and thus have an association with morbidity and mortality. Data regarding osteoporotic fractures are necessary in order to develop guidance and health policy in the region. SLE is an important risk factor for severe osteoporosis and must be kept in mind when developing guidance and health policy

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SAT0464

MULTIPLE REBOUND-ASSOCIATED VERTEBRAL FRACTURES AFTER DENOSUMAB DISCONTINUATION IN RHEUMATOLOGY CLINIC

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Background: Denosumab, a monoclonal antibody against RANKL, is an effective treatment for osteoporosis. Discontinuation of denosumab has been shown to lead in multiple vertebral fractures in some patients due to a severe acceleration of bone resorption (rebound-associated vertebral fractures-RAVFs). Limited data published during the last 2 years highlighted this issue.

Objectives: The aim of this case series is to describe features of the denosumab-associated RAVFs and the characteristics of these patients.

Methods: Patients from our outpatient rheumatology clinic who were diagnosed with recent vertebral fractures after denosumab discontinuation from January 2019 to December 2019 were included. Diagnosis was based on x-ray and/or magnetic resonance imaging (MRI) of thoracic (T) or lumbar (L) spine. All cases were the result of reduced compliance of the patients to the treatment regimen. A baseline x-ray examination was available in all patients included and was compared in order to exclude prevalent osteoporotic fractures. Demographic and clinical parameters were recorded.

Results: Nine patients (8 females) with a mean±SD age of 71.3±11.9 years were included (Table 1). A total of 32 fractures occurred, affecting median 4 (range 1-6) vertebrae (Figure 1). The mean±SD duration of denosumab treatment prior to discontinuation was 54.0±30.1 months, while the mean±SD time that RAVFs occurred after the last denosumab injection was 8.8±2.4 (range 7-12) months. The most commonly affected vertebra was L3 (Table1). Most patients (66.7%) did not have any prevalent osteoporotic fracture. Four patients (44.4%) were receiving drugs that affected bone metabolism (mainly corticosteroids and aromatase inhibitors). Only 33.3% of the patients had a history of previous treatment with bisphosphonates.

Table 1. Characteristics of RAVFs and patients affected. L: Lumbar, T: Thoracic, SD: Standard Deviation

Females (%)	88.9%
Age (years) (mean±SD)	71.3±11.9
Affected vertebrae (median, range)	4, 1-6
Treatment duration (mean±SD) (months)	54.0±30.1
Time after last injection (mean±SD) (months)	8.8±2.4
Vertebral fracture site	13
T10 T11 T12	2
L1	5
L2	5
L3	8
L4	5
L5	5
Patients with prevalent osteoporotic fractures (%)	33.3
Patients receiving drugs affecting bone metabolism (%)	44.4
Patients with previous treatment with bisphosphonates (%)	33.3

Figure 1. Multiple vertebral fractures (yellow arrows - T11, T12, L2-L5) in a patient 7.5 months after the last denosumab injection. T: thoracic, L: Lumbar

Conclusion: Denosumab-associated RAVFs usually occur within 7-12 months after the last denosumab injection and affect multiple vertebrae. Most cases are associated with long-term (>2 years) denosumab administration without previous treatment with bisphosphonates. Rheumatologists should be alert of this complication since the reported compliance in patients under denosumab treatment is only 46% (1) and the expected incidence of RAVFs after denosumab discontinuation has been reported to be 10% (2).

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SAT0465

FRACTURE RISK ASSESSMENT BY FRAX IN A SYSTEMIC LUPUS ERYTHEMATOSUS PORTUGUESE COHORT

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Background: Osteoporosis is commonly seen in patients with Systemic Lupus Erythematosus (SLE), even in pre-menopausal patients. The etiology is multifactorial and chronic glucocorticoid therapy seems to play a central role.

Objectives: To investigate the ten-year risk of fracture assessed by Fracture Risk Assessment Tool (FRAX), with and without dual-energy X-ray absorptiometry (DXA) and to determine possible demographic or clinical factors associated with an increased risk of fracture in a SLE population.

Methods: Retrospective study including all the over 40 years-old patients with the diagnosis of SLE (2012 SLICC classification criteria) followed at our Rheumatology Department registered in our national database. Demographic, clinical and laboratorial data were collected at the last follow-up visit. Data from the last DXA (until 3 years prior to the last visit) were collected. Indication for pharmacological treatment by FRAX was assessed according to the national recommendations: estimated fracture risk, without DXA, $\geq 11\%$ for major osteoporotic fracture or $\geq 3\%$ for hip fracture and/or estimated fracture risk, with DXA, $\geq 9\%$ for major osteoporotic fracture or $\geq 2.5\%$ for hip fracture.

Results: We included 104 patients, 101 (97.1%) females, aged 54.5 ± 9.9 years, with a median disease duration of 19.3 years [4.3-51.6]. Twelve patients (11.5%) were current smokers, 31 (29.8%) had elevated anti-dsDNA antibodies (≥ 100 IU/mL) and 27 (26.0%) had complement consumption (C3c < 83 mg/dL or C4 < 12 mg/dL). 73 patients (70.2%) were taking glucocorticoids with a mean daily prednisolone equivalent dosage of 4.4 ± 5.2 mg/day. Regarding SLE treatment, 69 patients (66.3%) were under hydroxychloroquine, 22 (21.2%) under azathioprine, 16 (15.4%) under mycophenolate mofetil, 5 (4.8%) under belimumab, 4 (3.8%) under methotrexate, 1 (1.0%) under leflunomide and 1 (1.0%) under rituximab. Ten patients (9.6%) had previous fragility fractures, 54 patients (51.9%) had DXA in the last 3 years and 81 (77.9%) were taking calcium and/or vitamin D supplements.

Sixteen (15.4%) had indication for treatment by FRAX without DXA and 8 of these (50%) were under treatment. Moreover, thirteen (12.5%) had indication for treatment by FRAX with DXA and 8 of these (61.5%) were under treatment. Five patients (4.8%) were reclassified in FRAX with DXA: 3 patients (2.9%) had no indication for treatment by FRAX without DXA but conquered it by FRAX with DXA and 2 patients (1.9%) had indication for treatment by FRAX without DXA but lost it by FRAX with DXA. We found a good level of agreement in the indication for treatment between FRAX with and without DXA ($\kappa = 0.741$; $p < 0.001$).

There was no significant difference in the risk of fracture estimated by FRAX with or without DXA, both for major osteoporotic fracture and for hip fracture. Correlations between fracture risk and some clinical variables can be seen in table 1.

Table 1. Correlations between the risk of fracture estimated by FRAX and disease related features.

		Age at SLE diagnosis	Disease Duration	ESR	SLEDAI
Estimated fracture risk by FRAX:	without DXA	major osteoporotic fracture	$r = 0.483$ $p < 0.001$	n.s.	$r = -0.586$ $p = 0.028$
		hip fracture	$r = 0.481$ $p < 0.001$	n.s.	n.s.
	with DXA	major osteoporotic fracture	$r = 0.386$ $p = 0.005$	$r = 0.299$ $p = 0.033$	n.s.
		hip fracture	$r = 0.338$ $p = 0.015$	n.s.	n.s.

Conclusion: A higher number of patients had indication for pharmacological treatment by FRAX with DXA in comparison with FRAX without DXA. However, we found no statistically significant difference in the estimated fracture risk with and without DXA. This, together with the good level of agreement between FRAX with and without DXA, suggests that the fracture risk estimation, even without DXA, may be an appropriate approach. The low number of patients with indication for pharmacological treatment by FRAX, with and without DXA, may be explained by their low mean age and the high number of them under vitamin D/calcium supplementation.

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SAT0466

FRAX RISK OF FRACTURE AND ITS CORRELATION WITH BONE MINERAL DENSITY IN MEXICAN PATIENTS WITH RHEUMATIC DISEASES

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Background: Osteoporosis (OP) is characterized by compromised bone strength and deterioration of quality, often leading to fragility fractures (1). Dual-energy x-ray absorptiometry (DXA) is the recommended test for OP screening among patients with rheumatoid arthritis (RA) and other RD (2). However, there are limitations to perform DXA on every patient, and the clinicians use screening tools to identify those patients with higher risk. The opportune identification of the patients at increased risk and early treatment can prevent the loss of bone mineral density (BMD) and reduce the risk of fractures (3).

Objectives: To evaluate the FRAX risk and its correlation with the spine and femoral neck T-score in patients with RD.

Methods: An observational retrospective study was done in the rheumatology clinic of the university hospital "Dr. José Eleuterio González" in Monterrey, Mexico, between March and November 2019. Patients who had reported DXA from the spine and hip in the medical record were included. The risk factors included in FRAX tool was collected; FRAX tool was used online at <https://www.sheffield.ac.uk/FRAX/> (algorithm for Mexicans) and classified as low ($< 10\%$ for OP or $< 1\%$ for hip), intermediate ($10\% - 19\%$ for OP or $1\% - 3\%$ for hip) and high risk ($\geq 20\%$ for OP or $\geq 3\%$ for hip); results of DXA of the spine and hip were collected. Results are shown in means or frequency. A chi-square test or one-way analysis of variance was used to compare groups. Pearson's correlation test (r) was done between spine T-score and FRAX risk for OP and between femoral neck T-score and FRAX risk for hip. $P < 0.05$ was considered statistically significant.

Results: 141 patients were included, Patients with OP was older (mean 62.6 years), weight and height were higher in those with normal BMD. There was no difference between the use of glucocorticoids or other risk factors (Table 1). According to FRAX risk for OP, 122 (86.5%) had low risk, 14 (9.9%) had intermediate risk and only 5 (3.5%) had high risk. According to FRAX risk for hip, 81 (57.4%) had low risk, 38 (27.0%) had intermediate risk and only 22 (15.6%) had high risk (Table 2). There was a low negative correlation between spine T-score and FRAX risk for OP ($r = -0.396$, $P = < 0.001$) (Figure 1), there was a moderate negative correlation between femoral neck T-score and FRAX risk for hip ($r = -0.614$, $P = < 0.001$) (Figure 2).

Table 1. FRAX score risk factors

	Normal BMD N= 27	Low BMD N= 66	Osteoporosis N= 48	P
Age, years, mean (SD)	46.8 (10.6)	56.5 (11.7)	62.6 (9.1)	$< 0.001^*$
Female, n (%)	24 (88.8%)	61 (92.4)	43 (89.5)	0.814
Weight, kg, mean (SD)	76.6 (14.6)	66.4 (12.1)	64.8 (10.6)	0.001^*
Height, cm, mean (SD)	156.7 (7.5)	152.3 (6.8)	153.3 (7.1)	0.034^*
Previous Fracture, n (%)	-	-	-	-
Parent Fractured Hip, n (%)	-	-	-	-
Current Smoking, n (%)	-	2 (3.0%)	4 (8.3%)	0.060
Glucocorticoids, n (%)	15 (55.5%)	30 (45.4%)	19 (39.6%)	0.411
Rheumatoid arthritis, n (%)	18 (66.6%)	40 (60.6%)	21 (43.7%)	0.040^*
Secondary osteoporosis, n (%)	-	-	-	-
Alcohol use, n (%)	1 (3.7%)	2 (3.0%)	1 (2.0%)	0.631
Osteoporosis treatment, n (%)	-	16 (24.2%)	42 (87.5%)	$< 0.001^*$

Table 2. BMD and FRAX risk

	Normal BMD N= 27	Low BMD N= 66	Osteoporosis N= 48	P
FRAX risk for OP, n (%)				
Low risk, (n=122)	27 (100%)	63 (95.4%)	32 (66.6%)	$< 0.001^*$
Intermediate risk, (n=14)	-	3 (4.5%)	11 (22.9%)	0.001^*
High risk, (n=5)	-	-	5 (10.4%)	0.007^*
FRAX risk for hip, n (%)				
Low risk, (n=81)	26 (96.3%)	45 (68.1%)	10 (20.8%)	$< 0.001^*$
Intermediate risk, (n=38)	1 (3.7%)	18 (25.7%)	20 (41.6%)	0.001^*
High risk, (n=22)	-	4 (6.0%)	18 (37.5%)	$< 0.001^*$

Conclusion: Most of the patients were classified as low risk for OP and hip, including a high amount of those with OP showing a low and moderate correlation with DXA respectively.

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