P619
ADIPOSE TISSUE-DERIVED MESENCHYMAL STEM CELLS AS BIOASSAY TO CLEARLY UNDERSTAND THE EFFECTS OF CANNABINOIDS ON BONE MINERALIZATION

G. Palmini[1], S. Donati[1], C. Romagnoli[1], F. Giusti[1], F. Miglietta[1], C. Aurilia[1], G. Galli[1], T. Iantomasi[1], P. Chiarugi[1], M. L. Brandi[2]

[1]Dept. of Experimental & Clinical Biomedical Sciences, University of Florence, [2]Fondazione Italiana Ricerca sulle Malattie dell'Osso (FIRMO Onlus), Florence, Italy

Objective: To date, we are still not sure of the role of cannabinoids and of endocannabinoids system on several physiological processes, including bone mineralization. Therefore, in this study we developed a bioassay to evaluate the role of the endocannabinoid system and anandamide (AEA) in osteoblastogenesis.

Methods: Adipose-tissue derived mesenchymal stem cells (preadipocytes (PA)) are able to differentiate in several cellular lineages, and in particular to differentiate into osteoblasts, producing alkaline phosphatase (ALP), collagen, osteocalcin and hydroxyapatite (HA) deposits. To start studying the effects/role of the endocannabinoid system on the mineralization process we have evaluated the in vitro effects of a range of AEA concentrations on ALP activity and mineralization, of three primary PA lines.

Results: For the first time we have observed that all the tested AEA concentrations inducing a significant increase of ALP activity as well as an equal increase in the production of HA deposits during in vitro osteogenic differentiation.

Conclusion: For the first time, thanks to the established bioassay of PA lines, we reported that our findings indicate that cannabinoids and the endocannabinoid system play an important role in supporting bone mineralization. In relation to the obtained results, we are currently evaluating not only the expression levels of osteogenic marker genes and of the endocannabinoid system genes, but also the modulation of osteogenic microRNAs (miRNAs) during in vitro osteoinduction with the several concentrations of AEA. After that, we will proceed to evaluate the role of other cannabinoids which are important phytocomponents of *Cannabis sativa*. The main aim of all these future perspectives is to clarify the role of cannabinoids on mineralization, which is still unknown due to the lack of valid human in vitro models, but also to identify new natural components of cannabis that may in future, thanks to the results obtained in these studies, play a role in the regeneration of bone tissue in pathological states, such as osteoporosis.

P620
CARDIOVASCULAR RISK IN PATIENTS WITH OSTEOARTHRITIS: RESULTS OF THE ALL-UKRAINIAN STUDY "PARTNER"

O. Iaremenko[1], O. Volodko[2], N. Hrechanyk[3], L. Vedenkina[4], N. Ahafonova[5], S. Brusentseva[6], H. Doroshenko[7], M. Komkina[1]

[1]Bogomolets National Medical University, Kyiv, [2]Rivne City Hospital #2, Rivne, [3]Dnipro Regional Clinical Hospital I.I. Mechnikov, Dnipro, [4]Poltava Regional Clinical Hospital M.V. Sklifosovsky, Poltava, [5]Kryvyi Rih City Hospital #8, Kryvyi Rih, [6]Kryvyi Rih City Hospital #9, Kryvyi Rih, [7]Kharkiv City Outpatient Clinic #6, Kharkiv, Ukraine

Objective: Osteoarthritis (OA) is extremely common in adults aged 60 and over and predicts cardiovascular diseases (CVD) [1]. 38% of people with OA have CVD compared to 9% of people without OA [2]. There are no studies on the prevalence of CVD among patients with OA in Ukraine. The aim of the study "PARTNER" was to study the prevalence of cardiovascular risk in patients with OA.

Methods: The multicenter PARTNER study (Prevalence of cardiovascular risk in newly diagnosed primary osteoarthritis patients) included 4769 patients with newly diagnosed OA who consulted medical center doctors in 22 regions of Ukraine in August 2019 - March 2020.

Results: Full data were collected from 3936 patients, including 65.9% women and 50% patients aged 50-59 y. A significant number of these patients (2946 - 75%) even without the calculation of SCORE were classified as people with high or very high risk of cardiovascular complications, as they already had atherosclerotic cardiovascular disease (55%), diabetes mellitus (21%), very high levels of blood pressure (15%) and/or cholesterol and chronic kidney disease (5%). According to the results of the SCORE calculation, we identified another 127 patients with very high cardiovascular risk. Total number of OA patients with high and very high cardiovascular risk reached 3073 (78%). So patients with newly diagnosed primary OA in Ukraine are much more likely to have cardiovascular pathology compared to data from other countries.

Conclusion: Among patients with newly diagnosed primary OA in Ukraine there is a significant prevalence of cardiovascular pathology and a high risk of developing serious cardiovascular events, according to the results of the "PARTNER" study. This must be taken into account when choosing NSAIDs in such patients especially when long-term therapy is required.

References:

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