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MRI monitoring of the effectiveness of personalized complex of physiotherapy exercises with Glisson loop at dystrophic-degenerative changes in the cervical spine

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According to the World Health Organization data (2018), from 30% to 87% of the most active working-age population aged 30 to 60 suffer from dystrophic-degenerative spine disease, and up to 80% of cases are accompanied by temporary disability [4].

In the pathogenetic process of development of dystrophic-degenerative changes in the spine, mechanoreceptors, Ruffini bodies in the cervical spine, as well as biologically active products of depolymerization of proteglycans of the nucleus pulposus and an autoimmune inflammatory reaction, which is caused by fragments of the nucleus pulposus prolapsing into the perineural and epidural space are important [1, 6]. Physical exercise treatment is useful in patients with neck pain, and in combination with cervical traction in dystrophic-degenerative changes in the spine, mechanical and manual traction [8], yoga, cognitive behavioral therapy, acupuncture, progressive relaxation, massage, manual therapy, acetaminophen and antidepressants shortens the rehabilitation period for these people [3].

The purpose of the study is to evaluate the effectiveness of complex treatment of cervical spine dystrophic-degenerative changes with Glisson's loop.

Material and investigation methods

For the period 2018-2022 327 people aged 20 to 55 years (mean age 38 ± 0.5 years) with dystrophic-degenerative lesions of the cervical spine according to MRI/CT data turned to the Evminov Vertebral Health Center (Kyiv). Protrusions of the cervical spine were diagnosed in 185 (56.6%) patients, and hernias – in 202 (61.8%) patients. Two groups of investigated patients were identified: before treatment (group I – 327 patients) and during treatment (group II – 296 patients) 2-6 months after the start of treatment.

The data were processed by the method of variation statistics with IBM SPSS Statistics Base version 22.0 program.

Results and discussion

At the time of the initial visit, all patients in the clinical picture of the disease dominated by complaints of dizziness, cephalalgia, and rises in blood pressure; weakness, pain when moving in one of the upper limbs, limitation of movement when tilting the head. In 193 (59%) people, a crunch was observed in the cervical spine when turning the head, mainly occurring in the morning after leep and towards the end of the day. The listed complaints did not have age and gender differences, but were associated with a long-term static load in the process of work.

An objective examination of 264 patients demonstrated pain at palpation in the collar zone; in the paravertebral region of the cervical region – in 199, positive Sperling's symptom – in 174, Wartenberg's brachialgia – in 59, Dupleix's syndrome – in 68, Steinbroker's syndrome – in 33 examined patients (Fig. 1).

All patients at the I stage of treatment were prescribed an orthopedic regimen, a personalized set of therapeutic physical exercises (exer-

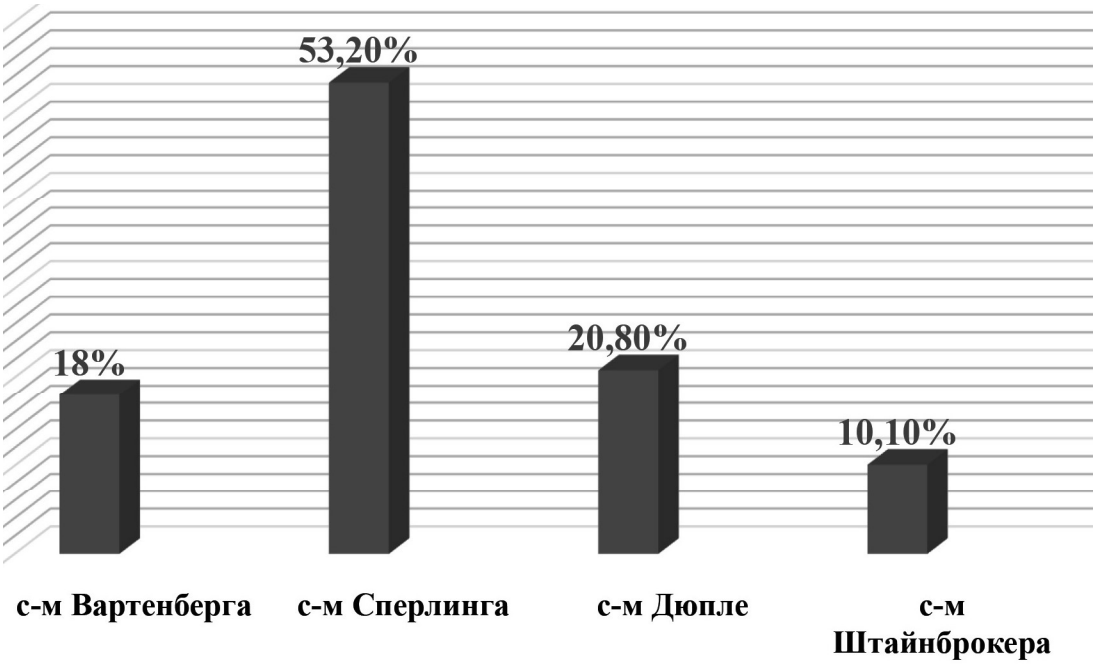

Fig . 1. *Data of an objective examination before treatment.*

cise therapy) at home, aimed at dosed traction of the cervical spine in the Glisson loop (negative installation angle of the Evminov'board): traction 0 or 0.5 kg, static load with obligatory rest after each exercise for 5-7 seconds (intermittent traction). A personalized complex of exercise therapy was prescribed to be performed 3-4 times a day, for 4-6 weeks. At the II stage of rehabilitation measures, in the presence of positive results, the patient increased the traction force in the Glisson's loop by 0.5 kg. For the purpose of static-dynamic power load on the cervical spine, rest periods of 5 seconds were followed after each exercise. The time of the exercises was lengthened by increasing the repetitions of the exercises themselves, and the frequency of the exercise therapy complex decreased to 2-3 times a day. All patients who applied to the Evminov Vertebral Health Center had previously received medication support course without a stable positive result after the end of therapy.

In the process of complex treatment of dystrophic-degenerative changes in the cervical spine with Glisson loop, after 2-6 months a pronounced positive trend was observed in all patients, which was manifested by the absence of dorsalgia, paresthesias in the cervical spine.

Complaints of patients with dystrophic-degenerative lesions of the cervical spine.

Symptoms	Before treatment (n=327)		In the process of treatment (n=296)	
	abs	%	abs	%
Cephalgia	201	61,5	84	28,4*
Dizziness	106	32,4	28	9,4**
Elevated blood pressure	88	26,9	42	14,2
Pain in the upper limb	69	21,1	0	0**
Restriction of movements at head tilting	234	71,5	129	43,6*
Cracking in the cervical spine	193	59,0	60	20,3*

Note: * – reliable differences, $p<0.05$, ** – reliable differences, $p<0.01$.

Fig. 2. *Results: size reduction of C5-C6 hernia from 6 mm → 4 mm. A – before treatment; B – in the process of treatment (after 4 months).*

Only in 44 (14%) women who were in the period of menopause, there was nocturnal dysesthesia of the upper extremities (Table). They were recommended to continue the course of performing therapeutic exercises in the Glisson loop.

2 months after the start of the treatment, an objective clinical examination revealed a positive Steinbroker's syndrome in three patients.

Clinical example

Kh., (male, 43 years old) entered with a diagnosis of cervical spine dystrophic-degenerative lesion: paramedial hernia of C5-C6 up to 6 mm with rough compression of the right radicular funnel. The 1st complex of exercises in the Glisson loop was prescribed according to a personalized program against the background of compliance with the orthopedic regimen. Prior to the initial visit to the Evminov Vertebral Health Center, the patient completed a course of nonsteroidal and steroidal anti-inflammatory drugs (diclofenac sodium, dexamethasone), muscle relaxants (tolperisone hydrochloride), however, there were no significant positive treatment results. The patient was prescribed an orthopedic regimen, a personalized exercise therapy complex at home conditions. After 6 weeks of treatment with Glisson's loop, it was noted: a decrease in pain symptoms, unstable remission, residual pain when turning and tilting the head, pain contracture.

II stage of rehabilitation measures was prescribed in the Glisson loop according to an individual program. After 2 months the pain contracture was eliminated, and stable remission was noted. After 4 months from the initial visit to the Evminov Vertebral Health Center, a repeated cervical spine MRI was performed (Fig. 2). The patient continues personalized treatment.

Traction of the cervical spine combined with manual therapy and strengthening exercises, has been proven [2] to be a useful intervention to reduce disability in patients with neck and arm pain (radiculopathy).

A prospective open observational study of 36 patients referred by a physician for symptoms

suggestive of cervical radiculopathy has been described [9].

All patients received the same treatment: 30-minute cervical spine traction protocol 2 times daily for 5 consecutive days. As a result, the motor function of the neck improved by 48.3% and the consumption of drugs decreased.

There are works [5, 10, 11] demonstrating that intermittent stretching instead of permanent cervical spine kinesitherapy is effective at radiculopathy, spondylosis.

Conclusion

A multidisciplinary approach applying traction treatment of dystrophic-degenerative diseases of the cervical spine at home conditions with Glisson loop allows to reduce the duration of severe pain syndrome, functional recovery of the motor and stabilizing functions of the spinal muscles.

The research was conducted in accordance with the principles of bioethics set out in the WMA Declaration of Helsinki – "Ethical principles for medical research involving human subjects" and "Universal Declaration on Bioethics and Human Rights" (UNESCO).

Conflict of interest information. The authors declare no conflicts of interest related to the publication of this article.

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MRI MONITORING OF THE EFFECTIVENESS OF PERSONALIZED COMPLEX OF PHYSIOTHERAPY EXERCISES WITH GLISSON LOOP AT DYSTROPHIC-DEGENERATIVE CHANGES IN THE CERVICAL SPINE

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The purpose of the work is to evaluate the effectiveness of complex treatment of dystrophic-degenerative changes in the cervical spine using the Glisson's loop.

A dynamic analysis of the state of health of 327 people aged 20 to 55 years with dystrophic-degenerative lesions of the cervical spine was carried out. Two groups of examined patients were distinguished: before treatment (group I – 327 patients) and in the course of treatment (group II – 296 patients), 2-6 months after the start of the treatment.

The results demonstrated that in the process of complex treatment of dystrophic-degenerative changes in the cervical spine using the Glisson loop, after 2-6 months, a pronounced positive trend was observed in all patients, which was manifested by the absence of dorsalgia, paresthesias in the cervical spine. Only 14% of women in the menopausal period had nocturnal dysesthesia of the upper extremities.

Thus, a multidisciplinary approach using traction treatment of dystrophic-degenerative diseases of the cervical spine at home using the Glisson loop can reduce the duration of severe pain syndrome, functional recovery of the motor and stabilizing functions of the spinal muscles.

***Key words*:** Glisson's loop, traction, cervical spine, osteochondrosis, protrusion, hernia.

МРТ-МОНІТОРИНГ ЕФЕКТИВНОСТІ ПЕРСОНАЛІЗОВАНОГО КОМПЛЕКСУ ЛІКУВАЛЬНОЇ ФІЗКУЛЬТУРИ З ВИКОРИСТАННЯМ ПЕТЛІ ГЛІССОНА ПРИ ДИСТРОФІЧНО-ДЕГЕНЕРАТИВНИХ ЗМІНАХ ШИЙНОГО ВІДДІЛУ ХРЕБТА

І.О. Афанасьєва, І.В. Андрущенко, Т.В. Безгодов, Ламія Гаржуме

Мета – оцінити ефективність комплексного лікування дистрофічно-дегенеративних змін шийного відділу хребта з використанням петлі Гліссона.

Проведено динамічний аналіз стану здоров'я 327 осіб віком від 20 до 55 років із дистрофічно-дегенеративним ураженням шийного відділу хребта.

Виділено 2 групи обстежених: до лікування (I група – 327 пацієнтів) та у процесі лікування (II група – 296 осіб) через 2-6 місяців від початку лікування.

У процесі комплексного лікування дистрофічно-дегенеративних змін шийного відділу хребта з використанням петлі Гліссона, через 2-6 місяців спостерігалася виражена позитивна динаміка у всіх пацієнтів, яка проявлялася відсутністю дорсалгії, парестезій у шийному відділі хребта. Лише у 14% жінок, які перебували у періоді менопаузи, відзначалася нічна дизестезія верхніх кінцівок.

Висновки. Мультидисциплінарний підхід з використанням тракційного лікування дистрофічно-дегенеративних захворювань шийного відділу хребта в домашніх умовах з використанням петлі Гліссона дозволяє скоротити період тривалості вираженого больового синдрому, функціонального відновлення рухової та стабілізуючої функції м'язів хребта.

Ключові слова: петля Гліссона, тракція, шийний відділ хребта, остеохондроз, протрузія, грижа.