multicentre clinical study, REMS T-score values were highly correlated with Dual-energy X-ray absorptiometry (DXA) T-scores [1].

Objectives: To determine the predictive value in term of fragility fracture risk reduction of the REMS T-score compared to DXA T-score in a representative female population.

Methods: We enrolled 1370 women (30-90 y, BMI ≤ 35 kg/m²) from 2013 to 2017. We performed in all patients both DXA and REMS lumbar scans. All analyses were performed under the strictest adherence to the corresponding guidelines. All patients underwent a follow-up lasting up to 5 years to assess the incidence of fragility fractures. Patients were stratified in two groups: patients who suffered a fragility fracture during the follow-up period (Group X) and those who did not (Group Y). Through an iterative process, the two groups were then age-matched with an enrolment proportion of 1:2. The finally obtained groups were identified as Group A (with incident fractures) and Group B (without incident fractures). The performance of REMS T-score in discriminating between Group A and Group B was quantitatively assessed and compared with DXA.

Results: Fragility fractures incidence was 14.0% (192 out of 1370 patients, mean follow-up 3.6 ± 0.8 years). Group A included 180 patients (mean age 67.2 ± 7.2 years) and Group B included 360 patients (mean age 67.3 ± 3.5 y). Group A and Group B did not show significant differences with respect to height ($p=0.41$), weight ($p=0.68$) and BMI ($p=0.32$). As expected we found significant differences in REMS T-score (-2.68 ± 1.28 in Group A vs -2.03 ± 1.23 in Group B, $p<0.001$) and DXA T-score (-2.52 ± 1.20 in Group A vs -2.08 ± 1.17 in Group B, $p<0.001$). REMS T-score ≤ -2.5 identified Group A patients with sensitivity = 65% and specificity = 58% (OR=2.6). DXA T-score identified Group A patients with sensitivity = 57% and specificity = 57% (OR=1.7).

Conclusion: REMS T-score resulted an effective predictor for the risk of incident fragility fractures in a representative population-based sample of female subjects. Reported OR values showed also that REMS had a better performance than DXA in the considered population, showing higher values for both sensitivity and specificity in the identification of fragile patients.

REFERENCES:

- [1] Di Paola M, Gatti D, Viapiana O, et al. Radiofrequency echographic multi-spectrometry compared with dual X-ray absorptiometry for osteoporosis diagnosis on lumbar spine and femoral neck. *Osteoporos Int* Published Online First: 4 September 2018. Doi: :10.1007/s00198-018-4686-3

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Osteoporosis

FRI0465

PREDICTION OF INCIDENT FRAGILITY FRACTURES THROUGH RADIOFREQUENCY ECHOGRAPHIC MULTI SPECTROMETRY(REMS)

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Background: Radiofrequency Echographic Multi Spectrometry (REMS) is an innovative non-ionizing technique used for diagnosing osteoporosis at lumbar spine and femoral neck sites. In accordance with the results of a

FRI0466

RISK FACTORS ASSOCIATED WITH THE DEVELOPMENT OF FRACTURES IN GLUCOCORTICOID TREATED PATIENTS. THE ROLE OF HYPOGONADISM

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Background: Glucocorticoid-induced osteoporosis (GIOP) is a common form of secondary osteoporosis (OP). Fractures in GIOP frequently occur with higher bone mineral density (BMD) than expected and typically at treatment initiation, complicating the identification of patients at risk for fracture.

Objectives: Identify risk factors associated with fragility fracture development in GC-treated patients.

Methods: 127 patients (aged 62±18years, 63% women, 46% postmenopausal) on GC treatment (prednisone ≥5mg/day, >3months) were included. Clinical data collected included: risk factors for OP and fractures, dose and GC-treatment duration, previous fractures and disease activity, anthropometric data, bone metabolism parameters (including gonadal axis study), BMD analysis (DXA; OP: T-score ≤-2.5), TBS (degraded microarchitecture [DMA]:<1.230), dorsolumbar X-ray (assessing vertebral fractures [VF]) and FRAX risk (GC-adjusted)¹.

Results: Most patients received GC treatment for vasculitis or polymyalgia rheumatica during 47.7±69 months (mean daily dose: 14.5mg). 17% had VF, 28% had fragility fracture (VF + non-VF), 29% OP and 71% DMA. Patients with VF received more GC-boluses (57.1% vs. 29.5%, p=0.03), were older (68±13 vs. 60±19 years, p=0.02), postmenopausal (100% vs. 67%, p=0.015) and/or men with testosterone <250ng/dL (57% vs. 11%, p=0.017) and had lower TBS values (1.100 vs. 1.220, p<0.001) and higher FRAX risk (17 vs. 9, p=0.003); patients with fragility fractures showed higher accumulated GC-doses (6.1±13 vs. 8±18g, p=0.046). On multivariate analysis, hypogonadism (OR 14.3; IC95% 2.2->100, p=0.01) and having received GC-boluses (OR 3.40; IC95% 1.1-11.8, p=0.01) were the principal factors associated with VF. Hypogonadism (OR 7.1; IC95% 1.5-38.7, p=0.01) and having a FRAX >20 (OR 6.97; IC95% 1.3-51.7, p=0.02) were factors related to the presence of fragility fractures. Men with testosterone <250ng/dL had higher BMI (29.4 vs. 26.3, p=0.005) and disease activity (ESR 23 vs. 12, p=0.005) and lower TBS (1.050 vs. 1.210, p<0.001); age, daily and cumulated GC doses were similar to subjects with normal testosterone levels.

Conclusion: Hypogonadism is a major risk factor for developing fractures in GC-treated men and women, whereas receiving GC-boluses is related to VF, indicating the importance of evaluating the gonadal axis in these patients.

REFERENCES:

- [1] Buckley L, et al. Arthritis Care Res. 2017

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FR10467 THE DISTRIBUTION OF PREVALENT AND INCIDENT VERTEBRAL FRACTURES IN THE TERIPARATIDE VERSUS RISEDRONATE "VERO" CLINICAL TRIAL

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Background: Biomechanical analyses indicate that compressive load is heterogeneous throughout the thoraco-lumbar spine, with maximal loads during daily activities on T₇-T₈ and T₁₁-L₁. Population-based studies have shown a bimodal spinal distribution of prevalent and incident vertebral fractures (VFXs) at the mid-thoracic and thoraco-lumbar junction levels. However, prevalence and incidence of individual VFXs according to both their location and severity have not been reported in randomised clinical trials with anti-osteoporosis drugs.

Objectives: The aim of this study was to describe the distribution of prevalent and 12- and 24-month incident new and/or worsening VFXs according to location and severity in the teriparatide versus risedronate VERO clinical trial¹.

Methods: 1360 postmenopausal women with at least 2 moderate (SQ2: 25% ≤ vertebral body height loss ≤ 40%) or 1 severe (SQ3: vertebral body height loss > 40%) VFX according to the semiquantitative (SQ) scale by Genant², and a BMD T-score ≤ -1.50 were randomised to SC

daily teriparatide (20 µg) or oral weekly risedronate (35 mg) in a double-blind, double-dummy 2-year trial. A new VFX was defined as a vertebral body height loss of at least 20% (and 4 mm) of a vertebra that was unfractured at baseline, based on a 6-point placement of the vertebral bodies from T₄ to L₄, and confirmed by an increase by 1 or more severity grades according to the SQ scale². Worsening of a baseline pre-existing fracture was diagnosed if the decrease in vertebral height was at least 1 severity grade in the SQ assessment. Vertebrae with Schmorl's nodules, Scheuermann's disease and platyspondyly were excluded. Spine x-rays were centrally assessed by radiologists at BioClinica.

Results: Mean (SD) age was 72.1 (8.7) years (min-max: 45-93 years). Spine x-rays were available at baseline, 12, and 24 months for 1,360, 1,159 and 1,049 patients respectively, for a total of 17,413, 14,987 and 13,454 evaluable vertebral bodies. The location of the prevalent VFX by SQ severity degree is shown in Fig.1. At baseline, VFXs were preferentially located at L₁, T₁₂, L₂, T₁₁ and T₈ (38.5%, 37.4%, 25.3%, 23.5% and 23.1% of the patients, respectively). A total of 524 (3.0%) of all the assessed vertebral bodies had a fracture at L₁, the most frequently affected level. There were 126 new and/or worsened incident VFXs during the course of the study (35 in the teriparatide and 91 in the risedronate groups) affecting 100 patients (9.5%) at 24 months. Eighty-nine of these patients presented a new moderate (SQ2) or severe (SQ3) incident VFX. The most frequently fractured vertebral body was T₁₂ (1.6% of patients), followed by L₁ and T₁₁ (1.3% both), T₉ (1.2%) and T₈ (1.1%). The frequency of incident VFX was lower at all levels with teriparatide (Fig.2). T₁₂ was also the most frequently fractured vertebral body at 12 months of follow-up (0.7% of patients).

Conclusion: These results from the VERO clinical trial confirm previous results from epidemiological studies that VFXs occur most frequently in the mid-thoracic and thoraco-lumbar regions of the spine. Given the study eligibility criteria, mild (SQ1) VFXs are likely under-represented. Teriparatide is more effective in reducing the incidence of the commonest VFXs (T₁₂, L₁) as compared to risedronate.

REFERENCES:

- [1] Kendler DL, et al. Lancet (2018);391:230.
[2] Genant HK, et al. J Bone Miner Res (1993);8:1137.

Fig. 2: % Patients with Incident VFX by Level and Treatment Arm

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