Results: 15 patients were included: 11 women and 4 men, with a mean age of 42.2 years (SD±16).

The genetic study was performed in 12 patients: 75% were positive for HLA DQ2 and 25% for HLA DQ8.

The determination of antibodies was positive in 12 patients (73%) and negative in 3 (27%). These 3 were positive for the genetic study (2 HLA DQ2 and 1 HLA DQ8).

The study of BD showed: type I in 4 patients; Type IIIa in 2 patients; Type IIIb in 6 patients; Type IIIc in 3 patients.

BMD showed normal values in 33%, osteopenia in 47% and osteoporosis (OP) in 20% of patients. Thus, 67% had an alteration in BMD at the time of diagnosis.

100% had a Vit D deficit, with a mean value of 14.3 ng/mL (range 4.15–26.8). 75% of them had values below 20 ng/mL (40% less than 10 ng/mL).

40% had secondary hyperparathyroidism (SHP), 83% of which had an alteration in BMD (67% osteopenia and 16% OP). The BD of the patients with SHP and alteration of the BMD showed a histological pattern type Marsh III.

No patient presented an alteration in the values of calcemia, phosphataemia or calciuria.

The relationship between the degree of alteration in BMD and the Marsh classification (table) was studied.

72% of patients with a Marsh III had an alteration in BMD (3 OP and 5 osteopenia vs 3 normal).

DMO	Marsh I	Marsh IIIa	Marsh IIIb	Marsh IIIc	Total
Osteoporosi	0	0	2	1	3
Osteopenia	2	2	1	2	7
Normal	2	0	3	0	5
Total	4	2	6	3	15

Conclusions: Most patients with celiac disease have an alteration in BMD.

In our study, all patients with celiac disease had a Vit D deficiency with no alteration of calcemia or calciuria.

Only in patients with SHP, there is a correlation between alterations in BMD and a higher degree of Marsh.

Most patients with a histological Marsh III have abnormalities in BMD.

Disclosure of Interest: None declared

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AB0844 FALLS: RISK AND PREVENTION IN PRIVATE RHEUMATOLOGY PRACTICE

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Background: Menopausal and osteoporotic women have a higher risk of fractures when falling. Fall prevention is important when taking care of those women.

Objectives: After identifying fall risk factors, defining the % of fractured fallers and the part of osteoporotic women in this population, we want to evaluate the relevance of balance tests and to favor prevention measures for those patients.

Methods: 110 patients, 60 years and older (including 24 controls), having fallen within a year, have seen 28 private practice rheumatologists in the larger Paris area and were subject of our multicentre retrospective study.

Results: Fallers mean age was 75 years.

37% of the fallers within a year fractured after falling. Among them, 95% were post-menopausal fractures versus 64% when including the control group.

Post-fall or post menopausal fracture sites are identical. In order: spine 26%, wrist 18%, ribs 6%.

The circumstances of the falls are: 1) lack of attention 2) slipping 3) stumbling. 61% of the fallers have at least one physical activity, among them 71% a weight-bearing physical activity. The most common physical activity was walking (46%).

Among the fractured, 32% had physical activity, 42% hadn't.

72% of the fallers had at least one fall risk factor: 94% had intrinsic risk factors, 28% extrinsic, and an average of 2 risk factors within the older than 80 years.

Intrinsic factors: 1) osteo-articular 2) eye-vision 3) postural 4) drugs, out of 13 items.

Extrinsic: 1) obstacles 2) footwear out of 7 items.

45% of the fallers within a year had at least one osteoporosis risk factor: 1) low body mass index

2) cortico-steroids 3) early menopause 4) smoking, out of 9 items.

70% of our patients had vitamin D level > 30 ng/l (as recommended)

69% of the patients had recent bone density measures: bone density was lower only at femoral neck of fractured fallers versus non fractured fallers.

The unipodal balance test (positive when standing less than 5 seconds) was relevant in 42% of the patients with or without fractures. Get up and go test was not relevant in our study population.

94% of the rheumatologists participating in the study recommend at least 2 fall prevention measures: 1) correct vitamin D levels 2) physical activity 3) reeducation 4) eye vision correction, out of 12 items.

Conclusions: A significant part of menopausal women with anteriority of falls

and fractures will refracture after falling again. Beside treating osteoporosis, we should identify potential fallers by doing unipodal tests, consider and correct fall risk factors, encourage those patients to keep on physical activity and prescribe reeducation.

Disclosure of Interest: None declared

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AB0845 TECHNETIUM-99 CONJUGATED WITH METHYLENE DIPHOSPHONATE AMELIORATES GLUCOCORTICOID INDUCED OSTEOPOROSIS IN RATS

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Background: ⁹⁹Tc-MDP has been used in Chinese RA patients for over 15 years and many more studies have focused on this agent in RA. However, the previous studies limited in its effect on the effects of anti-inflammation. As a special form of bisphosphonate, the anti-osteoporotic effect of ⁹⁹Tc-MDP is unclear.

Objectives: To systematically investigate the effect of technetium-99 conjugated with methylene diphosphonate (⁹⁹Tc-MDP), an anti-inflammatory drug effective in treating rheumatoid arthritis (RA), on cortical and cancellous bones in glucocorticoid-induced osteoporotic (GIO) rats, as well as comparing the effect of ⁹⁹Tc-MDP with that of methylene diphosphonate (MDP).

Methods: Forty-eight Sprague-Dawley rats were randomly divided into six groups: blank, negative control, high dose, medium dose, low dose, and positive control groups. After dexamethasone was given to all groups except the blank group to induce osteoporosis, the rats in different groups were treated with saline, MDP, or different doses of

Results: Micro-CT analyses showed that: (1) ⁹⁹Tc-MDP reversed glucocorticoid induced bone microarchitecture destruction by increasing vBMD, BV/TV, Tb.Th, Tb.N and decreasing BS/BV, Tb.Sp and TBPf; (2) effect of ⁹⁹Tc-MDP increased as its dosage increased; and (3) ⁹⁹Tc-MDP could improve cortical bone thickness while MDP failed to do so. Micro-CT spatial structure analysis and histology also yielded consistent results, indicating ⁹⁹Tc-MDP increased trabecular number and connectivity morphologically. Finally, biomechanics revealed ⁹⁹Tc-MDP can enhance the extrinsic stiffness of bone by changing bone geometry.

Conclusions: ⁹⁹Tc-MDP has anti-osteoporotic effect by improving both cancellous and cortical bone, as well as increasing extrinsic bone stiffness. The dual effect of ⁹⁹Tc-MDP, anti-inflammatory and anti-osteoporotic, may suggest a potential clinical application for patients with both GIO and RA.

References:

[1] Hoes JN, Jacobs JW, Buttgerit F, et al. Current view of glucocorticoid co-therapy with DMARDs in rheumatoid arthritis. *Nature reviews Rheumatology* 2010;6:693–702.

[2] Bijlsma JW. Disease control with glucocorticoid therapy in rheumatoid arthritis. *Rheumatology* 2012;51 Suppl 4:i9–13.

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AB0846 OSTEOPOROSIS AND ATHEROSCLEROSIS - ALTERNATIVE OR COEXISTENCE

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Background: The majority of scientific research data promote the idea that OP and Atherosclerosis are inter-connected via OPG system. Scientists have speculation that OPG is the molecular bond between artery hardening and bone resorption. Thus the mechanism explained above makes obvious the co-existence of two: Artery hardening and Osteoporosis.

Objectives: There are number of ongoing Clinical trials on Denosumab therapy in patients with diagnosis of Osteoporosis and Atherosclerosis. The increase of Bone mineral density is associated with less intensive hardening of arteries. This fact inspired us to study bone mass in patients with cardiovascular events and atherosclerosis.

Methods: 1675 men, age range 38–78 years, mean age 59±4.3 Disease duration 6.4±1.75 with the diagnosis of Atherosclerosis (revealed on coronarography, assessed lipid profile). At the moment of research Stabile Angina Pectoris (Stable Angina) found in 20% (335); unstable angina non S-T elevation in 48% (804); - Myocardial Infarction 32% (536) Bone Mass was assessed by DXA Absorptiometry technique (Hologic 1000) using T and Z Scores (WHO 1994). As a control group 680 healthy Georgian men 40–70 age range were assessed.

Results: Men having atherosclerosis are rather predisposed to Osteoporosis than health individuals. In Atherosclerosis subgroup normal bone mass was measured in 23% (385.25 patients) of patients; Osteopenia was diagnosed in 19% (315.25 patients), Osteoporosis was detected in 58% (971.5%) according to T-Score SD BMD records are shown in table 1.

Conclusions: 1. According to our research more than 50% of men with verified Atherosclerosis are diagnosed to have Osteoporosis 2. The lowest BMD values were observed in Lumbar Spine L1-L4, indicating that trabecular bone is more

Table 1

	Stable Angina n=335	Unstable angina nont S-T n=804	Myocardial Infarction n=536	Healthy N=680
L2- L4	-2.6±1.1 *	-2.9±1.4 **	-3.1±1.1 **	-0.6±0.2
Prox. Femur Neck	-1.8±0.5 *	-2.6±1.4**	-2.5±1.6**	-1.14±0.26
Prox. Femur Total	-2.7±1.48**	-2.7±0.2**	-2.7±1.25**	-1.05±0.5

*p<0.01 **p<0.001.

deteriorated than cortical 3. Correlation between T Score values and clinical forms of Atherosclerosis were not observed 4. The best understanding of interrelations of mechanisms could point out the right direction for the simultaneous therapy against both targets – Osteoporosis and Atherosclerosis 5. Therefore the expectation of establishing novelty direction among other subtypes of the Medical Specialties as a Preventive Gerontology can be realistic

Disclosure of Interest: None declared

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AB0847 ACCURATE ASSESSMENT OF FEMORAL ECHOSOUND APPROACH PERFORMANCE THROUGH DXA ERROR ANALYSIS

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Background: Currently, the accepted “gold standard” method for bone mineral density (BMD) measurement and osteoporosis diagnosis related to the reference axial anatomical sites is dual-energy X-ray absorptiometry (DXA). However, actual DXA effectiveness is limited by several factors, including intrinsic accuracy uncertainties and specific errors in patient positioning, image segmentation, and post-acquisition data analysis, as documented by very recent literature [1]. This may affect the comparative evaluation of the effectiveness of novel diagnostic methods whose validation studies adopt DXA outcomes as standard reference to assess diagnostic performance.

Objectives: To assess the impact of DXA errors on the performance of an innovative ultrasound parameter for osteoporosis diagnosis on the femoral site, known as Osteoporosis Score (OS).

Methods: 202 patients aged in 46–75 years underwent two diagnostic investigations on the femoral neck: a conventional femoral DXA and an echographic scan performed by employing the innovative EchoSound technology [2]. Initially, the performance of the OS parameter was evaluated considering all the available DXA reports as reference in the data analysis, and calculating the corresponding accuracy in patient classification (osteoporotic, osteopenic, or healthy) and the correlation coefficient between the DXA-measured BMDs and the OS-derived BMD values. At a later stage, the DXA errors were taken into account by performing a strict quality control on DXA reports: all those cases affected by a typical inaccuracy [1] were excluded from the analysis and the actual diagnostic accuracy of the EchoSound technology was re-assessed by analysing only the reliable DXA reports. Intra- and inter-operator repeatability of OS-derived BMD values were also measured in a group of patients.

Results: A diagnostic accuracy of 84.4% ($r = 0.78$, $p < 0.001$) was obtained for the EchoSound approach when all the DXA reports were included in the analysis. In the second part of the study, 61 out of the initial 202 (30.4%) patients were excluded from the analysis because their DXA reports were affected by specific errors. An actual diagnostic accuracy of 94.2% was then obtained on the remaining 141 patients, together with a high correlation between DXA-measured BMDs and OS-derived BMD values ($r = 0.88$, $p < 0.001$). Intra- and inter-operator repeatability of OS-derived BMD values, expressed in terms of the root mean square coefficient of variation (RMS-CV), resulted equal to 0.29% and 0.34% for intra- and inter-operator variability, respectively, therefore documenting a very good measurement repeatability.

Conclusions: Undetected DXA errors had an impact on the accuracy evaluation of EchoSound femoral neck densitometry, causing an underestimation of OS performance in osteoporosis diagnosis. The quality control analysis on DXA reports can be useful to study the actual performance of different ultrasonic methods that considered routine DXA reports as the gold standard reference.

References:

[1] Eur Radiol 2015;25:1504.

[2] UMB 2015;41:281.

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AB0848 DENTAL PANORAMIC RADIOGRAPHY AS A TOOL FOR IDENTIFICATION OF OSTEOPOROSIS: AMONG TUNISIAN WOMEN

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Background: Osteoporosis is defined as a skeletal disorder characterized by low-bone mass predisposing to an increased risk of fracture. At present, the evaluation of bone mineral density (BMD) is the main diagnostic tool in osteoporosis, and it is the most effective and accurate measurement for identifying and monitoring the disease. However, several studies have been conducted with the object of detecting whether these skeletal changes in the mandible are specific to the osteoporotic stage.

Objectives: The purpose of this study was to determine whether the mandibular indices on panoramic radiographs are useful for identifying women with osteoporosis or osteopenia (low BMD).

Methods: Tunisian women aged from 30 to 60 years, who consulted the Rheumatology department of Fattouma Bourguiba university hospital in 2017. The measure the BMD using the dual-energy X-ray absorptiometry (DEXA), were recruited to participate in this case-control study. Among the 60 women selected, 30 were diagnosed with osteoporosis or osteopenia (T-score < -1; cases) and 30 with normal T-score (T-score > -1; controls). The mandibular cortical index (MCI), the mental index (MI), the panoramic mandibular index (PMI) and the alveolar crest resorption degree (M/M ratio) were measured from digital panoramic radiographs in the right and left mandibles and the mean was calculated for each subject. The MI, PMI and M/M ratio values were evaluated using the Z test, and MCI values were analysed using the Chi² test.

Results: The mean age of patients with osteoporosis/osteopenia was 58.61±8.11 and 56.07±9.72 in the control group. The mean bone mineral density (BMD) in vertebral site was 0.856±0.090g/cm² and 1.216±0.185g/cm² in control group. In femoral site, it was 0.877±0.221g/cm² and 1.061±0.142g/cm² respectively. The mean T-score in vertebral site was -2.38±0.81DS in osteoporosis/osteopenia group and 0.64±1.58DS in control group. In femoral site, it was -1.57±0.97DS and 0.21±1.16 respectively.

The analysis of the panoramic radiography showed that in the osteoporosis/osteopenia group: the mean value of MI was 3.56±0.89, the mean PMI was 0.25±0.06 and the mean M/M ratio was 0.71±0.14; concerning the MCI: 46.7% were classified C2 stage and 53.3% were classified C3 stage.

In the control group, the mean MI was 4.42±0.98, the mean PMI was 0.30±0.07 and the mean M/M ratio was 0.77±0.11; 30.1% were classified C1 stage, 53.3% were classified C2 stage and only 16.6% were classified C3 stage.

This study showed that the MI and the PMI were significantly smaller in the group with osteoporosis/osteopenia. However, the M/M ratio was not significantly different. Therefore, the MCI was significantly more affected in the osteoporosis/osteopenia group.

Conclusions: In our study, we proved that the MI, PMI and MCI values were affected in women with osteoporosis/osteopenia, compared with normal patients. Therefore, these indices could be used as an ancillary method in the diagnosis of osteoporosis in women.

References:

[1] C S Valerio et al, Dentomaxillofacial Radiology (2013) 42, 20120059.

[2] André Ferreira Leite, et al, Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2011;112:648–656.

[3] Vlasidis Z. Konstantinos, et al, Maturitas 58 (2007) 226–235.

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AB0849 ASSOCIATION BETWEEN PERIODONTITIS AND OSTEOPOROSIS

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Background: Both periodontitis and osteoporosis have similar sign of bone resorption in nature and have multifactorial etiologic factors, although the mediator factors or mechanism may be different. How to prevent and treat these two bone-loss diseases is always an important issue in public health. However, the relationship of them is still uncertain.

Objectives: The aim of our study is to evaluate the relationship between periodontitis and osteoporosis.

Methods: Tunisian women aged from 30 to 60 years, who consulted the Rheumatology department of Fattouma Bourguiba university hospital between February to December 2017. The measure the bone mineral density (BMD) using the dual-energy X-ray absorptiometry (DEXA), were recruited to participate in this case-control study. Among the 60 women selected, 30 were diagnosed with osteoporosis or osteopenia (T-score < -1; cases) and 30 with normal T-score (T-score > -1; controls). The oral examination was done by a dentist in the stomatology department in the same hospital.

Results: The mean age of patients with osteoporosis/osteopenia was 58.61±8.11