one-third of the RA patients had osteoporosis (OP). However, most fragility fractures occur in patients not suffering from OP, that can be partly explained by impaired quality of bone, which is not measured with DXA. Therefore, only the measurement of bone mineral density is not sufficient to determine the indication for OP treatment. Another tool for assessing the need for anti-osteoporotic therapy is to calculate the 10-year probability of a major fracture using the fracture risk assessment tool (FRAX).

Objectives: To assess the need for anti-osteoporotic therapy in women with rheumatoid arthritis (RA) based on the identification of individuals with fragility fractures and high risk of fracture according to FRAX.

Methods: 295 postmenopausal women with RA were included in the study. The average age was 63 ± 7 years, the duration of RA was 11 [4;16] years, the duration of postmenopausal period was 13 [6; 20] years. 121 (41%) patients took glucocorticoids (cumulative dose 9025 [3650; 20720] mg in prednisolone equivalent). A survey was conducted to identify patients with risk factors and a history of fragility fractures. The 10-year probability of a major osteoporotic fracture was assessed using the FRAX tool. In patients treated with glucocorticoids at a dose >7.5 mg in prednisolone equivalent the estimates of probabilities of a major osteoporotic fracture were adjusted in accordance with the recommendations [1]. Dual-energy X-ray absorptiometry (DXA) of the proximal femur was performed in patients with a moderate risk (probabilities between the upper and lower assessment age-dependent intervention threshold) and the risk of fracture was recalculated with including femoral neck BMD.

Results: 83 (28.1%) patients had a prior fragility fracture: 44 (14.9%) – 1, 20 (6.8%) – 2 and 19 (6.4%) – 3 or more. Vertebral fractures were the most common, they accounted for 62.1% of all fractures, distal forearm was the second frequent fractures localization (18.2%). Only 2 (0.7%) women had hip fracture. The average 10-year probability of a major osteoporotic fracture was 17 % [11; 28] in RA women. 92 (31.2%) persons were at high risk, 28 (9.5%) patients - at low risk, and 175 (59.3%) - at moderate risk. After recalculation of fracture risk with including femoral neck BMD in people at moderate risk 48 (16.3 %) patients became at high risk, 9 (3.1%) – at very high risk, and 118 (40.0%) - at low risk. Thus, 149 (50.5%) RA patients were at very high or high risk and 146 (49.5%) – at low risk of major osteoporotic fracture according to FRAX, among the last – only 3 persons had a history of fragility fracture after age of 40 years.

Conclusion: Our study demonstrated that a half of postmenopausal women with RA had indications for anti-osteoporotic treatment based on the results of a 10-year probability of major fragility fractures using FRAX tool.

REFERENCES:

- [1] Kanis JA, Johansson H, Oden A, McCloskey EV. Guidance for the adjustment of FRAX according to the dose of glucocorticoids. *Osteoporos Int*. 2011;22(3):809-816. doi:10.1007/s00198-010-1524-7.

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POS0165

STUDY OF VERTEBRAL AND FEMUR FRACTURE PREVALENCE AND SCANOGRAPHIC BONE ATTENUATION COEFFICIENT OF THE FIRST LUMBAR VERTEBRA IN AN ACADEMIC HOSPITAL SETTING

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Background: Patients with osteoporosis are prone to suffer fragility fractures leading to an increased risk of future fractures. Detection of osteoporosis has been led by dual energy-ray absorptiometry (DEXA) as the gold standard. However, in acute fracture incidents, DEXA imaging is typically unavailable, and treatment is often delayed. In recent years scanographic bone attenuation coefficient of the first lumbar vertebra (SBAC-L1) on incidental computed tomography (CT) scans of the lumbar spine has been utilized as an alternative assessment of bone density. In particular, SBAC-L1 ≤ 145 HU correlates with osteoporotic bone density on DEXA imaging.²

Objectives: This study aims to assess the SBAC-L1 in HU of incidental CT scans in patients presenting with vertebra or femur fragility fractures in an academic hospital as it relates to osteoporosis.

Methods: We conducted a retrospective chart review of patients aged ≥ 45 admitted to an academic hospital for active vertebral or femur fracture between 1/1/2017- 1/31/2019, excluding traumatic and pathological fractures. Measurement of SBAC-L1 in HU was obtained on incidental CT scan imaging. Sex, race, prior and post diagnoses of osteoporosis, prior and post DEXA scan orders, use of calcium, vitamin D, and steroids were abstracted.

Results: There were 297 patients with vertebral or femur fractures from 1/1/2017-1/31/2019. Of 297 patients, 85 deemed appropriate after excluding pathological, traumatic fractures, and lack of CT scan on the admission for fracture. Average SBAC-L1 for all patients was $100.4 \pm$ standard deviation (SD) of 46.5 HU. 82% of all patients had SBAC-L1 ≤ 145 HU. Caucasian patients had a lower

average SBAC-L1 [99.4 HU] than African American (AA) patients [122.1 HU]. More Caucasian [n=15] had prior diagnoses of osteoporosis than AA [n=2]. Caucasian patients were prescribed Calcium and Vitamin D more often [n=39] than AA [n=3]. DEXA scan orders were placed more often in Caucasian patients [n=4] than AA patients [n=1]. Osteoporosis medications were prescribed more often in Caucasian patients [n=8] than AA patients [n=0].

Male average SBAC-L1 was 97.4 HU compared to females at 106.3 HU. Females were prescribed calcium and vitamin D more often [n=38] than males [n=8]. DEXA scan orders were placed more frequently in females [n=5] than males [n=2]. Osteoporosis medications were prescribed more often in females [n=9] than male patients [n=0].

Table 1. Study Characteristics

	Total Patients [n=85]	Caucasian Patients [n=67]	AA Patients [n=16]	Male Patients [n=31]	Female Patients [n=54]
SBAC- L1 Average $\pm$ SD (HU)	100.4 $\pm$ 46.5	99.4 $\pm$ 44.1	122.1 $\pm$ 49.9	97.4 $\pm$ 44.3	106.3 $\pm$ 47.2
Patients with SBAC- L1 $\leq$ 145 HU	70	58	10	26	44
Patients with SBAC- L1 $>$ 145 HU	15	9	6	5	10
Vertebral Fractures	57	47	8	19	38
Femur Fractures	28	20	8	12	16
Age Average	71.7	72	70.9	74	70.4
Prior diagnosis of osteoporosis	16	15	1	2	14
Post diagnosis of osteoporosis	6	2	2	2	4
Calcium	20	16	2	2	18
Vitamin D	26	23	1	6	20
Osteoporosis medication	9	8	0	0	9
Steroid use	5	4	1	2	3
DEXA prior	13	12	1	0	13
DEXA after	7	4	1	2	5

Conclusion: 70 of 85 patients with incidental fragility fractures exhibited SBAC-L1 ≤ 145 HU. This is consistent with osteoporotic bone density on DEXA imaging supporting the use of SBAC-L1 measurement to corroborate the diagnosis osteoporosis. SBAC-L1 ≤ 145 HU can be utilized to increase inpatient diagnostic confidence of osteoporosis in the setting of acute fragility fractures to allow initiation of treatment prior to awaiting outpatient DEXA imaging.

The results here also highlight health disparities present among African Americans and males of all races when considering bone health.

REFERENCES:

- [1] Lewiecki, E. Michael, et al. "Healthcare policy changes in osteoporosis can improve outcomes and reduce costs in the United States." *JBM R plus* 3.9 (2019): e10192.
- [2] Fauny, Marine, et al. "Study of vertebral fracture and Scanographic Bone Attenuation Coefficient in rheumatoid arthritis and ankylosing spondylitis vs. controls." *Scientific reports* 9.1 (2019): 1-9.

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POS0166

ASSOCIATION OF TRABECULAR BONE SCORE AND FAT DISTRIBUTION IN MOROCCAN RHEUMATOID ARTHRITIS PATIENTS

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Background: The association between body composition and bone microarchitecture reflected by trabecular bone score (TBS) has been studied lately (1). In rheumatoid arthritis (RA), this association, especially with fat mass, needs further confirmation.

Objectives: The purpose of the present work was to study the association of TBS with fat distribution in RA.

Methods: We designed a cross-sectional study of patients with RA diagnosis according to ACR-EULAR 2010 classification recruited from first January 2021. Those with prior cancer, hyperparathyroidism, hyperthyroidism, diabetes, chronic kidney disease, cirrhosis, and a body mass index (BMI) of more than 36kg/m^2 were excluded. TBS, total body fat mass (BFM), and its distribution (gynoid (GFM), android (AFM), visceral (VFM), limbs (LFM), trunk (TFM)) were measured with Dual-energy X-ray absorptiometry (Hologic). Clinical data and laboratory tests of the same day of the DXA scan were analyzed. The associations between TBS, BFM, and its distribution were studied by correlations and multiple linear regressions using SPSS 20.

Results: Sixty-nine patients were included. Their mean age was 49.86 ± 14.33 years, mean DAS28CRP was 2.56 ± 1.27 , and mean disease duration was 14.84 ± 10.99 years. Sixty-two (89.9%) were women, with 30 (48.4%) had menopause. The mean BMI was $26.46 \pm 5.26\text{kg/m}^2$, and 41 patients were obese (59.4%).

In the Pearson correlation analysis, TBS was associated with BFM ($p = 0.04$), AFM ($p = 0.001$), TFM ($p = 0.007$), and VFM ($p < 0.0001$). However, there was no correlation with LFM ($p = 0.262$), and GFM ($p = 0.469$). At multivariate analysis, only VFM ($p = 0.005$, $\beta = -0.355$, 95%IC [-0.0002; -0.00004]), and AFM ($p = 0.02$, $\beta = -0.395$, 95%IC [-0.00007; -0.000006]) were associated with TBS, when adjusted on age, menopause, disease duration, disease duration under treatment, lumbar BMD, BMI, HAQ, CRP, and triglycerides level.

Conclusion: In RA patients, TBS was negatively associated with visceral and android fat mass. This result may explain the intriguing coexistence of high BMD and vertebral fractures in RA obese patients.

REFERENCES:

- [1] Lv S, Zhang A, Di W, et al. Assessment of Fat distribution and Bone quality with Trabecular Bone Score (TBS) in Healthy Chinese Men. *Sci Rep*. 2016; 6:24935. Published 2016 Apr 26. doi: 10.1038/srep24935.

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POS0167

SECONDARY PREVENTION OF VERTEBRAL FRACTURES IN REAL PRACTICE

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Background: Vertebral fractures increases the risk of new fractures and deaths. There are different antiresorptive medications to prevent a secondary fracture, as bisphosphonates, teriparatide or denosumab, but little is known about the effects of secondary fracture appearance in real life.

Objectives: To evaluate the appearance of new vertebral fractures depending on the treatment used for secondary prevention.

Methods: We conducted a prospective descriptive study of patients with a first diagnosis of vertebral fracture from 2010 to 2017 and assessed the subsequent finding of new fractures. We selected patients with at least 3 years of secondary prevention with antiresorptive drugs or with sequential treatment (anabolic followed by, at least, 1 year with antiresorptive drugs), and excluded those who experienced new fractures within the first 6 months of treatment.

Results: A total of 400 patients were selected from an initial base of 1018 patients. The average age of onset of the first fracture was 69.7 years, 84% of female patients and 16% of male patients. 38.5% suffered dorsal fractures, 33.75% lumbar fractures and 27.75% dorsolumbar fractures. We classified the secondary prevention strategies according to the different therapeutic options, as we can see in Table 1.

We analysed the association between the appearance of new vertebral fracture corrected by sex with the age of the initial fracture its location. No association was found.

We also performed a multivariate Bayesian model of logistic regression, in order to analyze the association between the appearance of new vertebral fracture and factors as the age of the initial fracture, its sex and the pharmacologic option used as secondary prevention. No statistically significant differences were observed between the different antiresorptive treatments and their efficacy as a secondary prevention of vertebral fractures. However, there was a tendency for a smaller occurrence of new fractures in patients undergoing sequential treatment. On the other hand, similar results were observed between denosumab and oral bisphosphonates, observing somewhat worse data with zoledronate (figure 1), probably due to patients under zoledronate treatment showed high osteoporotic risk and worse prognosis.

Pharmacologic option	Patients (%)	New fractures (%)
Denosumab	192 (48%)	10 (5.21%)
Teriparatide (up to 2 years) + Denosumab (at least 1 year)	86 (21.5%)	0 (0%)
Oral bisphosphonate (alendronate, risedronate or ibandronate)	58 (14.5%)	3 (5.17%)
Zoledronate	33 (8.25%)	4 (12.12%)
Teriparatide (up to 2 years) + oral bisphosphonate (at least 1 year)	28 (7%)	2 (7.14%)
Teriparatide (up to 2 years) + Zoledronate (at least 1 year)	3 (0.75%)	0 (0%)

Conclusion: No differences between the different secondary prevention options in terms of the appearance of new fractures were observed.

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POS0168

BONE MINERAL DENSITY IN PATIENTS WITH MULTIPLE SCLEROSIS. A DESCRIPTIVE STUDY FROM A UNIQUE CENTER FROM THE EAST OF SPAIN

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Background: Several studies have suggested that multiple sclerosis (MS) patients have low bone mineral density (LBMD) compared to healthy adults of same age. This fact, combined with the functional impairment of the disease, increases the risk of fractures. However, information about the prevalence and the risk factors of LBMD in Spanish patients with MS is still quite limited¹⁻³.

Objectives: To evaluate the prevalence of LBMD and low vitamin D in patients with MS from a unique center from the east of Spain, describing the clinical features of these patients.

Methods: Type of study: observational, cross-sectional, descriptive. Patients with MS from a local cohort have been consecutively recruited for this study since Apr-2020. A cross-sectional visit which included a clinical interview, analytic test (blood and urine) and a dual-energy X-ray absorptiometry (DXA) was performed. We defined LBMD as T score ≤ -1 SD in postmenopausal women and men over 50 years and a Z score ≤ -2 SD in premenopausal women and men under 50 years. Low levels of vitamin D were defined as < 20 ng/mL. A descriptive and associative analysis of these data was carried out using the SPSS software.

Results: From a cohort of 288 MS patients, due to the COVID-19 pandemic, we have only been able to assess 60 patients, and only 48 out of them have undergone all the tests required. These were 30 women and 18 men, with a mean age of 49 (SD 11.6) years. The main type of MS was relapsing-remitting (77.1%) and 25% of them were not taking any maintenance treatment. Some of the classical factors related to a LBMD are shown in table a1. A 43.8% of the patients had a LBMD and 40.5% had low levels of vitamin D. Despite these results, as far as 89% of patients had never received any specific treatment, not even calcium and/or vitamin D supplementation. Furthermore, 13 patients (27.1%) must have received specific treatment, according to latest guidelines⁴, and only 4 of them (8.5%) were being adequately treated.

Table 1.

Women/Men (n)	30/18
Mean age; SD (years)	49; 11.6
Non smokers/Smokers (%)	58,4/41,7
Alcohol abuse (%)	8,3
Personal history of fracture (%)	10,4
Personal history of nephrolithiasis (%)	14,6
Normal/Reduced mobility (%)	77,1/22,9
Sedentary lifestyle (%)	66,7

Conclusion: These preliminary results show that almost half of the MS patients have LBMD and a low vitamin D, most of them without taking any specific treatment. Taking this in mind, it is necessary to integrate the early diagnosis of LBMD