time DHEP content was substantially reduced;
(2) Permeation profiles in Franz cells showed that both the amount and rate of DHEP release from heparin-containing plasters was significantly greater as compared to the reference formulation without heparin.
Conclusions: In vitro and in vivo data demonstrated that heparin is not released from the DHEP plaster formulation after topical application. This suggests that heparin works as permeability enhancer, increasing the release and skin penetration of diclofenac, thus providing an explanation for the significantly greater analgesic efficacy of the DHEP heparin plaster vs the DHEP plaster without heparin in clinical trials.

eP409

CAPSAICIN PATCH FOR NEUROPATHIC CHEST WALL PAIN - LOCAL AUDIT FINDINGS

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Background and aims: Neuropathic pain is an unpleasant sensory and emotional experience and can be as a result of surgery or trauma and 5% of patients may still have a degree of pain one year from their initial injury (1). High-concentration capsaicin patch is a well-established treatment for peripheral neuropathic pain. Following discussion with the cardio-thoracic department it was apparent that post-surgical neuropathic pain management was inadequate.
Methods: Following a search of the current Qutenza database (n=230) we identified 30 patients that would meet the clinical criteria of neuropathic chest wall pain. 4 records were discounted due to lack of complete data. Demographics - n=26 patients - 13 male, 13 female age range 25-80 years. Average patch application n=4. Pre and post pain (VAS 0-10) and BPI (British Pain Inventory) scores were taken with percentage relief scores and qualitative

comments
Results: There were significant changes to both VAS and BPI scores. Pain decreased from 7.4 (severe) to 4.1 (mild/moderate) and BPI from 40 to 28. 65% of patients‘ rated more than 50% relief with comments such as ‚best treatment so far‘.
Conclusions: High strength capsaicin appears to be effective in treating neuropathic chest wall pain and offers significant benefits to some patients with persistent severe pain. For some patients symptoms resolved completely, whilst for others therapeutic efficacy may have been deleted due to the presence of continued psycho-social factors.
(1)Gottschalk A, Cohen SP Yang S et al. Preventing and treating pain after thoracic surgery. Anaesthesiology 2006;104:594-600

eP410

RADIOFREQUENCY TAPENTADOL TREATMENT FOR CHRONIC LUMBAR RADICULOPATHY

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Background and aims: Chronic Lumbar Radicular Pain caused by injury of a spinal nerve root may be associated with numbness, tingling, weakness, meaning nociceptive and neuropathic painful components. CLRP can be effectively treated combining pharmacological and interventional treatments. Tapentadol (MOR-NRI agent) with its dual analgesic mechanisms of action is a real opportunity to treat radicular pain. The aim of this study is to prove a sparing effect from a combined treatment by radiofrequency and tapentadol.
Methods: In our retrospective study from March 2017 to January 2018 we enrolled 50 patients with CLRP from more than 3 months, correlated lumbar discopathy, without a preexisting surgical repair, nobody responder to early physical and pharmacological therapy. At beginning each enrolled patient was subjected to intradiscal and dorsal root ganglia radiofrequency treatment and then discharged with tapentadol prescription for at least 30 days. Outcome measures were improvement of the Numeric Pain Rating Score, Oswestry Disability Index and DN4 questionnaire.
Results: At first control visit we have had as responder (with reduction NPRS > 30%) 38 patients (77.6% - I.C. 95%: 65.6÷89.5) and (reducted NPRS >50%) 14 patients (28.6% - I.C. 95%: 15.6÷41.5). Tapentadol doses changed from a media of 100 mg/die until 140 mg/die with a max of 200 mg/die overall period. It has been observed that DN4 and ODI improve during all period of study.
Conclusions: Radiofrequency and tapentadol combined treatment allows a sparing effect for radicular pain, with no early repetition of radiofrequency procedure and a reduced daily doses of tapentadol.

eP411

“MY LIFE IS UNDER CONTROL WITH THESE MEDICATIONS”: AN INTERPRETATIVE PHENOMENOLOGICAL ANALYSIS OF MANAGING CHRONIC PAIN WITH OPIOIDS

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Background and aims: The use of opioids to relieve chronic pain has increased during the last decades, but experiences of long-term opioid therapy (> 90 days) points at risks and loss of beneficial effects. Still, some patients report benefits from opioid medication, indicating that opioids *may* be adequate for effective pain control in particular individuals. Guidelines for opioid use in chronic pain do not help identifying who benefits and who does not, making the first person‘s perspective an important complement.

In this study we explored *the lived experienced* of managing chronic pain with opioid therapy. The objective was to understand the sense-making of opioids as a long-term treatment from a first person's perspective.
Methods: We used a qualitative research design; interpretative phenomenological analyses. Ten individuals with chronic pain and opioid therapy were purposively sampled in Swedish tertiary care.
Results: Three super-ordinate themes emerged from the analyses; *without opioids the pain becomes the "boss"*; *opioids as a salvation and a curse*, and; *acknowledgement of the pain and acceptance of opioid therapy enables transition to a novel self*. The participants used opioids to regain control over pain, thus reclaiming the wanted life and self, and sense of agency. Using opioids to manage pain was not unproblematic and some of the participants had experienced a downward spiral of escalating pain and uncontrollable opioid use, and stigmatization.
Conclusion: All participants emphasized the importance of control, both regarding pain and opioid use. Trust between participants and care providers was essential to enable satisfying treatment.

eP412

TREK-1 CHANNEL ACTIVATION AS A NEW ANALGESIC STRATEGY DEVOID OF OPIOIDS SIDE EFFECTS

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Opioids are effective painkillers, however, their benefit/risk ratio is dampened by numerous adverse effects and the current rise in opioid misuse led to a public health crisis. While activation of the mu opioid receptor triggers both analgesia and adverse effects of opioids, the TREK-1 potassium channel activated downstream of mu is only involved in the analgesic activity of morphine. We developed a TREK-1 activator, RNE28, which showed good specificity for the human TREK-1 channel over the evolutionary-related TREK-2 and TRAAK channels. RNE28 had antinociceptive activity in naive mice, and was effective in relieving inflammatory and neuropathic pain-like behavior in rodents. This effect was strongly reduced in TREK-1 knock-out mice and in mice treated with the TREK-1 blocker spadin. In parallel, RNE28 failed to induce respiratory depression, constipation, abuse potential or sedation. TREK-1 activators could therefore constitute a novel class of painkillers, inspired by the mechanism of action of morphine but devoid of opioid-related adverse effects.

eP413

CHARACTERIZATION OF THE PRONOCICEPTIVE EFFECT OF MAGNESIUM SULFATE IN RATS

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Background and aims: Magnesium beside antinociceptive activity, also may have and pronociceptive activity. This study aimed to asses the effect and mechanism of action of intraplantar (i.pl.) administration of magnesium sulfate (MS) in rats.
Methods: In male Wistar rats the paw withdrawal threshold to mechanical stimuli was evaluated by the electronic von Frey test. MS was administered i.pl. with/without tested antagonist of the transient receptor potential channels ankyrin type (TRPA1) or vanilloid types (TRPV1 and TRPV4) or acid-sensing ion channels (ASIC).
Results: MS at doses of 0.5 - 6.2 mg/paw (i.pl.) induced local and dose-dependent mechanical hyperalgesia. Only

isotonic MS (6.2 mg/paw) induced mechanical hyperalgesia that lasted at least six hours. Isotonic pH-adjusted (7.4) MS-induced mechanical hyperalgesia was reduced by co-injection of HC-030031, a selective TRPA1 antagonist (140 nmol/paw), capsazepine, a selective TRPV1 antagonist (500 pmol/paw) or RN-1734, a selective TRPV4 antagonist (6.2 µmol/paw). Amiloride hydrochloride, a non-selective ASIC inhibitor (7.55 µmol/paw) did not change MS-induced hyperalgesia.
Conclusion: Injection of isotonic pH-adjusted solution of MS (6.2%; 7.4) induces local peripheral pain to mechanical stimuli. This effect is mediated *via* activation of TRPA1, TRPV1 and TRPV4 receptors probably in primary afferent fibers.

eP414

HAS THE TIME COME FOR AN HARMONIZED REGULATORY GUIDANCE FOR DEVELOPING A NEW MEDICINE TARGETING PAIN AND PAIN ASSOCIATED SYMPTOMS IN FIBROMYALGIA?

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Different primary or co-primary endpoints have been often utilized in clinical setting for newly investigated drugs developed with the intent of treating pain associated with fibromyalgia. Amongst these endpoints, average daily pain score (ADPS) estimated on a weekly basis has been the most frequently used as primary or co-primary endpoint in Fibromyalgia clinical programs (D. Merante, IASP 2018). Fibromyalgia is a complex pain disease characterized by peripheral and central pain augmentation. Subjects suffering from fibromyalgia are grouped into clusters (T. Giesecke, 2003) and high pain catastrophizers with high depression are highly represented (D. Goldenberg, 2008). To date pregabalin, duloxetine and milnacipran are the only approved drugs in fibromyalgia pain. They were approved by the American FDA and by the Japanese PMDA, but not by the European EMEA. Many other drugs were rejected by the regulatory agencies (sodium oxybate) or failed to provide clinical evidence of meaningful benefit in this condition (gabapentin, mirogabalin). Currently no harmonized global regulatory guidance exists in pain associated with fibromyalgia. Several global clinical development programs differed in terms of primary or co-primary endpoints utilized in such as an extremely heterogeneous population. Since the latest draft FDA Guidance on pain drug development (February 2014), average of worst daily pain (AWDP) score was recommended in pain clinical studies. We advocate the creation and harmonization of a patient-centric regulatory guidance and the use of a commonly identified primary endpoint to ultimately support the clinical development of a newly investigational medicine primarily targeting pain associated with fibromyalgia and pain-associated symptoms.

eP415

EXPERIENCES OF PAIN-RELIEVING DRUGS IN INDIVIDUALS WITH SPINAL CORD INJURY AND NEUROPATHIC PAIN - A QUALITATIVE STUDY

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Background and aims: Neuropathic pain (NP) is described as one of the most challenging conditions for individuals with spinal cord injury (SCI) and is primarily managed pharmacologically. However, knowledge is lacking on the patient‘s experiences of using these drugs. This study aimed to explore patient‘s expectations, experiences and desires with drugs prescribed for SCI NP.
Methods: 18 informants with SCI and NP were interviewed in focus groups consisting of 4-5 participants in four separate sessions. The informants originated from 6 large and small cities in southern Sweden. An emergent design

was used using an interview guide containing 6 open questions. The interviews were transcribed verbatim and data was analyzed according to qualitative content analysis.
Results: Initially expectations of drugs giving pain relief were described as rather high but these decreased over time due to negative experiences. Cognitive side-effects and/or insufficient pain-relief decreased further expectations and willingness to try new drugs. Still the informants described a remaining hope for a truly effective drug without side-effects. Since cognitive side-effects were described to impair relations and ability to work/study the informants described having to choose pain for cognitive clarity.
Competence in SCI pain management and a functional dialogue with the treating physician, improved accessibility to health care, and an individually tailored treatment plan and follow-up of prescribed medication were factors desired by the informants. Further, peer support and alternatives to a pharmacological approach were highlighted.
Conclusions: The need for efficacious drugs, improved inter-personal health care relations and a patient-centred approach emerged.

eP416

PATHOPHYSIOLOGY AND MANAGEMENT OF OPIOID-INDUCED CONSTIPATION: EUROPEAN EXPERT CONSENSUS STATEMENT

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Background and aims: Opioids are potent analgesics associated with substantial clinical burden and side effects, including those arising in the gastrointestinal tract. Opioid-induced bowel dysfunction (OIBD) encompasses symptoms including nausea, vomiting and opioid-induced constipation (OIC): the most common, yet under-recognised, OIBD subtype that can substantially impact patient quality of life, healthcare utilisation and workplace productivity. A consensus was sought on clinical recommendations to inform OIC management in clinical practice.
Methods: A panel of European experts in neurogastroenterology, pain medicine and palliative medicine, chosen based upon their clinical and academic experience, met to discuss, develop and agree on the contents of the European Expert Consensus Statement and associated recommendations.
Results: The Expert Panel suggest a pragmatic stepwise management scheme for OIC management that is tailored to individual patients and their clinical presentation. Confirming the aetiology of constipation will inform on the approach: diagnosis of OIC requires initiation of a peripherally-acting mu-opioid receptor antagonist (PAMORA) or other opioid antagonist. Depending on treatment outcomes, referral to specialist/secondary care may be necessary. Regular clinical re-evaluation should be undertaken, and the Bowel Function Index (BFI) can also be used as a useful adjunct for diagnosis and monitoring.
Conclusions: Successful OIC management is dependent on early recognition. The BFI is a useful way of objectively evaluating OIC severity and monitoring response. Optimal OIC management should be based on a stepwise approach. Treatments including gut-restricted opioid antagonists or PAMORAs need to be considered in those with recalcitrant symptoms, with an aim to improving patient outcomes in OIC.

eP417

THE INITIATION OF TAPENTADOL: A CLINICAL AUDIT

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Background and aims: Tapentadol is a centrally-acting analgesic that acts both as a μ-opioid-receptor-agonist (MOR) and a norepinephrine-reuptake-inhibitor (NRI). This would add an additional anti-hyperalgesic effect and makes it less prone to tolerance. Compared to conventional opioids, this theoretically makes tapentadol a more appropriate analgesic for chronic pain patients.
We aimed to evaluate the treatment succes of tapentadol. This was defined as the subjective positive appraisal of the patient and the willingness to continue the treatment. Secondly, we evaluated the possibility of weaning strong opioids when using tapentadol.
Methods: We retrospectively collected the following data of 19 chronic pain patients treated with strong opioids that started a treatment with tapentadol: numeric rating scale (NRS 0-10), global perceived effect (GPE 0-100%), subjective appraisal (positive or negative), side-effects, maintenance dose of tapentadol and the decrease in morphine-equivalent-dosing (MED) of the conventional opioids.
Results: In 79% of the patients, the start of tapentadol was experienced as positive and tapentadol was continued. In these patients, the mean NRS-decrease was 3 points, the mean GPE was 39% and the mean daily maintenance dose of tapentadol was 312mg. Mean follow-up time was 62 days.
Sixteen patients reduced the dosing of conventional opioids. Four of them completely stopped the use of conventional opioids. The mean reduction of MED was 89%.
Conclusion: Tapentadol can be regarded as a useful option in the treatment of chronic pain patients. Furthermore, it can be used to reduce or stop these opioids.

eP418

SEX-SPECIFIC AND AGE-SPECIFIC ANALGESIA FOR EARLY POSTOPERATIVE PAIN MANAGEMENT AFTER LUMBAR DECOMPRESSIVE SURGERY: A RANDOMIZED CLINICAL TRIAL

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Multimodal analgesia is associated with synergistic effects while reducing opioid-related adverse effects. However, there is no consensus on the ideal multimodal analgesic regimen. The authors compare the efficacy and safety of nonsteroidal anti-inflammatory drug and opioid for acute pain management after lumbar decompressive surgery. This prospective randomized clinical trial recruited adult patients who underwent single-level lumbar decompressive surgery. Patients were randomized to receive our postoperative analgesic regimen including either nonsteroidal anti-inflammatory drug (celecoxib) or opioid (extended-release oxycodone) from postoperative day 3 to 14. The Visual Analog Scale (VAS) and Oswestry Back Pain Disability Index (ODI) were used to evaluate effectiveness preoperatively and on postoperative days 2, 3, 7, and 14, and at 6 months. Drug-related adverse effects were also recorded. One hundred patients were enrolled and 93 patients (46 patients with celecoxib vs. 47 patients with oxycodone) were randomized. No differences were observed in patient demographics, preoperative VAS and ODI between the 2 groups. However, subanalysis according to sex and age, revealed significant differences in efficacy: celecoxib was effective in female individuals and oxycodone was effective in male individuals on postoperative days 7 and 14; oxycodone was effective in patients aged above 65 years on postoperative days 7 and 14. Although nausea/vomiting and constipation were more common in the oxycodone group. In patients who underwent single-level lumbar decompressive surgery, treatment with celecoxib and oxycodone for postoperative pain management showed no significant differences in efficacy. However, subanalysis showed that each drug was effective in different ages and sex groups.

eP419

UNFAVORABLE PHARMACOKINETIC INTERACTIONS OF CO-ANALGESICS - WHICH DRUG COMBINATIONS SHOULD BE AVOIDED

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Current guidelines for the treatment of pain recommend the use of multimodal therapy. The use of polypharmacotherapy is always associated with the risk of side effects, which in their consequence may worsen the effectiveness of pain treatment and may lead to the need to discontinue the use of Based on the observation of 60 patients in whom adverse events with different clinical picture occurred as a consequence of the use of combination therapy, were assessed what drug combinations are associated with a special risk of interaction. The clinical signs of adverse reactions with the drugs used was correlated and the causal relationship between the drugs used and the adverse effects observed was assessed. In 48 patients, there was a need to stop using combination therapy. The remaining 12 were corrected for the dosage of drugs used in polytherapy or modification of individual drugs used to treat pain.
The analysis shows that the common problem we observe in combined pain therapy are pharmacokinetic interactions between co-analgesics and analgesics, both opioids and non-opioid analgesics. Due to the pharmacokinetic profile, pharmacokinetic interactions are often observed when duloxetine, venlafaxine and valproate are used. Very rarely, side effects are a consequence of treatment with pregabalin. It is also worth remembering about the increased risk of bleeding complications in patients taking simultaneously NSAIDs and duloxetine or venlafaxine, and this interaction is pharmacodynamic.

eP420

THE DUAL CCR2/CCR5 ANTAGONIST, CENICRIVIROC, ATTENUATED NEUROPATHIC PAIN-RELATED BEHAVIOR AND ENHANCED MORPHINE EFFECTIVENESS

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Background and aims: Unsatisfactory management of chronic pain significantly impairs patients‘ quality of life. Recent studies focused on the search for new analgesics indicated the key role of CCR2 and CCR5 chemokine receptors in neuropathy. Therefore, the aim was to investigate the effects of the dual CCR2/CCR5 antagonist, cenicriviroc, on pain-related behavior and morphine effectiveness in neuropathic pain. To define mechanisms underlying observed effects, we studied changes in the level of microglial activation and important pronociceptive cytokines.
Methods: Wistar rats were implanted with intrathecal catheters. Afterwards, chronic constriction injury of sciatic nerve was performed. Cenicriviroc (CVC) was administered intrathecally, preemptively, and then once per day for 7 days. The last day rats received a single dose of morphine. Pain-related behaviors were measured using von Frey and cold plate test. Biochemical analysis was performed using RT-qPCR.
Results: Our studies showed that CVC attenuated mechanical and thermal hypersensitivity and enhanced morphine-induced analgesia in a rat neuropathic pain model. Simultaneously, CVC diminished the activation of microglia/macrophages and prevented the CCI-induced mRNA upregulation of IL-1beta, NOS2, CCL2, CCL3 and CCL7 in the spinal cord and/or dorsal root ganglia. However, do not influence the level of IL-18.
Conclusion: We demonstrated that beneficial effects of CVC result from reduction in the level of important pronociceptive factors. It suggests that pharmacological modulation of CCR2/CCR5 may serve as an innovative strategy for neuropathic pain treatment.
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eP421

5HT- RECEPTORS MEDIATE THE ANTIALLODYNIC EFFECT OF *ROSMARINUS OFFICINALIS L.* (ALECRIM) IN INFLAMMATORY PAIN IN MICE

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Background and aims: The involvement of the *Rosmarinus Officinalis L.* in the modulation of nociception has been the subject of several studies. Previous studies have shown that *Rosmarinus Officinalis L.* induces antinociception in models of phasic and persistent *pain.* This study examines whether intraperitoneal injection of the *Rosmarinus Officinalis L. (50, 100 and250mg/kg)* produces antiallodynic effect in inflammatory pain in mice.
Methods: To induce inflammatory pain in mice, they were subjected to the injection of complete Freund´s adjuvant (CFA) in the hindpaw of mice. The mechanic allodynia was evaluated using an electronic anesthesiometer (in 2, 7, 14 and 21 days after surgery). Drug and vehicle (saline) was administered intrathecally via a catheter implanted chronically in the subarachnoid space.
Results: The injection of CFA reduced the threshold for 30 days. *Rosmarinus Officinalis L.* injection (250mg/Kg, intraperitoneal) reduces the severity of inflammatory pain induced by CFA during initial (2 days following the injury) and maintenance (subsequent 7 days) phase. On the other hand, intratecal methysergide (5micro/ml) but not saline reduced the *Rosmarinus Officinalis L.*- induced antiallodynia.
Conclusion: We conclude 5HT- receptors are involved in the antiallodynic effect evoked from *Rosmarinus Officinalis L.* in inflammatory pain in mice.

eP422

IS INTRAVENOUS LIDOCAINE A SAFE AND EFFECTIVE ALTERNATIVE IN THE TREATMENT OF CHRONIC PAIN? IMPLEMENTATION OF PROTOCOL AND INITIAL RESULTS

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Background and aims: Intravenous lidocaine has been used to treat chronic pain syndromes for years due to its known analgesic and antihyperalgesic effects, but there are some doubts about its long-term effectiveness. The objective of this presentation is to present a new protocol implemented in Valme Hospital, Seville, for the treatment of neuropathic chronic pain with intravenous lidocaine, and to show initial results.
Methods: Patients with neuropathic chronic pain (evaluated by questionnaire DN 4) that don´t respond to treatment are eligible. In four separate sessions for one week, 3 mg/kg, 4 mg/kg, 5 mg/kg and 5 mg/kg of lidocaine are infused sequentially for one hour. If toxicity appears the infusion must be interrupted. The follow-up completed one month and two months after the end of treatment, using visual analog scale (VAS), Latineen Index and Brief Pain Inventory.
Results: At the moment we have included three cases: trigeminal neuralgia (patient 1), chronic arachnoiditis (patient 2) and inguinal postherniorrhaphy pain (patient 3). In all these cases, the pain has improved in one month and two months after the end of treatment, and the improvement has been greater in patients with more neuropathic symptoms. There were mild adverse effects in two patients that required interruption or modification of the perfusion. There were no serious adverse effects.
Conclusions: According to the protocol carried out in our center, treatment with repeated doses of intravenous lidocaine seems effective and in the short term in those patients.

eP423

ANALGESIC EFFICACY OF TOPICAL SEVOFLURANE IN CHRONIC ULCERS OF DIFFERENT ETIOLOGIES

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Backgroung and aims: 5.6% of patients older than 65 years have chronic ulcers that cause pain and functional impotence, being venous ulcers the most frequent (80%).
Usually mechanical debridement is used to improve the healing process. Mechanical debridement is painful despite the use of systemic analgesics, thus requiring locoregional or general anesthesia. EMLA cream has been used to reduce debridement pain, with poor results. Sevoflurane is an inhalational anesthetic with central action. Some evidence suggests it has peripheral analgesic action when administered topically. The aim was to study the analgesic efficacy of sevoflurane applied topically in painful chronic ulcers of different etiologies.
Methods: This prospective study included 22 patients with painful chronic ulcers that required debridement. Pain was assessed using a visual-analog scale (VAS: 0-10) at baseline and after applying sevoflurane (1 ml/cm^2). The degree of satisfaction (Likert scale) and complications were also assessed.
Results: 52.2% of patients were women. The mean age was 71.07 +/- 7.3 years. 30.45% of ulcers were ischemic, 21.7% venous. 91.4% of ulcers were in lower limbs. Surface area mean was 22.5 +/- 11.1 cm2. The time of evolution (median) was 3.5 months. At baseline VAS was 7.8 +/- 0.6. 15 minutes, 60 minutes and 24 hours after applying sevoflurane VAS decreased to 3.6 +/- 0.8 ($p < 0.01$), 2.7 +/- 0.9 and 2.8 +/- 0.7 ($p < 0.01$), respectively. The degree of satisfaction was high for all patients. No complications were manifest.
Conclusions: Topical sevoflurane provides effective and safe analgesia in chronic painful ulcers.

eP424

SHOULD WE USE OPIOID ANALGETICS IN PATIENTS WITH END-STAGE KIDNEY DISEASE?

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Background and aims: Pain represents a common problem in end-stage renal disease (ESRD) patients. Our aim was to examine the prevalence and the effectiveness of opioid analgetics use among dialysis patients.
Methods: We searched MEDLINE/EMBASE database from 1990 to 2017. for English language articles including following key words: pain, opioids, kidney, end-stage kidney disease etc.
Results: We identified 18 relevant studies from 11 countries. Sample size of patients ranged from 65 to 9235. Prevalence of opiod use was variable, ranging from 7 to 34% (95% CI, n=10), and from 9 to 28% (95% CI, n=8), respectively. Effectiveness of pain control varied from 15 to 35%. Althought, there was no strict control, some adverse effects were reported including: gastrointestinal system (nausea, vomiting, n=5), cardiovascular system (orthostatic hypotension, n=2) and central nervous system (impared cognition and sedation, n=1). Regarding use of different class of opioids, for moderate pain (pain scores 4-6/10), codeine/dihydrocodeine were used - alone (n=2) or in combination with non-opiod analgetics (n=4), while for severe pain (pain scores 7-10/10), fentanyl patch was the most used (n=8).
Conclusions: The prevalence and the effectiveness of opioid use among ESRD patients are very variable between different centers. It is necessary to improve information and to form appropriate guidelines regarding the pain treatment in this population.
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eP425

OPIOID USE IN COMMUNITY BY CHRONIC PAIN PATIENTS

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Most healthcare systems of world have epidemic of Opioid use in community.
Opioid are prescribed mostly by primary care physician in community.
This eventually lead to opioids abuse and increased opioid overdose related deaths are evidence of that.
In our referral area there is no data available on use of opioids for different chronic pain conditions. So we designed a questionnaire to find out magnitude of the problem. A set of 7 questions were used to find out treatment already received by all newly referred patients to the pain clinic.
We investigated 64 patients. Surprisingly 56% of patients in our group was using opioids in some form for chronic pain. Codine was used by nearly half of the patients and rest of them were using partial agonist more than full agonists. More than half of the patients were on opioids for more than a year. Interestingly only 2% patients reported to get excellent results of opioids use and were fully satisfied. Drowsiness and constipation were most reported side effects in less than 10% patients.
We concluded from our group of patients that opioid use for chronic pain is much more common than anticipated. There is lack of resources allocation and local data. More education and awareness of primary care physicians and patients will be required to overcome this problem.

eP426

MICROSCOPIC STUDY OF INJECTABLE STEROIDS USED IN EPIDURAL INJECTIONS: EFFECTS OF DIFFERENT DILUENTS USED IN STEROID´S AGGREGATION ABILITY

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Background: Epidural steroids injection (ESI) is a common practice for pain treatment since 1953. In 2014, the FDA issued a warning about ESI. Although steroid aggregates provide longer times for reabsorption, they are potentially harmful to the central nervous system via embolic mechanisms. Anatomical studies have established sizes over 100 µm like potentially able to occlude blood vessels.
Objetives.We evaluated the steroids available in Spain.: betamethasone, triamcinolone, and dexamethasone undiluted and in dilution with saline, levobupivacaine 0,25% and lidocaine 2%. The size of the aggregates was determined and compared.
Methods: Statistical analysis was carried out using the R software. Nonparametric techniques were used in the comparison of the particle size with Kruskal-Wallis test and the Wilcoxon test, adjusting the p-values by the Holm method for multiple comparisons[DC1] [jo2] .
Results: -Non-diluted samples: Triamcinolone samples had a higher (statistically significant) number of aggregates over 100 µm, regarding betamethasone and dexamethasone samples.- Samples diluted with isotonic saline solution:Triamcinolone samples showed a significantly larger number of particles over 100 µm regarding to betamethasone and dexamethasone.
-Samples diluted with 0.25% levobupivacaine: Showed a remarkable large number of aggregates over 500 µm. Those formed an uninterrupted surface, which did not allow the measurement of individual particles.
Conclusions: Our results have shown that dilutions of triamcinolone with levobuivacaine 0,25% produce large aggregates, in some cases over 500 µm. The time between the mixture and the analysis could affect to those results. We need more determinations to demonstrate that hypothesis

eP427

TOPICAL ANALGESIA DOES NOT AFFECT DESENSITISATION EVOKED BY 8% TOPICAL CAPSAICIN

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Background: To prevent pain associated with 8% capsaicin application (for pain desensitisation), pretreatment with local anesthetics, such as EMLA (eutectic mixture of lidocaine 2.5% and prilocaine 2.5%), is an option. However, there is limited evidence regarding the effect of local analgesia on the degree of capsaicin-induced desensitisation.
Methods: Twenty-four participants were included. Two squared areas on each forearm were randomised to 2-hour pretreatment with EMLA or placebo cream. Hereafter, one 8% capsaicin patch was administered in each arm. The capsaicin patches were applied in a placebo and an EMLA pretreated area for 3 hours respectively. Pain scores were retrospectively assessed using a visual analogue scale. Warmth detection, heat pain sensitivity, and microvascular reactivity were measured to assess the interaction of EMLA and capsaicin on small fiber function.
Results: EMLA increased warm and heat thresholds prior to capsaicin application ($p < 0.002$). Within the first and the third hour of capsaicin application, EMLA caused reductions in capsaicin-induced pain of 36% ($p < 0.001$) and 16% ($p < 0.050$) respectively. During the second hour of capsaicin application, EMLA did not significantly reduce pain levels ($p=0.053$). EMLA enhanced the capsaicin-induced increase in superficial blood perfusion immediately after the 3-hour capsaicin application ($p < 0.01$). Capsaicin, regardless of pretreatment, induced heat hyperalgesia immediately after the application ($p < 0.001$), which was subsequently replaced by impaired warmth detection 24 hours post application ($p < 0.001$).
Conclusion: The findings suggest that topical analgesic cream applied before administration of 8% topical capsaicin reduces application site pain without interfering with the evoked desensitisation.

eP428

DIFFERENTIAL EFFECTS OF EPIDERMAL GROWTH FACTOR RECEPTOR INHIBITORS IN A SINGLE CASE OF NEUROPATHIC PAIN

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Background: The human epidermal growth factor (HER) family of receptors consists of four members, including the epidermal growth factor receptor (EGFR, HER1). Both tyrosine kinase inhibitors (TKIs) and monoclonal antibodies inhibit HER receptors in oncology practice. Neuropathic pain (NP) represents an unmet medical need, where analgesic responses to different EGFR-inhibitors (EGFR-I) have been described in patients. This has appeared to be a class effect of EGFR-Is. M
ethod: The clinical course of a single case of NP treated with 5 different EGFR-Is is described.
Results: A 52 year-old male was included in a randomized, double-blind, cross-over proof of concept clinical trial testing cetuximab in chronic, treatment-refractory severe NP due to nerve compression. His NP scores decreased dramatically after blinded intravenous cetuximab, but not after placebo. Therefore, upon pain recurrence after the trial, he was treated (off-label) with the oral TKIs erlotinib and gefitinib, but without NP relief. The oral pan-HER-inhibitor afatinib was then prescribed, with gradual NP improvement starting on day 4 (figure). The patient was also given a trial of the oral HER1/HER2 TKI lapatinib, but reverted to afatinib after 7 days without pain relief. Currently, after 2,5 years on afatinib (25mg/d), pain control is excellent (NRS 0-1/10) with only transient side effects (grade 1 mucositis and diarrhea).
Conclusion: This is the first report describing NP relief with afatinib and the first reported observation of differential effects of various EGFR-Is on NP in the same patient. Further understanding of the pathophysiology may lead to development of EGFR-Is specifically targeting NP.

eP429

A DOSE ESCALATION TRIAL TO INVESTIGATE THE SAFETY AND TOLERABILITY OF NEOSAXITOXIN IN COMBINATION WITH BUPIVACAINE AND EPINEPHRINE IN PERINEURAL ADMINISTRATION

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Background and aims: Neosaxitoxin (NeoSTX) is part of a class of molecules known as site-1 sodium channel blockers. Data from previous clinical trials suggest that this may result in functional synergism of NeoSTX and classical local anesthetics such as bupivacaine (BUPI). The addition of the vasoconstrictor epinephrine (EPI) further increases the local anesthetic block duration and reduces the frequency and intensity of systemic symptoms.
The goal of this trial was to investigate the safety and tolerability, pharmacodynamics and pharmacokinetics of ascending doses of NeoSTX when administered perineurally for interscalene plexus block.
Methods: A randomized, single-site, double-blind, active-controlled, parallel-group, single-administration, dose-escalation trial was performed in 32 healthy male subjects to investigate the safety and tolerability of NeoSTX in combination with BUPI and EPI, in perineural administration.
Sensory and motor function testing were conducted by a standardized method. Plasma samples were analyzed to determine the pharmacokinetics of NeoSTX and BUPI.
Results: The tested doses of NeoSTX in combination with BUPI and EPI were safe and generally well tolerated. The onset of sensory and motor block was reached within the first hour. Sensory blocks up to 30 hours were observed. NeoSTX and BUPI were systemically absorbed after perineural administration and quantified in all subjects. NeoSTX exposure increased with dose, C_{max} increased in a dose-proportional manner.
Conclusions: The effects of NeoSTX in combination with BUPI + EPI on sensory and motor function have been shown in this trial after perineural administration.

eP430

EVALUATION OF EFFICIENCY OF KETAMINE, METAMIZOL, DICLOFENAC AND MAGNESIUM GARGLE FOR PREVENTION OF POSTOPERATIVE SORE THROAT

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Sore throat after intubation remains one of the most common complaints. The goal of this study was to determine whether it is possible to reduce the incidence and severity of of postoperative sore throat using ketamine, metamizol, diclofenac or magnesium sulfate solution gargle.
Prospective, randomized, placebo-controlled,double blind study was conducted at the National Cancer Research Center of Serbia from January 15th to June 30th, 2017. It included 150 patients scheduled for elective breast surgery under general anesthesia randomized into five groups: 1st group received placebo (20 ml of sterile saline), 2nd - ketamine (40 mg), 3rd - metamizol (250 mg), 4th - diclofenac (75 mg), 5th - magnesium sulfate (20 mg/kg), dissolved in up to 20 ml of saline to gargle for 30 seconds 15 minutes before the intubation. Primary outcome was the presence of sore throat at baseline in recovery room, after 2, 4 and 24 hours after the operation. The severity of the complaint was measured using visual analogue scale (VAS).
The incidence of the presence of sore throat was significantly lower in all groups compared to placebo and in groups which received magnesium sulfate and diclofenac compared to other groups. The pain scores according to VAS scale were also significantly lower in all groups compared to placebo. There were no adverse effects in any of the groups.
Preoperative gargle of a solution containing ketamine, metamizol, diclofenac or magnesium sulfate significantly reduces the incidence and severity of postoperative sore throat without adverse effects.

eP431

ANALYSIS OF THE QUALITY OF LIFE OF NALOXEGOL IN A REAL-WORLD 12-WEEK FOLLOW-UP STUDY, IN PATIENTS WITH CANCER AND OPIOID-INDUCED CONSTIPATION WITH LAXATIVE-INADEQUATE RESPONSE

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Background and aims: Naloxegol is a peripherally acting, μ-opioid receptor antagonist for treatment of opioid-induced constipation (OIC). The main objective of this prospective study was to analyze the quality of life (QoL) of patients with cancer with naloxegol.
Methods: An observational, one year follow-up study was conducted in 16 Spanish centers. Adult patients with active oncological disease, under treatment with opioids for pain control were selected. OIC with inadequate response to laxative(s) was the main diagnosis. The patients received treatment with naloxegol according to clinical criteria. Efficacy was assessed measuring response rate and symptoms evolution by means of PAC-SYM questionnaire. QoL was assessed by PAC-QOL questionnaire.
Results: 126 patients were included in the study (58.2% men, 61.3 average age). Types of tumor were lung (35.7%), breast (37.3%), prostate (15.5%), and gastrointestinal (11,1%). About 75.5% had metastases. At 12 weeks, 80% of the patients were responders to naloxegol 12.5 mg/day and 89.7% to 25 mg/day. 75% and 90.5% of patients were responders to 12.5 mg/day and 25 mg/day, respectively, without concomitant laxative treatment. Response rate differences by tumor were not observed. PAC-SYM and PAC-QOL improvements were significant and even greater in breast cancer compared to other cancers ($p < 0.05$). Karnofsky was not affected and pain intensity decreased from EVA 4.8 to 3.2 ($p < 0.0001$).
Conclusions: The results of this first real-world-data study confirm the efficacy and QoL of naloxegol for the treatment of OIC in patients with cancer. Naloxegol does not interfere with opioid treatment for pain control in oncologic patients.

eP432

DOSING REGIMEN AND TOXICOLOGY OF THE INTRATHECAL AYX2 DNA-DECOY FOR THE LONG-TERM REDUCTION OF CHRONIC FOCAL PAIN SYNDROMES IN RATS

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Aims: AYX2 is a DNA transcription factor decoy targeting Krüppel-like factors 6, 9 and 15. In the spared nerve injury (SNI) model of chronic pain, AYX2 produces up to 70% reduction of mechanical hypersensitivity. This pain suppression lasts for weeks following a single intrathecal (IT) bolus until hypersensitivity resolves in controls. This work was designed to test whether a second AYX2 bolus could influence efficacy and to assess the tolerability of single and repeated AYX2 doses.
Methods: In the pharmacology study, AYX2 or vehicle were administered at day 14 following SNI surgery and either at the peak (day 28) or resolution (day 46) of the effect of that first injection. Efficacy was measured using repetitive von Frey testing. In the toxicology study, AYX2 or vehicle were injected at study day 1 or at days 1, 8 and 15 and animals sacrificed at days 15 or 30, respectively. Two dose levels were tested including the maximum feasible dose. Clinical observations, clinical pathology, mortality and morbidity observations, food consumption, necropsy, organ weight and histopathology of the spinal cord (H&E and GFAP) and brain (H&E and Fluoro-jade B) were conducted. IT were done in 20 uL.
Results: In the SNI model, a second injection of AYX2 enhances and expands AYX2 treatment effect relative to the first injection. In the toxicology study, AYX2 was well tolerated and the no-observed-adverse-effect level (NOAEL) was considered to be the maximum feasible dose.
Conclusions: These data support both AYX2 dosing regimen flexibility and high tolerability.
Funding: Adynxx Inc.

eP433

THE NOVEL SELECTIVE NOX1 INHIBITOR GKT771 PREVENTS INFLAMMATION-INDUCED TRPV1 ACTIVATION AND ACHIEVES POTENT ANALGESIC EFFECTS IN SEVERAL *IN VIVO* PAIN MODELS

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Background and aims: NADPH oxidases (NOX) mediate several types of pain. In dorsal root ganglia (DRG) neurons, NOX1 activates the multimodal pain channel TRPV1 in response to inflammatory mediators. Following oxidation by NOX1-derived reactive oxygen species, PKCetranslocates to the plasma membrane and sensitizes TRPV1. We determined whether the novel, selective NOX1 inhibitor GKT771 could prevent PKCetranslocation and TRVP1 activation, and display analgesic properties *in vivo*.
Methods: In rat DRG neurons, the effect of GKT771 on capsaicin-mediated TRPV1 activation was assessed in the presence or absence of the inflammatory mediator bradykinin (BK). Subsequently, GKT771 was evaluated in mice to assess effects on UV- and capsaicin-induced thermal and mechanical hyperalgesia. GKT771 was also evaluated in LPA-induced neuropathic pain.
Results: In DRG neurons primed with NGF and stimulated with the TRPV1 agonist capsaicin, GKT771 prevented BK-induced TRPV1 activation *via* inhibition of PKCetranslocation to the plasma membrane. *In vivo*, GKT771 dose-dependently suppressed UV- and capsaicin-induced mechanical and thermal hyperalgesia. In these models the efficacy of GKT771 was comparable to, or better than, the efficacy achieved by morphine, a TRPV1 antagonist, or a COX2 inhibitor. GKT771 also attenuated LPA-induced neuropathic pain in mice.
Conclusions: NOX1 inhibition produced potent analgesic activity in multiple *in vivo* models of inflammatory and neuropathic pain. In DRG neurons, GKT771 prevented NOX1-mediated membrane translocation of PKCe, thereby blocking TRPV1 activation elicited by BK. Efficacy in LPA-induced neuropathic pain suggests that GKT771 possesses analgesic mechanisms beyond TRPV1 desensitization. NOX1 inhibitors represent novel, non-opioid analgesics with broad therapeutic potential.

PHYSICAL/OCCUPATIONAL THERAPIES

eP434

PREGABALIN PRESCRIBING IN PRIVATE HEALTHCARE SETTINGS IN SOUTH AFRICA WITH SPECIFIC FOCUS ON DOSAGES

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Background and aims: Pregabalin is registered in South Africa for post-herpetic neuralgia and painful diabetic polyneuropathy in adults. The primary aim of the study was to analyse the prescribing patterns and cost of pregabalin with the focus on dosages.
Methods: A retrospective drug utilisation study was conducted on a South African medical insurance administrator database for 2018. All products in ATC group N03AX16 were analysed.
Results: A total of 726 patients (54.41% males) were prescribed 1888 pregabalin products. The average age of patients was 50.38 (SD=13.59) years. Two trade name products were prescribed (the originator and one generic), and both were available in capsules in strengths of 25 mg, 75 mg and 150 mg. The originator accounted for 72.83% of prescription volume. The 75 mg capsules of the originator product was prescribed the most (44.92% of prescriptions), followed by the 25 mg capsule of the originator. The average Prescribed Daily Dose (PDD) was 73.44 mg. Most prescriptions were dispensed by pharmacies (57.10%), followed by hospitals (32.10%). Smaller quantities were prescribed in hospitals. If only pharmacy prescriptions were considered, the average PDD of pregabalin in the 464 patients was 89.36 (SD= 67.38) mg. The most popular specific PDD was 75 mg, followed by 150 mg.
Conclusions: Pregabalin is used for different indications, also often off-label. Similarly, a wide variation of dosages were prescribed. In pharmacies, a PDD of 75 mg was the most popular dose. The importance of accurate diagnosis codes in electronic databases to enable dosage linking cannot be overemphasised.

eP435

ULTRASOUND GUIDED VALIDATION OF A NEW APPROACH FOR THE INVASIVE TREATMENT OF THE QUADRATUS PRONATOR MUSCLE

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Background and aims: Dry needling is one of the most used techniques to treat Myofascial Pain Syndrome. Nowadays, new, safer and better approaches for the treatment of different muscles are being developed. The present study proposes a new, safe and efficient invasive approach to treat the quadratus pronator muscle.
Methods: An ultrasound guided validation study of the different approaches to treat the quadratus pronator muscle was developed. To do this, an ultrasound study was applied to a series of subjects to obtain the anatomic measurements needed to elaborate an invasive ultrasound guided protocol. This protocol was then performed in all of the subjects. Electrostimulation of the needle was performed to observe the contraction of the muscle, which confirmed its correct placement.
Results: The safest location for this approach is the anterior surface of the radius bone in its distal third. Firstly, the radial artery must be located, then, the needle must be placed between this vascular structure and the volar border of the radius. The mean distance between these structures is 7 millimeters. Secondly, the needle must be inserted medially in a 45-degree angle reaching a maximum depth of 25 millimeters, thus avoiding contact with the radial artery, the median nerve and the anterior interosseous neurovascular bundle. In this study, no contact with any neurovascular structure took place and the quadratus pronator muscle was reached in all the subjects.

Conclusion: The proposed approach proves to be safe, efficient and ultrasound validated for the invasive treatment of the quadratus pronator muscle.

eP436

END OF LIFE CARE: ROLE OF PHYSICAL THERAPY INTERVENTION WITHIN HOSPICE PALLIATIVE CARE

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Background and aims: Palliative care (PC) and best Supportive Care are complex areas to promote and advance. Spreading knowledge and existence of interdisciplinary teams (IDT) are required to ensure best quality of life. Nowadays only 15% of Countries have Hospice and Palliative Care (HPC) integrated inside their national health system.
Physical therapies (PT) are part of a no pharmacological approach, applied by physical therapists (PTs) with the purpose not only to manage the symptoms but also to improve Quality Of Life (QOL) of patients. It allows PTs to be part of an IDT.
Linking PC with physical rehabilitation or physical exercise (PE), the aim was to critically evaluate the evidence for the effectiveness, benefits and weaknesses of PT (exercise) in end-of-life care.
Methods: A systematic review has been conducted. More than 10 among databases and journals has been investigated to answer the aim.
Results: Improvements were observed in physical performance, fatigue, and overall quality-of-life scores. A first physical exercise programme is suggested.
Conclusion: An holistic biopsychosocial intervention is the key for those people (patients and caregivers) with complex and life-threatening illnesses. PTs play an important role inside a team focusing their intervention in improving functionality and QOL turning to physical and functional dimensions of care.
Around 75% of the population will need PC therefore it is indispensable to start offering i) the best services, ii) where patients want, iii) taking the best decisions (right care, right place, right time).

eP437

MENTAL PRACTICE FOR CHRONIC PAIN IN PEOPLE WITH SPINAL CORD INJURY

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Background and aims: The management of chronic pain after spinal cord injury (SCI) is very challenging and there is a lack of evidence on the impact of both pharmacological and non-pharmacological treatments. Mental practice (MP) can be used as an adjunct treatment for motor recovery as well as pain relief. Until now, the effect of MP on pain in SCI patients remains unclear. In this systematic review, we aim to identify therapeutic benefits of MP for both pain management and motor function recovery in SCI people.
Methods: From the 9924 non-duplicate titles of potential relevance, 19 (2 RCT, 9 quasi-RCT, 8 observational) studies were selected for final analysis and were rated using standardized critical appraisal assessment forms from the Joanna Briggs Institute. Because of significant heterogeneity in the included studies, we summarized intervention effects on outcomes of interest descriptively.
Results: The included studies involved 307 patients. Results showed mainly improvement in motor function and pain, although some reported no effect or increase in pain. Training modalities of MP were heterogeneous,

nevertheless most of the studies used shorter sessions (8 to 20 minutes) for pain management, and 30 to 60 minutes sessions for motor improvement. Neurophysiological data demonstrate reorganizations in brain activity, which could be corrected by MP.
Conclusions: High heterogeneity in SCI population, interventions and outcomes measured, makes it hard to judge about therapeutic effects and best MP protocol, especially in SCI with neuropathic pain.
Further clinical trials evaluating MP as adjunct therapy for pain in SCI patients are warranted.

eP438

THE EFFECT OF HYPEREXTENSION EXERCISES ON PAIN AND PHYSICAL FUNCTIONS IN LUMBAR DISC HERNIATION

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Background and aims: Low back pain is a common health problem that negatively affects the physical functions. The aim of this study is to investigate the effects of hyperextension exercises on pain and physical functions in patients with lumbar disc herniation.
Methods: In our study, 48 female patients aged between 18-45 years who were diagnosed with lumbar disc herniation in the L4-S1 interval were randomly divided into two groups (Study Group and Control Group). Conventional Physical Therapy (Hot pack, Ultrasound, TENS) 15 sessions were applied to the participants in both groups. In addition to the participants in the study group, hyperextension exercises were performed. Pain severity (Visual Analogue Scale), performance level (five repetition sit-to-stand tests), lower extremity mobility level (modified sit and reach test) were measured before treatment, after treatment and 3 months after treatment.
Results: In groups, pain severity, performance level, mobility level improved after the treatment ($p< 0.05$). In the third month after the treatment, pain intensity, lower extremity mobility improvement were maintained in the study group ($p< 0.05$). When the groups were compared, a significant difference was found in favor of the study group in which hyperextension exercises were applied in all measurement parameters after the treatment ($p< 0.05$). In all measurement parameters at 3 months after the treatment, the superiority of the groups was not found ($p>0.05$).
Conclusions: The results of this study; hyperextension exercises have a positive effect on pain, performance level, mobility level in lumbar disc herniation.

eP439

THE EFFECT OF KINESIOTAPE APPLIED IN DIFFERENT TENSIONS AT HEALTHY INDIVIDUALS ON PRESSURE PAINS AND PAIN TOLERANCE

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Purpose: The aim of this study is to investigate the effect of kinesiotape technique in applied different tension on pressure pain threshold(P.P.T).
Methods: It is expected that 100 healthy and volunteer male students who study at Mugla Sitki Kocman University. The randomized,controlled,double-blind study is planned to be performed with 4groups consisting of 25individuals with applied different tension (0%(Plasebo), 50%, 75% and 100%).On the dominant sides of the lateral epicondyle areas were taped by KTAI®certified physiotherapist according to preferred diamond shape technique because of easy determination of area to be measured.Algometer was used for P.P.T. All measurements will be performed before,immediately and 30minutes after taping, repeated 3times.The mean values was recorded.Each evaluation was performed by another physiotherapist who is blind to tension and has no experience of kinesiotaping.

Results: The results were obtained in 4cases placebo,4cases 50%tension,1case 75%tension and 1case 100%tension.In placebo group, the mean P.P.T(lb/cm^2)before the taping was15,1±2,56; immediately taping was14,25±0,83 and 30 minutes after was11,92±2,19. In 50%tension group, the mean P.P.T before the taping was12,44±2,74; immediately taping was14,36±5,1 and 30 minutes after was16,91±3,27. In 75% tension group, P.P.T value before the taping was6,43; immediately taping was6,86 and 30 minutes after was9,7. In 100% tension group, P.P.T value before the taping was 19,67; immediately taping was15,33 and 30 minutes after was17,13.
Conclusion: According to data obtained from the pilot study,kinesiotape increases the pain threshold.The study will be completed by the congress date and will be presented in a wider manner with all studying groups.
Acknowledge: We would like to thank Mugla Sitki Kocman University Scientific Research Project for their support.

PSYCHOLOGICAL THERAPIES

eP440

VALUE-BASED COGNITIVE-BEHAVIOURAL THERAPY FOR THE PREVENTION OF CHRONIC WHIPLASH ASSOCIATED DISORDERS: RESULTS FROM A RANDOMIZED CONTROLLED TRIAL WITH CROSS-OVER DESIGN

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Background and aims: Whiplash injuries is a common traffic-related injury with up to 50% of injured continuing to report symptoms one-year post-injury. Ongoing symptomatology often include persistent pain and disability as well as a range of additional bio-psycho-social issues. Unfortunately, conservative treatments have not proven high effectiveness in preventing chronic symptomatology. Instead, targeting of early psychological risk factors and maladaptive pain behaviours may be of importance in optimizing prevention of chronic symptomatology. Hence, we set out to test the potential preventive effect of exposure based on values and life goals, a programme named value-based cognitive-behavioural therapy (V-CBT). The aims were to test whether
1) V-CBT delivered early post-injury was effective compared to wait-list controls and
2) early V-CBT gave better effect compared to V-CBT after a three month wait.
Methods: The present study was a two-armed randomized controlled trial using a cross-over design. Participants (n=92) experienced pain, disability, and at least one psychological risk factor (e.g., enhanced pain-catastrophizing) post-whiplash. Half of the participants were scheduled for the 10 session V-CBT program starting one-week post-randomization with the remaining starting after a three-month delay. Randomization was no later than 6 months post-injury with assessments at baseline, 3, 6, 9, and 12 months post-randomization.
Results: As the trial has only recently finished, results will be presented at the conference.
Conclusions: Results will be discussed in relation to earlier findings and theory. If proven effective, the study will provide new information on early treatment, thereby serving as a step towards preventing chronic whiplash.

eP441

OUTCOMES AND PROCESSES OF PSYCHOLOGICAL FLEXIBILITY DURING ACCEPTANCE AND COMMITMENT THERAPY (ACT), GROUP BASED TREATMENT FOR PATIENTS WITH CHRONIC PAIN IN A RHEUMATOLOGY CONTEXT

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ACT (pronounced as one word) is a type of Cognitive Behavioural Therapy that promotes a therapeutic process known as “Psychological Flexibility”. A key feature of this therapy in the context of chronic pain is that it focuses on behaviour change rather than symptom reduction only. This was a prospective study, which aimed to design, implement and evaluate ACT based, group, interdisciplinary, rehabilitation programmes for people with chronic pain attending rheumatology services. Data was collected at three time points; at assessment, on the last day of the interventions and at a 6-month review date following completion of the programme. Four self- report measures were used to collect data for the primary outcomes. To examine the processes of psychological flexibility, five validated measures were included at each time point and these mapped onto the content of the programme. Paired t-tests and repeated measures ANOVA were used to test differences between time points and these differences were further tested using Pearson‘s Correlation tests. Results showed statistically significant improvements across all the primary outcome measures except for pain. Improvements made during the eight-week programmes were maintained at follow up for all the measures. Furthermore, moderate correlations were found across some of the primary outcomes and the measures of psychological flexibility. These are the first trials, examining ACT for chronic pain that were carried out in a rheumatology context only. As such they add to the existing evidence for the effectiveness of Acceptance and Commitment Therapy for chronic pain in the wider world.

eP442

THE EFFICACY OF DISTANCING-BASED INTERPRETATION BIAS MODIFICATION PROGRAM FOR PAIN OUTCOMES

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Background and aims: Theoretical models for pain suggest interpretation bias affects subsequent pain experience. However, limited research has been conducted on the role of interpretation bias in a subjective pain experience. The purpose of this study was to investigate the efficacy of distancing-based interpretation bias modification for pain outcomes (i.e., pain intensity, threshold, and tolerance).
Methods: This study was conducted on 22 healthy university students in Daejeon, South Korea. Participants were randomly assigned to either the training group (n = 12) or the control group (n = 10). Interpretation bias was assessed before and after conducting the interpretation bias modification for pain (IBM-P). The IBM-P created by E-Prime 2.0 trains participants to choose objective interpretation (vs. pain-related interpretation) to ambiguous pictures. After the IBM-P, participants were asked to complete the cold pressor test and report pain intensity, threshold and tolerance.
Results: Results indicated that the training group showed significantly less interpretation bias and less pain intensity than the control group after the IBM-P. However, no significant difference was found in other pain outcomes (i.e., threshold and tolerance) between the groups.
Conclusions: Results highlight that interpretation bias is modifiable and plays an important role in pain outcome. Thus, using IBM-P for pain patients can be a useful application to improve a patient‘s well-being. Furthermore, future research should consider the precise role of interpretation bias that affects patient‘s pain outcomes.

eP443

SMARTPHONE DELIVERED ACT FOR ADULTS WITH LONGSTANDING PAIN - A PILOT STUDY OF FEASIBILITY AND PRELIMINARY EFFECTS

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ACT as a development of CBT aims at improving the ability to engage in valued living also in the presence of interfering pain and distress, ie. behavioral flexibility. Recently, the use of smartphone and tablets has exceeded the use of desktop computers. To further increase accessibility and effects, we have during the past 3 years developed a flexible digital solution for ACT with chronic pain (ACTsmart) that works on all devices. Treatment content and structure is based on the previously developed internet-delivered ACT treatment (iACT).
The main purpose of this study was to evaluate the feasibility and acceptability of ACTsmart for adult patients with longstanding pain, and conduct a preliminary efficacy testing.
34 adult patients with longstanding pain (mean duration = 19.8 years, *SD* = 11.3), admitted via self-referral, received a smartphone delivered ACT treatment during 8 weeks.
Feasibility data included recruitment rate, retention, compliance to treatment and proportion of planned assessments completed. After completing treatment, semi-structured interviews were conducted to provide information on user experience, i.e. acceptability, comprehensiveness and usability. Efficacy data collected pre- and post-treatment included pain interference, psychological inflexibility, values oriented behavior, anxiety, depression and insomnia.
Preliminary results show that the vast majority of the participants found the treatment acceptable and feasible. Also, analyses illustrate a large effect on primary outcome (pain interference, *d* = 1.10) and process (behavioral flexibility, *d* = 1.20) measures, and moderate to large effects on the secondary treatment outcomes (anxiety and depression). Furthermore, 12 month follow-up assessments shows that effects are retained.

eP444

INTERNET-DELIVERED ACCEPTANCE AND COMMITMENT THERAPY (IACT) USING A MICRO-LEARNING FORMAT FOR ADULTS WITH LONGSTANDING PAIN - A RANDOMIZED CONTROLLED TRIAL

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The utility of Cognitive Behavioral Therapy (CBT) to improve self-management and functioning in chronic pain has repeatedly been shown, but modest effects sizes calls for further improvements. Acceptance and Commitment Therapy (ACT), is a development within CBT, with strong empirical support for longstanding unspecific pain. The treatment objective in ACT is to improve increased behavioral flexibility, ie. the ability to act in alignment with valued activities also in the presence of pain and distress. There is yet a scarcity of studies evaluating internet-delivered ACT.
The aim of the present study was to evaluate the effect of iACT, and internet delivered ACT protocol based on a micro learning format, consisting of daily steps including short texts/audio files and exercises taking less than 15 minutes per day for eight weeks.
Participants (n = 113) were self-referred individuals from all over Sweden (91% females, mean age 49.5 years, mean pain duration 17.8 years, 88% fulfilling criteria for at least one psychiatric diagnosis, e.g. depression, fatigue), Participants were randomized to iACT (n = 57) or a waitlist control condition (n = 56).
In short, only three participants dropped out of treatment, suggesting that iACT has good feasibility. Results show significant improvements following iACT in pain interference and psychological inflexibility as compared to the control group, with effect sizes in the medium to high range. Furthermore, preliminary analyses suggest that the effects of iACT remain 12 months following end of treatment.

eP445

COLOR THERAPY IN COMPLEX TREATMENT OF PAIN SYNDROME IN PATIENTS WITH HEADACHES

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Color art techniques enable painless access to psychological problems, make a path for the analysis of unconscious experiences, and reduce personal resistance.
The purpose of this study is to compare the effectiveness of the complex color therapy (color art therapy and color impulse therapy conducted against the background of drug treatment) and drug therapy in patients with headaches associated with osteochondrosis.
The objectives of the study are the psychological diagnosis of patients with headaches **before** and **after** the treatment, namely: 1) the evaluation of the pain syndrome‘s dynamics (Visual Analog Scale, VAS; McGill Pain Questionnaire, Multidimensional verbal-color pain test), 2) The evaluation of the characteristics of the psycho-emotional sphere (MMPI, Spielberger State-Trait Inventory (STAI), Life Style Index(LSI)).
As a result of the application of the complex color therapy, a significant ($p \leq 0.05$) positive dynamics was observed in the structure of pain syndrome in men and women: the frequency of pain declined, the duration and intensity of pain attacks decreased, the level of neuroticism and anxiety dropped down. The same indicators demonstrated a less significant response to the drug therapy. The effects of complex color therapy conducted on the background of drug treatment in patients with headaches differ depending on the patients‘ gender:
Conclusions
1. Color therapy employing a system of images and meanings has a positive impact on the dynamics of the pain perception and attitudes towards pain.
2. Color therapy in combination with standard drug therapy significantly increases the effectiveness of headache treatment in patients with osteochondrosis.

REHABILITATION THERAPIES

eP446

A FEASIBILITY STUDY OF A CENTRAL NERVOUS SYSTEM FOCUSED TREATMENT FOR PEOPLE WITH FROZEN SHOULDER CONTRACTURE SYNDROME (FSCS)

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Background and aims: Frozen shoulder contracture syndrome (FSCS) is a highly disabling shoulder pathology of poorly understood etiology. Currently there is no therapeutic approach that has shown to improve the natural history course of this condition. Consequently, innovative research in the area of management for FSCS is needed. Different treatments focused on the central nervous system (CNS) have been applied in subjects with shoulder pain and FSCS with promising results.
The aim of this study was to evaluate the feasibility and clinical impact when implementing a CNS-focused treatment program for people with FSCS.
Methods: Ten subjects (8 women and 2 men) with idiopathic FSCS were recruited according to specific inclusion criteria. Participants underwent a 10-weeks intervention program including graded sensory discrimination and graded

motor imagery training. Treatment sessions were delivered as 60-min sessions scheduled weekly. In addition, participants performed 30-min home training sessions five times per week. Pain intensity (VAS 24h), active elevation range of motion (ROM) and disability (SPADI questionnaire) were assessed at baseline (T-1), after a 2 week period of "washout" with no intervention (T0), at the end of treatment (T3) and at three months follow up (T6).
Results: 70% of participants completed the treatment and follow up measurements. No adverse effects were found. At T3 and T6 participants reported improvement in VAS24h (p=0.003), active ROM elevation (p=0.001) and SPADI (p=0.008).
Conclusions: The results of this study suggest that CNS-focused treatment program might be a suitable approach to improve pain and disability in people with FSCS.

eP447

MULTICENTER STUDY ABOUT THE UTILITY OF THE OSTEOPATHIC MANUAL THERAPY ON THE CRONIC PELVIC PAIN SYNDROME

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Objectives: The chronic pelvic pain syndrome includes patients with a permanent pain for the pelvic area starting from an unknown origin, and without any treatment forcing to recommend a simultaneous multimodal approach. The objective was to investigate the utility of an osteopathic treatment protocol, to reduce the pain, and achieve a better quality of life and level the urinary symptoms of these patients.
Materials and methods: The clinical efficiency study consists of 6 session(3 weekly sessions and 3 fortnightly sessions) of manual therapy done by one only physiotherapist depending on the Osteopathy. Patients are recruited by urologists from areas I and II including pre-established criteria and signing an informed consent. The questionnaire used: Chronic Prostatic symptom Index from the National Health Institute (NIH-CPSI) International score of Prostatic Symptoms (IPSS) One- dimensional Scale of Pain (EVA) and a Questionnaire of Hospitalized anxiety-depression (HASD).
The details were processed by an external investigator.
Results: 23 men with CPPS accomplished the criteria with an average age of 45,68.
We reduce the NIH-CPSI from 7,69 points (reduction of a 30,92%, (p< 0,0005).
The IPSS improved 3,20 points, a 22,18% (p< 0,0005), The quality of life item fell 1,67 points, a 31,99%(p< 0,0005).
The EVA scale 2,20 points, a 38,6% (p< 0,0005)
Conclusion: The Osteopathic Manual Therapy can be useful on patients with a chronic pelvic pain syndrome. More studies are required to confirm this observation.

eP448

RETURN TO WORK FOR PATIENTS WITH CHRONIC PAIN- COLLABORATION AND STRUGGLE TO MAKE IT WORK

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Background and aim: To reduce the individual, societal and economic burden of the high sick-leave rates and the low employment rates due to chronic pain it is essential to find effective strategies for returning to work (Scaratti et.al, 2018). Multimodal rehabilitation programs (MMRP) often have the over-all aim of return to work (RTW). However, the effects on RTW are inconsistent (Kamper, 2015). The aim was to explore what persons with chronic pain perceive as limiting and facilitating factors for return to work after MMRP.
Method: Four focus groups and three individual interviews were accomplished in order to get a heterogenetic group of participants regarding different work status. In total 19 patients were interviewed, 14 women and five men. Qualitative content analysis was used to analyze the data (Krippendorff, 2018). The study was approved by the local ethical committee, dnr 2016/184-31.
Results: The participants described facilitating and limiting factors for return to work before as well as during and after MMRP. Three main categories were identified; Personal factors, Work related conditions and Interventions from different stakeholders. According to the participants collaboration between different stakeholders play an important role in the return to work process.
Conclusion: A variety of different facilitating and limiting factors creates complex prerequisites for return to work as described by the participants. Therefor it is important to meet the individual needs in every time period of the rehabilitation process, to bridge the gaps and to strengthen the collaboration between different stakeholders.

eP449

THE PATIENT GOAL PRIORITY QUESTIONNAIRE IN PAIN REHABILITATION - STUDY PROTOCOL FOR A CONTROLLED CLINICAL TRIAL

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Background and aims: The Patient Goal Priority Questionnaire (PGPQ) is a clinical tool to support patients‘ active involvement in rehabilitation and their identification of self-selected prioritised rehabilitation goals. This is a protocol for a study aiming to evaluate the usefulness of the PGPQ for successful activity performance in self-selected activity-related rehabilitation goals in people participating in pain rehabilitation.
Methods: Controlled experimental trial design. Intervention participants: consecutive groups of eight people with persistent pain participating in a 10-week rehabilitation program at a pain specialist clinic. The PGPQ is used at the second session of the program to identify the patient‘s prioritised activity-related rehabilitation goals, for mid-program (week 5) collaborative formative evaluation, and for program evaluation at last session (week 10). For each goal, the participants rate their satisfaction with, self-efficacy for and fear of activity performance, readiness to change to improve performance, and expectations of future activity performance. At 5 and 10 weeks, a question is added on changes made to improve activity performance. A historical control group: people who have received the same rehabilitation program, except from the use of PGPQ, at the same pain clinic. Data on patient reported outcome measures (PROMs) regarding pain interference in daily-life activities, pain-related fear, catastrophizing and work ability, will be retrieved from the Swedish Quality Registry for Pain Rehabilitation for comparisons between the intervention and control groups.
Results and conclusions: The PGPQ is expected to be favourable for increasing satisfaction with activity performance in both prioritised and other daily-life activities.

eP450

GUILLAIN BARRÉ SYNDROME COMPLICATED BY HIP OSTEOARTHROPATHY. A CASE REPORT

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The paraosteoarthropathies are complications occurring in the wake of central but also peripheral neurological pathologies such as Guillain Barré syndrome in its severe form. We report in this case the case of a young patient who presented during the recovery phase a hip osteoarthropathy preceded by significant pain impeding the seated position following a short stay in medical resuscitation in front of vegetative disorders.

eP451

COMPARISON OF TWO DIFFERENT MOBILIZATION TECHNIQUES IN SUBACROMIAL IMPINGEMENT SYNDROME

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Background and aims: The aim of the study is to investigate the efficacy of two different manual therapy methods that cervical mobilization and shoulder mobilization in subacromial impingement syndrome (SIS).
Methods: A total of 40 patients (18 to 60 years old, 28 female and 12 male) were included in the study. The patients were randomized into two groups. The effectiveness of the treatments applied in both groups were assessed before and after treatment with Numerical Pain Rating Scale (NPRS), Shoulder Range of Motion (ROM), Disabilities of The Arm Shoulder and Hand (Quick-DASH), Rotator Cuff Quality of Life (RC-QOL). Both groups received physiotherapy program comprised of fifteen therapy sessions (five days per week). Conservative treatment included ultrasound, transcutaneous electrical nerve stimulation (TENS), cold pack and therapeutic exercises for SIS. In addition to conservative treatment, Group I received shoulder mobilization techniques, while Group II received cervical mobilization techniques.
Results: Regarding comparisons within the groups, both groups showed statistically significant improvement as determined by NPRS, Quick-DASH, ROM and RC-QOL scores.
Conclusion: Mobilization techniques that involve shoulder complex are found to be more effective than cervical mobilization techniques in SIS for most of the assessment parameters in terms of reducing patients pain and enhancing functionality, ROM and life quality.

eP452

CHRONIC PAIN MANAGEMENT PROGRAM - TAILORED EGYPTIAN EXPERIENCE

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Background: Pain is a world wide problem; in developing countries it represents a devastating problem due to many reasons the most import are financial and cultural aspects. This work would represent a tailored pain management program to suit the Egyptian circumstances aiming by this to raise the public and professional awareness about the multidisciplinary team approach for chronic pain management.
Methods: A 6 month prospective study applied upon 5 Egyptian patients with chronic pain, underwent these non pharmacological therapies for the whole duration of the program;
Physiotherapy(aerobic training and endurance), Art therapy and mandala training, virtual rehabilitation, motor

imaginary and mirror training, TENS, cognitive training (online open source), pain and diet education, ergonomics, psychotherapy.
Assessment tools for follow up were; Brief Pain Inventory(BPI) and Visual Pain Analogue(VPA), Hamilton Rating Scale, Epworth Scale, 10 meters speed of walking, Fear Avoidance Belief questionnaire, DN4 scale, beside the regular follow up chart for the vital data and blood sugar.
Results: Patients included in this study were improved at most of the assessed domains including pain scores (BPI and VPA) in addition to ambulation, mood, blood pressure and blood sugar. at the end of the program 4 patients were functioning and all of them showed a manifest reduction in the use of pain medication (number and/or doses).
Conclusions: This tailored Chronic Pain Management program was set to suit low resource setting countries as Egypt, even so this was was a successful initiative that should be replicated on a wider scale.

eP453

EXERCISE FACILITATION METHOD IN COMBINATION WITH COGNITIVE BEHAVIORAL THERAPY USING THE „IKI-IKI REHABILITATION NOTEBOOK“ IN PATIENTS WITH INTRACTABLE CHRONIC PAIN

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Aims: „Iki-iki“ in Japanese means „active“. The purpose of this study was to analyze the effectiveness of a exercise facilitation method in combination with cognitive behavioral therapy (CBT) using the „Iki-iki Rehabilitation Notebook“ in patients with intractable chronic pain.
Methods: The subjects were 5 males and 11 females (48 +/- 20, mean +/- SD, years of age) with chronic low back (n=10), or lower extremity (n=5), or neck (n=1) pain without specific lesions over 3 months. Indications for using the notebook were as follows: 1) Numeric Rating Scale (NRS) for pain >3, and 2) Patient felt disabilities of ADL or social work due to the pain. Patients were asked to write in their notebooks daily or once a week regarding their emotion, mood, anxiety, and exercise routine (muscle exertion, gait distance). Once every 2 weeks, the patients returned to the clinic to go over the notebook/journal. The evaluation contents were NRS (Numerical Rating Scale), PDAS (Pain Disability Assessment Scale), HADS (Hospital Anxiety and Depression Scale), PCS (Pain Catastrophizing Scale), EQ-5D (EuroQol 5 Dimension), PSEQ (Pain Self Efficacy Questionnaire).
Results: The NRS, PDAS, PCS, HADS (anxiety), PSEQ and EQ-5D, but not HADS (depression), improved significantly 10 months after starting to use this notebook.
Conclusion: The Iki-iki Rehabilitation Notebook is a valuable tool to educate patients about the cause and treatment of pain and to actively facilitate CBT-based exercise.

eP454

REGENERATIVE REHABILITATION MEDICINE IN A LATERAL MALLEUS FRACTURE IN AN ELDERLY PATIENT: CASE REPORT

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Backround and Aim: Among fragile elderly fracture due to a fall is related with significant decline in quality of life and extra costs in medical services. We present Extracorporal Shockwave Therapy (ESWT) in combination with high Peripheral Magnetic Stimulation (PMS) and PhotoBioStimulation (PBS) with high intensity Laser in 84 years old female patient who suffered from a lateral malleus fracture after a fall. In clinical evaluation patient reported pain, VAS: 8/10 and was wheel-chaired ridden.
Methods: ESWT parameters were frequency 20Hz, 4000 shocks per session, intensity 4 bars, energy flux density 0.5 J/mm2. PMS parameters were frequency 5Hz, intensity 40% of 3 Tesla, session duration 10 minutes. PBS

parameters were frequency 2Hz, average power 8W and 4080J in total energy per session.
Session rate was twice per week and eight in total for PMS and PBS respectively, while ESWT session was one every ten days and three in total.
Results: Outcome scales were Visual Analogue Scale for pain intensity (VAS: 1/10 versus VAS:8/10), radiological Xray image and patient's gait improvement, as she was able walk with a cane and an AFO Aircast, 1 month post treatment.
Conclusions: ESWT in combination with PMS and PBS in the regenerative rehabilitation medicine field declare the successful boost of the bone regenerative remodeling process suggesting these as a first line treatment in the bone fracture management. These rehabilitation options are well tolerated, short in time, without adverse effects, dec

eP455

GRADED MOTOR IMAGERY IN THE AFFECTIVE COMPONENTS OF PAIN IN SUBJECTS WITH CHRONIC PAINFUL SHOULDER SYNDROME: A CASE SERIES

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Background: Chronic painful shoulder syndrome is a frequent condition characterized by a pain in the lateral edge of the shoulder in a non-specific manner and with constant progression, affecting clinical and affective aspects of pain. Physical Therapy (PT) are based on mechanical models of the tissues, thus achieving that the response to treatment is not favorable. Currently, it has been mentioned that graded motor imagery (GMI) has been an appropriate strategy for patients with chronic pain.
Aim: To describe in the short term the effect of a program of graded motor imagery (GMI) on the improvement of the affective components of pain and range of motion in patients with chronic painful shoulder syndrome.
Methods: Fifty-four patients received a 6-week GMI program. Before the start, at the end of the treatment, kinesiofobia with TAMPA, catastrophization with PCS, pain with visual analog scale (VAS) and active range of motion in flexion (AROM) was evaluated.
Results: At the end of the treatment, the TAMPA showed a decrease of 17. 7 points P = 0.000, for the catastrophization variable (PCS) showed a decrease of 19 points P = 0. 000, for the VAS showed a decrease of 4. 4 points P = 0. 000, for the AROM in flexion, showed an increase of 41° P=0.000.
Conclusions: An GMI program, in the short term, improves the affective components of pain in patients with chronic painful shoulder syndrome. For the AROM improves after the intervention with IMG. All differences are statistically and clinically significant.

eP456

CORRELATION BETWEEN PAIN AND RADIOLOGICAL PARAMETERS IN PATIENTS OLDER THAN 60 YEARS OF AGE WITH DISTAL RADIUS FRACTURE

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Objective: To determine whether there is a correlation between pain and acceptable distal radius fracture (DRF) alignment in patients older than 60 years of age.
Material and method: This correlational study was carried out at the San Borja Arriarán Clinical Hospital. A total

of 210 patients diagnosed with extra-articular DRF, according to the AO classification, were recruited prospectively recruited. Radiological parameters, including radial inclination, residual dorsal angulation and ulnar variance, were evaluated to assess the results of the orthopedic reduction. After the removal of the immobilization and after 6 months of follow-up, the pain intensity was assess with the visual analogue scale (VAS), the wrist function with the PRWE questionnaire and the grip strength with a dynamometer.
Results: Only 88 patients (42%) showed acceptable DRF alignment. After cast removal, the correlations between alignment were as follows: VAS 0.17 ($p = 0.546$), PRWE 0.09 ($p = 0.821$), and grip strength 0.08 ($p = 0.631$). At the 6th months of follow-up, the correlation with the VAS was 0.09 ($p = 0.668$), PRWE 0.05 ($p = 0.882$) and grip strength 0.04 ($p = 0.614$).
Conclusion: In the short and medium term, there was no significant correlation between acceptable alignment according to radiological parameters and pain and function of patients older than 60 years with extra-articular DRF treated conservatively.

SURGICAL THERAPIES

eP457

REGENERATIVE TECHNOLOGIES IN THE COMPLEX TREATMENT OF PATIENTS WITH OSTEOCHONDRAL INJURIES OF THE ANKLE JOINT

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The clinical efficiency of regenerative technologies such as PRP, debridement, abrasive chondroplasty, microfracturing, drilling, osteochondral autotransplantation in the treatment of patients with osteochondral injuries and ankle defects was evaluated. 36 patients aged from 21 to 67 years were treated. In 27 patients, the ankle arthroscopy was performed with the removal of free osteochondral bodies, debridement, tunneling or microfractioning in the affected area followed by the use of PRF and PRP. In 9 patients, the above procedures were performed with arthrotomy and osteotomy of the medial malleolus and osteochondral autotransplantation was performed. In the autotransplantation, the defect place was filled with PRP. The functional condition of the ankle was assessed by VAS and AOFAS before treatment, 3 and 12 months after treatment. In the group of arthroscopic treatment, after 3 months, the pain syndrome in VAS decreased from 6.4 ± 0.4 to 2.3 ± 0.3, and after 12 months to 1.7 ± 0.2. According to AOFAS, the function of the joint increased from 35 ± 5.4 points to 73 ± 4.7 points in 3 months, and to 89 ± 2.9 in 12 months. In the group of patients with osteochondral autotransplantation, the pain with VAS before treatment was 8.1 ± 0.6, 3 months after treatment, the pain syndrome decreased to 3.6 ± 1.8, and after 12 months to 2.1 ± 0.3. The joint function of AOFAS from 34 ± 2.8 points after 3 months increased to 67 ± 4.1, and after 12 months it was 83 ± 2.9.

eP458

LOCAL APPLICATION OF DEXALGIN AFTER LAPAROSCOPIC SURGERY

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Background and aims: Dexketoprofen reveals the properties of a local anesthetic. The purpose of this study was to check the efficacy of local dexalgin administration after laparoscopic surgery.
Methods: We observed 51 patients after laparoscopic cholecystectomy and appendectomy. They were divided into two groups: the comparison (26 persons) and the main (25 persons). Comparison group patients were anesthetized in a standard way: 13 with ketoprofen (CGK) and 13 with dexalgin (CGD). The main group (MG) patients received 50 mg of dexalgin in 20 ml of saline subcutaneously in the places of trocar administration.
Results: Extremely severe postoperative pain was absent in all patients. Severe pain was not noted by anyone MG patient, five (20%) patients were painless for 3 hours and 2 (8%) within 12 hours after the surgery. Narcotic analgesics were not used in this group. Nine patients in the comparison group (34.6%) complained of a severe night pain ≥12 hours after surgery. Four CGD patients needed the third dexalgin administration and one single dose of fentanyl. After two ketoprofen injections, opiates were used in 5 CGK patients (38.5%). In two patients second administration of narcotic analgesics was needed and in one case even third one. The pain syndrome during the first day in the MG was 2.1±0.5 points, the CGD - 2.5±0.2, the CGK - 2.2±0.3 points, and within the next two days - 1.4±0.4, 1.2±0.2 and 1.3±0.5 points, respectively.
Conclusions: Thus, local application of dexalgin showed higher efficacy than other analgesics in the postoperative pain management.

eP459

IMPACT OF SPINAL CORD STIMULATION (SCS) IN THE MANAGEMENT OF CHRONIC NEUROPHAPIC PAIN IN PATIENTS WITH FAILED BACK SURGERY SYNDROME (FBSS)

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Aim of investigation: This study compares effectiveness of Spinal Cord Stimulator (SCS) vs Conventional Medical Management (CMM) in patients with failed back surgery syndrome (FBSS) in Spain.
Methods: 24-month open-label observational prospective multicenter study that compared clinical outcomes, Quality-of-Life (QoL) measured by EQ-5D-3L and use of resources.
Results: 49 patients were included in CMM arm and 38 in SCS. SCS patients were younger, had more back surgeries, used more opioids, and visited more Pain Unit. Pain Detect showed significant differences at baseline between both groups (“current pain” CMM 6.94 versus SCS 7.74 p=0.0159; “intensity strongest Pain” CMM 8.83 versus SCS 9.42 p=0.0026; “light touching” p=0.007; “touch pain with cold /hot P=0.0037”). At 24-months all patients improve, SCS patients more than CMM (“current pain” CMM 6 versus SCS 4.21 p=0.0091; “intensity strongest Pain” CMM 7.77 versus SCS 6.07 p=0.0103; “average pain” CMM 6.46 versus SCS 4.75 p=0.0012).
The EQ-5D Visual Analog Scale improved in SCS patients from baseline versus CMM (baseline CMM 17.25 versus SCS 21.87; 24-months CMM 31.31 versus 45.48 p=0.0324). EQ-5D-3L TARIFF (baseline CMM 0.32 versus SCS 0.22; 24-months CMM 0.37 versus SCS 0.63 p=0.026). Reduction in opioids, anticonvulsants and antidepressants at 24-months compared to baseline was 47%, 29% and 18% for SCS and 14%, 14% and 11% for CMM.
Conclusions: FBSS patients managed in a Pain Unit improve with both treatments. SCS compared to CMM improve the QoL of FBSS patient‘s refractory to CMM. SCS shows a greater reduction in the consumption of pharmacological resources than CMM.

eP460

ASSESSMENT OF EFFICIENCY OF TRANSOSSEOUS ACCESS TO INTERVERTEBRAL DISC L5S1 DURING TREATING OF DISCOGENIC PAIN SYNDROME BY MEANS OF PERCUTANEOUS LASER DECOMPRESSION

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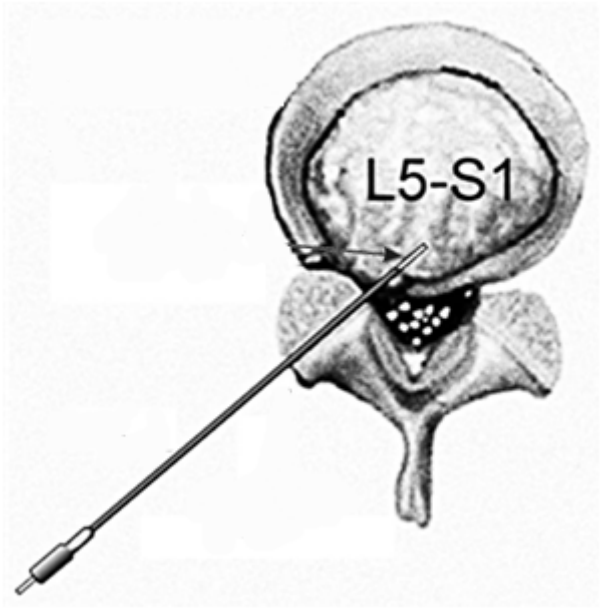
The results of open microdiscectomy do not show high efficiency in patients of specific group, especially in cases when there initially were small spinal disc herniations held by posterior longitudinal ligament. The percutaneous surgery for small hernial bulges draws increased attention, especially this concerns percutaneous laser disc decompression. It is important to find an optimal percutaneous access to the disc.



[needle insertion scheme]

Topographic-anatomical peculiarities of location of L5-S1 disc make it technically difficult to access. There is high risk of development of postpuncture syndrome and iatrogenic radiculopathy of involved L5, S1 roots.
Research objective: To demonstrate justification and high efficiency of transosseous access to intervertebral disc L5S1 during percutaneous laser decompression.
Materials and methods: Laser decompression of intervertebral disc by transosseous access on L5S1 level has been performed on 24 patients. All patients suffered from discogenic pain syndrome for over 8 weeks before the visit. Results of performed transosseous laser decompression of L5S1 disc were assessed in 3 months. All patients noticed relative pain management, minimal pain reduction was from 7 to 4 VAS scores, maximal pain reduction was from 7 to 2 VAS scores.
Conclusion: Transosseous access to intervertebral disc L5S1 helps to eliminate possible development of postpuncture syndrome and iatrogenic radiculopathy, reduces function of homonimous ipsilateral facet joint as of independent pain generator.
Thus, the method of transosseous percutaneous laser decompression of intervertebral disc in L5S1 spinal motion segment is an effective treatment of discogenic pain syndrome.

eP461

A CASE REPORT OF RECURRENT PAINFUL UMBILICAL ENDOMETRIOSIS

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Background: Umbilical endometriosis is a rare condition which accounts for 0.5% of non-genital endometriosis. We report a case of recurrent umbilical endometriosis in a female who presented with a painful lump. Surgical excision remains the treatment of choice.
Method: A case report.
Summary: A 48 year old lady presented with umbilical bleeding. CTAP showed a nodular soft tissue thickening in the umbilicus measuring 1.5 x 1.3 cm with no patent rectus cyst, urachal cyst, fistula or umbilical abscess. She underwent excision of the umbilical nodule and histology shows endometriosis with no malignancy. She was not started on any hormonal medication.
She complained of cyclical pain over a recurrent umbilical nodule a year later with no bleeding and no signs of pelvic endometriosis. On examination, there was a 1cm tender umbilical nodule. Ultrasound showed a 1.3cm well defined avascular hypoechoic umbilical nodule. She underwent a repeat re-excision and umbilicus was reconstructed using a purse-string suture technique**.** Histology confirmed scar tissue endometriosis. Recovery was uneventful with no more pain.
Discussion: Umbilical endometriosis should be considered as a differential diagnosis in any female presenting with a painful or bleeding umbilical nodule. Differential diagnosis for umbilical lesions includes umbilical hernia, keloid, foreign body granuloma, desmoid tumour and hemangioma.
Surgical excision of a painful umbilical nodule with sufficient healthy margins to prevent local recurrence is the recommended management with a subsequent course of progestins to induce endometrial atrophy. Alternative treatment includes complete umbilical resection with or without repair of underlying fascia and peritoneum.

eP462

THE DYSMENORRHEA IMPROVEMENT EFFECT OF RESECTION OF DEEP INFILTRATING ENDOMETRIOSIS AFTER CONTINUOUS HORMONAL THERAPY

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Objective: In the treatment of endometriosis, improve dysmenorrhea is an important task. The patient of endometriosis with dysmenorrhea often has deep infiltrating endometriosis (DIE). We select hormonal therapy at first in these cases. Surgery for the patient with dysmenorrhea, especially who are not effective the hormonal therapy, we resect endometriosis lesions including DIE. In this study, we examined dysmenorrhea improvement effect of DIE resection surgery and hormonal therapy.
Method: The subjects of this study were targeted 18 patients who received DIE resection surgery and follow-up more than 1 year after surgery in our hospital. We conducted a retrospective study to compare the change of dysmenorrhea before and after surgery by Visual analog scale (VAS) score. It was also similarly examined the effect of the presence or absence of hormonal therapy.
Results: Surgery complications such as organ damage and massive bleeding were not observed. Dysmenorrhea was disappeared (VAS 0) after surgery in 10 cases (56%). The patients who underwent hysterectomy was disappeared dysmenorrhea in 6/7cases(86%). On the other hand, Patients who had not received hysterectomy was 50%. In these cases, there was no difference in improvement rate of dysmenorrhea whether they received hormonal therapy or not.
Conclusion: DIE resection surgery especially with hysterectomy was effective against dysmenorrhea.Whether the patient received hormonal therapy or not, it was no diferrence in outcome of the surgery.

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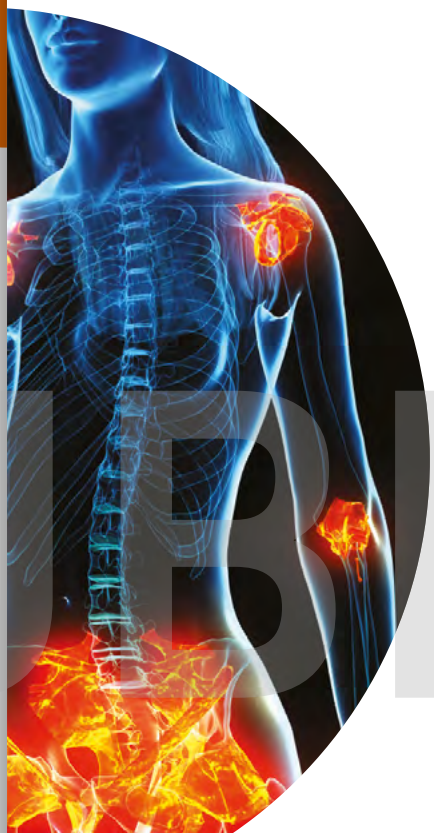

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