$p = 0.597$), nor the fact of performing DXA significantly affected the risk of MOF (Wilcoxon test, $p = 0.185$) or of HF (Wilcoxon test, $p = 0.785$) by FRAX.

Conclusion: In line with Portuguese guidelines, FRAX seems to be, in itself, a very useful tool in patients with PsA, and the performance of DXA does not significantly alter the indication for anti-osteoporotic treatment.

References:

- [1] Rodrigues AM, Canha H, Marques A, Ambrosio C, Borges J, Coelho P, et al. Portuguese recommendations for the prevention, diagnosis and management of primary osteoporosis - 2018 update. *Acta Reumatol Port.* 2018;43(1):10-31.
- [2] Del Puente A, Esposito A, Parisi A, Atteno M, Montalbano S, Vitiello M, et al. Osteoporosis and psoriatic arthritis. *J Rheumatol Suppl.* 2012;89:36-8.
- [3] Gulati AM, Michelsen B, Diamantopoulos A, Grandaunet B, Salvesen O, Kavanaugh A, et al. Osteoporosis in psoriatic arthritis: a cross-sectional study of an outpatient clinic population. *RMD Open.* 2018;4(1):e000631.
- [4] Adami G, Fassio A, Rossini M, Caimmi C, Giollo A, Orsolini G, et al. Osteoporosis in Rheumatic Diseases. *Int J Mol Sci.* 2019;20(23).
- [5] Kanis JA, Harvey NC, Johansson H, Oden A, Leslie WD, McCloskey EV. FRAX Update. *J Clin Densitom.* 2017;20(3):360-7.

Disclosure of Interests: Filipe Pinheiro: None declared, Maria Rato: None declared, Bruno Miguel Fernandes: None declared, Salomé Garcia: None declared, Sara Ganhão: None declared, Pedro Madureira: None declared, Miguel Bernardes Speakers bureau: Abbvie, Amgen, Biogen, Eli-Lilly, Glaxo-Smith-Kline, Pfizer, Janssen, Novartis, Lúcia Costa: None declared
DOI: 10.1136/annrheumdis-2020-eular.2515

SAT0479

IMPACT OF TRABECULAR BONE SCORE ON INTERVENTION THRESHOLD FOR BONE SPARING THERAPY IN PATIENTS REFERRED FOR BONE MINERAL DENSITY

C. Rakieh¹, S. Ho², R. Butler¹. ¹The Robert Jones and Agnes Hunt Orthopaedic Hospital, Rheumatology, Oswestry, United Kingdom; ²The Robert Jones and Agnes Hunt Orthopaedic Hospital, Medicine and Rehabilitation, Oswestry, United Kingdom

Background: Trabecular bone score (TBS) is an index of skeletal quality that has been validated as an independent risk factor for fracture and incorporated into fracture risk assessment (FRAX). TBS provides information on bone microarchitecture not captured from standard bone mineral density (BMD) measured by dual energy X-ray absorptiometry (DXA). Nonetheless, the clinical implications of using TBS in routine practice are not yet fully understood and warrant further evaluation.

Objectives: To determine whether lumbar TBS can have an impact on clinician's treatment threshold derived from DXA and clinical risk factors: does the addition of TBS to DXA measurements make the clinician more or less likely to recommend bone sparing therapy?

Methods: A cross-sectional study at a tertiary metabolic bone centre in the West Midlands region of England. Three expert metabolic bone physicians, two rheumatologists and one elderly care, assessed consecutive patients referred for a DXA scan ± clinic review and provided treatment recommendations with and without TBS. Patients ≥ 18 years old with BMI of 15-37 who were not on bone sparing therapy were considered eligible. TBS was defined according to T-score as normal (T-score ≥ -1), moderate (-1 > T-score ≥ -2.5) or degraded (T-score ≤ -2.5). TBS groups were stratified by BMD T-scores (normal, osteopenia, or osteoporosis) using minimum T-score of total hip, femoral neck, and spine to identify categories in which TBS may be of more clinical use. The main outcome measure was the proportion of change in clinician's treatment threshold between BMD alone and BMD plus TBS. The difference was assessed for significance using Chi-square test. Additionally, the change in UK National Osteoporosis Guideline Group (NOGG) threshold was also assessed using TBS-adjusted FRAX scores. Correlations between BMD-TBS strata and the change in intervention threshold (yes/no) were carried out using Spearman test.

Results: 540 patients were analysed. The inclusion of TBS resulted in 8.2% change in clinician's treatment threshold ($p < 0.001$) shifting the outcome 6.5 % for and 1.7 % against treatment. More than half of the cases in which the clinical decision was changed were for patients with osteopenia and degraded TBS (significant correlation; $P < 0.001$). NOGG intervention threshold was changed in 7.4% of the cases ($P < 0.001$); 6.1% for and 1.3% against treatment. 37.5% of NOGG changed outcome was related to osteopenia with degraded TBS ($p < 0.001$). Kappa agreement between the clinician and NOGG was fair at 0.42 ($p < 0.001$).

Conclusion: These results demonstrate that using TBS in routine clinical practice is most likely to impact treatment decision in patients with osteopenia who have compromised bone microarchitecture. Incorporating TBS in routine DXA

scans may lead to a net increase in bone protective therapy of approximately 5%. It is unknown whether adopting such an approach universally can reduce future fracture risk, and prospective studies are needed to address this question.

References:

- [1] Hans D et al. *J Bone Miner Res.* 2011;26(11):2762-9.
- [2] McCloskey EV et al. *Calcif Tissue Int.* 2015;96(6):500-9.

Table 1. Demographic and baseline characteristics (n = 540)

Female	470 (87%)
Age (years)	68.1 ± 11.6
Body mass index (BMI)	26.2 ± 4.6
Femoral neck T-score	-1.80 ± 1.04
Total hip T-score	-1.32 ± 1.07
Lumbar spine T-score	-1.37 ± 1.42
Lumbar spine TBS	1.32 ± 0.13
Major osteoporotic fractures	238 (44%)
Spinal fractures	81 (15%)
FRAX major osteoporotic fracture	14.43 ± 9.03
FRAX hip fracture	4.60 ± 6.20
TBS-adjusted FRAX major osteoporotic fracture	13.82 ± 8.80
TBS-adjusted FRAX hip fracture	4.45 ± 5.73

Table 2. Change in clinician's treatment threshold according to TBS-BMD strata

	Distribution of clinical decision change (%)	P value
Normal BMD with normal TBS¶	0	0.029
Normal BMD with moderate TBS	11.1	0.005
Normal BMD with degraded TBS	4.4	0.79
Osteopenia with normal TBS	6.7	0.048
Osteopenia with moderate TBS	4.4	0.012
Osteopenia with degraded TBS	51.1	<0.0001*
Osteoporosis with normal TBS	6.7	0.916
Osteoporosis with moderate TBS	8.9	0.048
Osteoporosis with degraded TBS	6.7	0.284

*statistically significant

¶ normal TBS: T-score ≥ -1, moderate TBS: -1 > T-score ≥ -2.5, degraded TBS: T-score ≤ -2.5

Figure 1. Distribution of changed clinical treatment threshold in normal, moderate, and degraded TBS according to BMD T-score

Acknowledgments: Bone density unit & Rheumatology team, Robert Jones and Agnes Hunt Orthopaedic Hospital

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.4879

SAT0480

ASSESSMENT OF CORONARY ATHEROSCLEROSIS SEVERITY IN MEN WITH CORONARY HEART DISEASE DEPENDING ON BONE MINERAL DENSITY

I. Baskina¹, A. Voronkina², M. Leteava¹, A. Kokov³, M. Elena². ¹Federal State Educational Institution of Higher Education "Kemerovo State Medical University", Kemerovo, Russian Federation; ²State Autonomous Healthcare Institution of the Kemerovo Region "M. A. Podgornsky Regional Clinical Hospital of Emergency Medical Care", Kemerovo, Russian Federation; ³Research Institute for Complex Problems of Cardiovascular Diseases, Siberian Branch, Russian Academy of Medical Sciences, Kemerovo, Russian Federation

Background:

Objectives: Assess the severity of coronary atherosclerosis in men with coronary heart disease (CHD) depending on bone mineral density (BMD).

Methods: 102 of men with verified CHD aged 51-75 (60.8 ± 6.9) were examined. All patients performed two-energy X-ray absorption of lumbar vertebrae bodies LI-LIV and hip necks (Excell XR-46, Norland, USA) and polyproject coronarangiography (Innova, General Electric, USA). On the basis of results of densitometry on value of T-criterion (the recommendation of ISCD, 2007) estimated BMD condition: normal BMD (T criterion ≥ -1), osteopenia (T-criterion from -1 to -2.5) and osteoporosis (OP) (T criterion < -2.5). According to the SYNTAX scale (www.syntaxscore.com), the following degrees of coronary artery (CA) injury severity were isolated to quantify the expression of atherosclerotic injury: low (22 or less), intermediate (23-32) and high (33 or more). According to the result of multispiral computed tomography of CA, calcium index of vessels was determined by the Agatston method using the CaScore program. On the basis of the calcium index value the degree of CA calcinosis was evaluated: 0 - absence of calcinosis, 1-10 - minimal, 11 - 100 - moderate, 101-400 - increased, more than 400 - expressed calcinosis.

Results: According to the results of densitometry, patients were found to have 21 patients (20.6%) with normal BMD, 48 (47.0%) - osteopenia and 33 (32.4%) - osteoporosis. Osteopenic syndrome (OPS) was found in 79.4% of men. All patients tested, depending on the degree of CA calcinosis, were distributed as follows: 57.8% of men had pronounced CA calcinosis, 25.5% - increased, 6.9% - moderate, 2.0% - minimal, 7.8% of patients had no CA calcinosis. In a comparative analysis of the degree of coronary calcinosis in men with CHD depending on the T-criterion, it was found that the majority of patients with OPS (69.7% of patients with OP and 60.4% with OPe) had pronounced CA calcinosis. In men with normal BMD, the prevalence of pronounced CA calcinosis (33.3%) was significantly lower than in patients with OPS ($p < 0.050$). Calcinosis-negative CA was recorded reliably more frequently in patients with normal BMD (28.6%) compared to men with low BMD ($p < 0.050$). The results of the work demonstrated the relationship of the studied parameters of coronary atherosclerosis expression with densitometry indicators in men with CHD. Thus, the inverse correlation of the BMD at the level of the hip neck with the number of significant stenoses of the spacecraft ($r = -0.19$; $P = 0.045$) and the degree of coronary calcinosis ($r = -0.23$; $P = 0.022$) and similar dependence of BMD of vertebral bodies LI-LIV with coronary calcinosis degree ($r = -0.19$; $p = 0.046$). A direct correlation between CA calcinosis and FRAX hip fracture risk ($r = 0.24$; $p = 0.018$). Inverse correlation of parameters of atherosclerotic damage of CA (number of significant stenoses and degree of calcinosis) with BMD was established, and direct correlation of CA calcinosis degree with risk of hip fracture on FRAX scale in male persons with CHD over 50 years of age was revealed.

Conclusion: The findings suggest in favor of likely common mechanisms for developing atherosclerosis with OP and allow coronary calcinosis to be considered as a condition potentially increasing the risk of hip fracture.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.5337

SAT0481

RELATIONSHIP BETWEEN SARCOPENIA AND BONE MINERAL DENSITY IN MEN WITH CORONARY HEART DISEASE

I. Grigoreva¹, I. Raskina¹, J. Averkieva¹, M. Letaeva¹, O. Malyshenko¹, K. Krivoshepova², V. Fanaskov³. ¹Federal State Educational Institution of Higher Education "Kemerovo State Medical University", Kemerovo, Russian Federation; ²Research Institute for Complex Problems of Cardiovascular Diseases, Siberian Branch, Russian Academy of Medical Sciences, Kemerovo, Russian Federation; ³State Autonomous Healthcare Institution of the Kemerovo Region "Regional Clinical Hospital for War Veterans", Kemerovo, Russian Federation

Objectives: To study the relationship of indicators of muscle mass, muscle strength and muscle function with bone mineral density (BMD) in men with coronary heart disease (CHD).

Methods: 79 men aged over 50 years with verified CHD were examined (mean age 63 (57; 66) years).

The BMD (g/cm²) and T-criterion (standard deviation) of the femoral neck and lumbar spine (L1-L4) were evaluated using dual-energy x-ray absorptiometry (DXA) on the lunar Prodigy Primo bone densitometer (USA).

To assess muscle mass, the total area (cm²) of the lumbar muscles of the axial section at the level of the 3rd lumbar vertebra (L3) was determined using multispiral computed tomography on a 64-slice computer tomograph "Somatom Sensation 64" (Siemens AG Medical Solution, Germany). The ratio of the obtained index of the area of skeletal muscle to the square of the patient's growth index determined the "musculoskeletal index L3" (SMI). The media considered the threshold value to be 52.4 cm²/m². Evaluation of muscle strength was performed using a mechanical wrist dynamometer DC-25. Muscle function was examined using a short physical performance battery (SPPB).

Results: The data obtained from the results of correlation analysis show that there is a reliable direct correlation between BMD and hand dynamometry indicators ($r = 0.250$; $p = 0.026$ for the right hand and $r = 0.247$; $p = 0.028$ for the left hand), the T-criterion of the femoral neck and hand dynamometry indicators ($r = 0.245$; $p = 0.030$ for the right hand and $r = 0.242$; $p = 0.032$ for the left hand). A similar relationship was established between the BMD of the lumbar vertebra and the parameters of dynamometry ($r = 0.237$; $p = 0.036$ for the right hand and $r = 0.228$; $p = 0.043$ for the left hand) and T-criterion for the lumbar region and dynamometry parameters ($r = 0.232$; $p = 0.039$ for the right hand and $r = 0.220$; $p = 0.051$ for the left hand). There is no significant relationship between densitometry scores and the result of SPPB tests.

There was a significant direct relationship between the total SPPB score and the area of skeletal muscle at the L3 level ($r = 0.249$, $p = 0.026$), the total SPPB score and the musculoskeletal index ($r = 0.233$, $p = 0.039$). A similar relationship was established between the result of the chair lift test and the total area of skeletal muscle at the L3 level ($r = 0.262$, $p = 0.019$) and the musculoskeletal index ($r = 0.220$, $p = 0.050$).

A significant negative relationship between walking speed and the musculoskeletal index was found ($r = -0.260$, $p = 0.021$). The relationship between muscle mass and strength could not be traced.

Conclusion: A decrease in muscle strength correlates with the severity of bone loss, while a decrease in muscle function correlates with a decrease in muscle mass. The results obtained confirm the probability of common mechanisms in the development of sarcopenia and osteoporosis in patients with CHD.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2020-eular.5738

SAT0482

FRAX 10-YR FRACTURE RISK IN RHEUMATOID ARTHRITIS ASSESSED WITH AND WITHOUT BONE MINERAL DENSITY – ARE WE TREATING OUR PATIENTS UNDER BDMARDS?

M. Rato¹, F. Pinheiro¹, S. Garcia¹, B. M. Fernandes¹, S. Ganhão¹, R. Gaio², M. Bernardes¹, A. Bernardo¹, L. Costa¹. ¹Centro Hospitalar Universitário de São João, Rheumatology, Porto, Portugal; ²Faculdade de Ciências da Universidade do Porto & Centro de Matemática da Universidade do Porto, Mathematics, Porto, Portugal

Background: Patients with rheumatoid arthritis (RA) have a higher risk of osteoporosis not only due to chronic inflammation status, but also due to the treatment with glucocorticoids. FRAX is a computer-based algorithm developed by the World Health Organization for estimation of the 10-year risk of a hip or major osteoporotic fracture. Inclusion of femoral neck bone mineral density (BMD) in the estimation is optional.

Objectives: The study aimed to identify the RA patients under treatment with biological disease-modifying antirheumatic drug (bDMARD), who have FRAX scores, calculated with and without BMD, classified as high fracture risk and evaluate if they are receiving treatment for osteoporosis. The authors also investigated the intra-individual agreement between FRAX fracture risk calculated with and without BMD.

Methods: Demographic and clinical data and BMD results from RA patients followed in a tertiary university hospital and registered in the Rheumatic Diseases Portuguese Register were used for analysis. Patients under 40 years of age at the last visit were excluded. McNemar test was applied for the identification of discordance of risk categories. The Wilcoxon test was used to characterize the intraindividual differences between paired FRAX risks with and without BMD. Correlations between pairs of variables were evaluated by the Spearman test. For independent variables Mann-Whitney test was used.

Results: A total of 303 patients were included, 244 were females (80.5%) and 49 current smokers (16.2%). Mean age was 59.5 ± 9.54 years and mean disease duration 18.5 ± 10.4 years. Two hundred and twenty patients (72.4%) and 243 (80.2%) were RF and ACPA positive, respectively, and 51.5% had erosive disease. Mean disease activity score (DAS28-4V-CRP) was 3.08 ± 1.18 and mean femoral neck BMD 0.84 ± 0.12 g/cm². One hundred and seventy nine patients (58.9%) were concomitantly treated with conventional synthetic DMARDs and 215 (70.7%) with glucocorticoids. Among all the patients, 35 (11.6%) had previous fractures and 19 (6.3%) have family history of fracture. The median 10-year risk of a major fracture and a hip fracture, calculated without BMD, was 6.0 (1.2-50) and 1.5 (0.1-39), respectively; with BMD it was 6.9 (1.3-61) and 1.7 (0-49). When FRAX score is calculated without BMD ($n = 303$), 76 (25.1%) patients were categorized as high fracture risk. Among them, only 41 (54%) were receiving osteoporosis treatment. FRAX assessment with BMD ($n = 231$) identified 99 (32.7%) patients with high fracture risk, 51 (51.5%) in treatment for osteoporosis. Thirty patients (21%) previously classified as low fracture risk using FRAX without BMD were recategorized as high risk ($p < 0.001$). Despite that, there was a strong correlation between fracture risks assessed with and without BMD for both major and hip fracture ($r = 0.867$, $p <$