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AbstractBook

of frailty (OR 1.02 [1.00, 1.04], P=0.029 and OR 6.43 [2.23, 18.51], P=0.001 respectively) and lower physical function (r=−0.205 and r=−0.292). In conclusion, different TRP metabolites have various associations with physical performance, frailty, and sarcopenia. Defining the underlying mechanisms may permit the development and validation of new biomarkers and therapeutics for frailty and musculoskeletal conditions targeting specific metabolites of the TRP catabolic pathway.

P559

LIPID SIGNALING MEDIATORS REGULATE BONE-MUSCLE CROSSTALK DURING AGEING

A. A. Al Saedi[1], W. Z. Zhiying[2], M. B. Brotto[2], G. D. Duque[1]

[1]1Australian Institute for Musculoskeletal Science (AIMSS), Geroscience & Osteosarcopenia Research Program, The University of Melbourne and Western Health, St. Albans, Australia, [2]Bone-Muscle Research Center, College of Nursing and Health Innovation, The University of Texas-Arlington, Arlington, USA

Due to its association with adverse outcomes, the simultaneous concurrence of sarcopenia and osteoporosis, a condition termed osteosarcopenia, is of public health concern and interest. Osteosarcopenia is an age-related pathological condition characterized by fragile bone and exhibiting low muscle mass and function thus leading to high mortality and financial threat. Fat infiltration contributes to age-related bone and muscle decline. This effect could be explained by fat-secreted factors, which could be locally secreted in the muscle and bone milieu thus affecting cell-cell interactions, and cell function and survival. However, the specific fat-related secretory factors that simultaneously affect those tissues remain unknown. Using new targeted-lipidomics approach via a targeted liquid chromatography with tandem mass spectrometry (LC-MS/MS) approach, we comprehensively quantified fat composition (lipid mediators [LMs]) in gastrocnemius, serum and bone marrow flushes from tibia and femur obtained from 6, 24 and 42 weeks C57BL6 mice. Compared to young mice (6 wks), all tissues in older mice showed significantly higher levels of arachidonic Acid (AA) (p=0.042) and AA-derived eicosanoids, PGA_2 (p<0.0001), TXB_2 (p<0.001), 11,12-EET, which are known to affect muscle and bone function. Moreover, Lipoxin B_4, another AA product and an enhancer of bone turnover and negative regulator for muscle, showed significantly lower values in older mice compared to young mice in both genders (p=0.0092). Furthermore, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) autoxidation products (20-HDoHE, 11-HDoHE, 7-HDoHE and 4-HDoHE), an omega-3 fatty acids that negatively regulate bone and muscle health were significantly higher in older mice (p=0.003, p=0.020, p=0.025, p=0.045 respectively). In conclusion, elucidation of those LMs that are present in ageing muscle, serum and bone marrow could provide valuable evidence on the role of fat infiltration in osteosarcopenia. These results suggest that LMs could play a role in modulating musculoskeletal function during aging, which might relate to sarcopenia and osteoporosis, and could become therapeutic targets in the future.

P560

HEALTH TECHNOLOGY ASSESSMENT OF DIFFERENT GLUCOSAMINE FORMULATIONS AND PREPARATIONS CURRENTLY MARKETED IN THAILAND: IMPACT OF THEIR CLINICAL EFFECT AND SELLING PRICE

O. Bruyere[1], J. Detilleux[1], J.-Y. Reginster[1]

[1]ULiège, Liege, Belgium

Objective: To assess to cost-effectiveness of different glucosamine formulations and preparations used for the management of osteoarthritis in Thailand.

Methods: We use a validated model to simulate the individual patient Utility score from aggregated data available in 10 different clinical trials. We then used the Utility score to calculate the quality-adjusted life year (QALY) over a 6-month treatment horizon. We used the 2019 public costs of glucosamine products available in Thailand to calculated the incremental cost/effectiveness ratio. We separated the analyses for prescription-grade crystalline glucosamine sulfate (pCGS) and other formulations of glucosamine. A cost-effectiveness cutoff of 3.260 $/QALY was considered.

Results: Regardless of the glucosamine preparation (tablet or powder/capsule), the data show that pCGS is cost-effective compared to placebo over a 3 and 6-month time horizon. However, the other glucosamine formulations (e.g., glucosamine hydrochloride) never reach the breakeven point at any time.

Conclusion: Our data show that pCGS is cost-effective in the management of osteoarthritis in the Thai context while other glucosamine formulations are not.

P561

NESFATIN-1 IS ASSOCIATED WITH OSTEOPOROSIS IN PATIENTS WITH RHEUMATOID ARTHRITIS

E. V. Papichev[1], Y. R. Akhverdyan[1], Y. V. Polyakova[1], L. E. Sivordova[1], B. V. Zavodovsky[1]

[1]Research Institute of Clinical and Experimental Rheumatology named after A.B. Zborovsky, Volgograd, Russia

Objective: Nesfatin-1 is a multifunctional protein, associated with an insulin-sensitivity and demonstrating an anorexigenic effect [1]. Nesfatin-1 is positively associated with an inflammation level in patients with rheumatoid arthritis [2]. However, there is lack

of evidence, whether nesfatin-1 level may be associated with a bone metabolism. Our aim was to study the association between serum nesfatin-1 level and prevalence of osteoporosis in patients with rheumatoid arthritis.

Methods: 110 patients with rheumatoid arthritis were enrolled in our study. Nesfatin-1 serum levels were assessed by ELISA using a commercial test system. The diagnosis of osteoporosis was set according to the recommendations of WHO. We determined serum levels of 25-hydroxycalciferol (25(OH)D), C-terminal telopeptide of type I collagen (CTX-1) and procollagen type I N-propeptide (P1NP). Nonparametric characteristics are presented as Me [Q1-Q3]. The Mann-Whitney test (Z) was performed to determine the differences between groups. Spearman's ρ was used to describe correlation.

Results: Median level of nesfatin-1 was 44.5 [25.9-67.2]. Median nesfatin-1 serum levels were higher among patients with osteoporosis (45.2 [27.3-74.5] ng/ml vs. 40.1 [21.4-53.4] ng/ml; Z=-2.06; p=0.040). No correlation was observed between serum levels of nesfatin-1 with 25(OH)D and CTX-1 (ρ=-0.10; p=0.304 and ρ=0.09; p=0.351 respectively). Weak positive correlation was observed between nesfatin-1 and P1NP serum levels (ρ=0.25; p=0.009).

Conclusion: Serum nesfatin-1 levels were higher in patients with osteoporosis. Weak positive correlation was observed between serum nesfatin-1 and P1NP levels. Due to our study, nesfatin-1 is positively associated with the level of bone metabolism and osteoporosis development. More studies are needed to clarify the mechanisms of observed associations.

References:

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2. Kvlividze T, et al. Ann Rheum Dis 2021;80(S1):1437

P562

OSTEOPOROSIS MEDICATION ADHERENCE TOOLS: A SYSTEMATIC REVIEW

E. Hesari[1], M. J. Mansourzadeh[2], M. Sanjari[2], N. Fahimfar[2], K. Khalagi[2], A. Ghazbani[3], A. Ostovar[2], A. Fotouhi[1]

[1]School of Public Health, Dept. of Epidemiology & Biostatistics, Tehran University of Medical Science, Tehran, [2]Osteoporosis Research Center, Endocrinology and Metabolism Clinical Sciences Institute, Tehran University of Medical Sciences, Tehran, [3]Student Research Committee, Bushehr University of Medical Sciences, Bushehr, Iran

Objective: Poor adherence reduces the effectiveness of osteoporosis treatment, resulting in lower BMD gains and subsequently higher fractures rates. Reliable and practical tools are needed to measure medication adherence. The aim of this systematic review was to find osteoporosis medication adherence measurement tools and assess their applicability.

Methods: We searched for osteoporosis adherence measurement tools and all their related keywords in PubMed, Embase, Web of science and Scopus databases on 12 April, 2021. After excluding duplicates in the Endnote software, two researchers independently investigated the remained articles and included all articles that used a method for measuring medication adherence of osteoporosis. Adherence meant both terms compliance and persistence. Quality assessment was performed for selected articles by Newcastle-Ottawa Quality Assessment Scale.

Result: A total of 3821 articles were found, of which 180 articles met the inclusion and exclusion criteria. In general, 5 types of methods were observed to measure medication adherence of osteoporosis including direct methods (n=4), pharmacy records (n=17), questionnaires (n=13), electronic methods (n=1) and tablet counting (n=1) (Figure). Direct methods included measurement of bone turnover markers such as uNTX, sCTX and the BMD. The most commonly used adherence measurement based on pharmacy records was medication possession ratio (MPR). Among questionnaires, Morisky Medication Adherence Scale was mostly used.

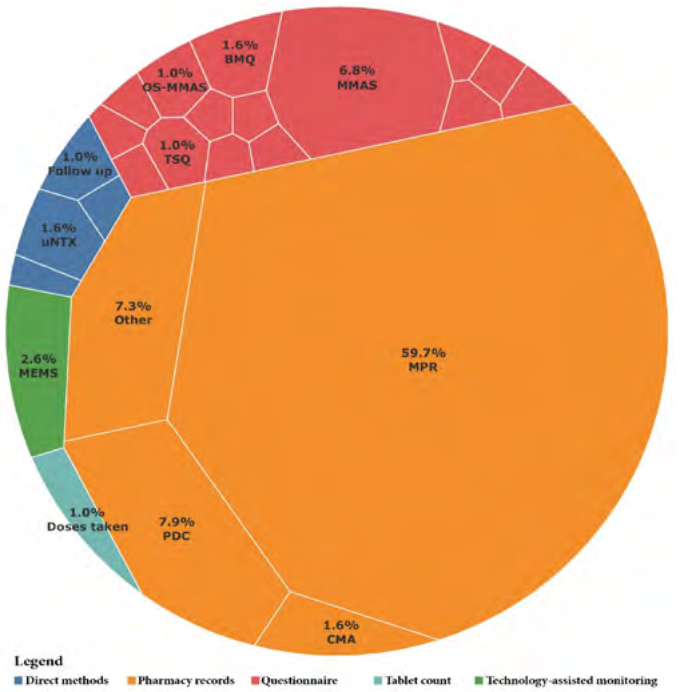

Figure. Osteoporosis medication adherence tools based on their frequency among the retrieved studies

Conclusion: A variety of direct and indirect tools have been introduced or used in researches aiming at measuring adherence to osteoporosis treatment. Feasibility, cost, validity, availability, invasiveness, simplicity, and flexibility are among the factors that should be considered.