including the TUG test. TUG performance was considered low if it took, 15 seconds or longer. A vertebral fracture assessment (VFA) image was obtained which was subsequently scored for the presence of significant vertebral deformities. VF grade 1 were excluded.

Results: Eighty four patients were included. The mean age of our patients was 62.29 ± 8.27 years with an average body mass index (BMI) of 31.45 ± 6.21 kg/m² [18.18-44.38]. According to the WHO classification 42 patients (50%) had osteoporosis. Among 84 women, 47 had a low TUG performance. Subjects with low TUG performance had an older age (57.94 vs 65.71 years) ($p < 0.001$), and had a significantly lower BMD at femoral neck (0.825 g/cm³ vs 0.752 g/cm³) ($p < 0.001$). There was no significant difference between the two groups regarding duration of menopause, history of previous fragility fracture, body mass index and BMD at total hip and at vertebral site. Osteoporosis was found in 30 patients who had low TUG performance and in 12 patients who had normal TUG performance without statistically significant difference ($p = 0.08$). VF were assessed in 22 subjects. VF were found in 20 patients with low TUG performance (42.55%). Compared with the group with normal TUG performance, subjects with low TUG performance had significantly higher number of fracture ($p < 0.001$). A significant correlation was found between the number of VF and the score of get up and go test (Khi-2 test, $p < 0.001$).

Conclusion: Our study found a strong relationship between TUG performance and prevalent vertebral fracture. Therefore evaluation of additional risk factors may improve the prediction of vertebral fracture in post-menopausal women.

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FRI0486

NO IMPACT OF ANTI-RANK LIGAND AND PTH ANALOGUES ON CARDIOVASCULAR RISK IN IDIOPATHIC AND POSTMENOPAUSAL OSTEOPOROSIS: A SYSTEMATIC LITERATURE REVIEW AND META-ANALYSIS

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Background: Emerging evidence suggests a possible association between osteoporosis and cardiovascular disease^{1,2}. The mutual effects of drugs used in these two diseases are now a point of interest. Two meta-analyses have been conducted to explore the cardiovascular effects of bisphosphonates^{3,4}. There is no review for other osteoporosis treatments, such as anti-rank ligand antibody and parathyroid hormone analogues.

Objectives: A literature review and meta-analysis of randomized controlled trials was conducted to address the impact of PTH analogues and anti-Rank Ligand on cardiovascular events and overall mortality in individuals with idiopathic osteoporosis.

Methods: A systematic literature review was conducted in December 2017 in the PubMed, Embase, Cochrane databases, and updated on PubMed in December 2018, by selecting trials including a treatment (anti-Rank Ligand or PTH analogue) and a control group. We also conducted a search for abstracts of the French Rheumatology Society, American College of Rheumatology and European League Against Rheumatism annual meetings over the past 3 years. Relative risks and 95% confidence intervals for each event were estimated using the Inverse Variance fixed effects method. The main endpoints were the occurrence of cardiovascular events and all-cause of mortality.

Results: Of the 2782 reports initially found (503 articles via PubMed, 1309 via Embase, 474 via the Cochrane Library and 15 abstracts from annual meetings, 16 articles were used for the meta-analysis. All studies were randomized; no exploitable prospective cohort study was found. The number of adverse events of interest was available for 6 studies for the anti-Rank Ligand corresponding to 26 864 patient-years. After meta-analysis, there was no significant difference between the placebo group and the anti-Rank Ligand group for overall mortality (RR 0.79, 95% CI (0.60-1.04)), the combined cardiovascular endpoint (overall mortality, coronary artery disease and stroke: RR 0.95, 95% CI (0.78-1.16)), and the individual risk of coronary artery disease (RR 1.14, 95% CI (0.76-1.73)), arrhythmia (RR 1.03, 95% CI (0.63-1.68)) and ischemic or hemorrhagic stroke (RR 1.03, 95% CI (0.72-1.47)). The number of adverse events of interest was available for 10 studies for the PTH analogue group, corresponding to 6 220 patient-years. After meta-analysis, there was no significant difference between the placebo group and the PTH analogue group for overall mortality (RR 0.89, 95% CI (0.35-2.29)), the combined endpoint (overall mortality, coronary artery disease and stroke: RR 0.71, 95% CI (0.37-1.36)), and the individual risk of coronary artery disease (RR

0.65, 95% CI (0.19-2.27)), arrhythmia disorders (RR 1.43, 95% CI (0.73-2.80)) and ischemic or hemorrhagic stroke (RR 0.60, 95% CI (0.19-1.96)).

Conclusion: The anti-Rank Ligand and the PTH analogues have no short-term impact on the cardiovascular risk and the overall mortality in postmenopausal osteoporosis. To better answer the question whether these treatments are able to reduce the long-term cardiovascular risk, further comparative studies with longer duration are required.

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FRI0487

UTILITY OF TRABECULAR BONE SCORE (TBS) FOR FRACTURE RISK ASSESSMENT IN GLUCOCORTICOID-INDUCED OSTEOPOROSIS

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Background: Glucocorticoid-induced osteoporosis (GIOP) is the one of the most common forms of secondary osteoporosis (OP). Fractures in GIOP frequently occur with higher than expected bone mineral density (BMD) values. The Trabecular Bone Score (TBS) is a gray-level textural index derived from DXA images that provides information about bone microarchitecture and fracture risk independently of BMD; therefore, TBS measurement could be useful for identifying patients with high fracture risk associated with glucocorticoid (GC) treatment.

Objectives: To analyse the clinical utility of TBS for fracture risk assessment in GC treated patients and compare it with BMD assessment, the gold-standard diagnostic test.

Methods: 127 patients on chronic GC treatment (≥ 5 mg/day) were included (mean age 62 ± 18 years, 63% women) in this cross-sectional study. The medical history and anthropometric data were collected, as well as measurements of bone metabolism parameters, bone densitometry (DXA) at lumbar spine and femur (considering OP when T-score ≤ -2.5), TBS (considering degraded microarchitecture [DMA] with values < 1.230) and dorsolumbar X-ray to assess vertebral fractures (VF). BMD and TBS

sensitivity, specificity and positive and negative predictive values (PPV, NPV) were evaluated to determine the diagnostic accuracy of the two methods.

Results: Most of the patients were receiving GC treatment for vasculitis or polymyalgia rheumatica over a mean period of 47.7±69 months at a mean daily dose of 14.5mg. 17% had VF, 28% any type of fragility fracture (VF + no-VF), 29% OP and 71% DMA. In patients with VF, low TBS (DMA) was more common than densitometric OP (76%, $p=0.03$ vs. 38%, $p=n.s.$). Similar results were observed when analysing patients with any fragility fracture (69%, $p=0.02$ vs. 36%, $p=n.s.$). The diagnostic accuracy of TBS was greater than BMD on evaluating VF, with a sensitivity, specificity, PPV and NPV of 0.76, 0.53, 0.25 and 0.92 for TBS and 0.38, 0.72, 0.22, and 0.85 for BMD, respectively. Specificity increased to 0.89 for VF and 0.9 for any fragility fracture on combining both assessments (OP+DMA).

Conclusion: TBS has greater discriminative power than BMD measurement and could be useful as a complementary tool for fracture risk assessment in GIOP.

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FRI0488

ROLE OF DUAL-PHOTON X-RAY ABSORPTIOMETRY (DXA) IN PREDICTION OF REFRACTURE AND MORTALITY

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Background: The presence of a fragility fracture leads to a high risk for a subsequent fracture and mortality. Although bone mineral density (BMD) does not reflect the real fracture risk in many conditions, it is a well-established predictor of fracture risk and for many years, dual-photon X-ray absorptiometry (DXA) has been the reference standard for measuring BMD.

Objectives: To evaluate the predictive significance of femur BMD and T-score obtained by DXA in the outcomes refracture and mortality of elderly patients with a previous fragility hip fracture.

Methods: Longitudinal retrospective study of patients referred to the Rheumatology department's Fracture Liaison Service (FLS) from march 2015 until march 2017 aged ≥65 years old. Demographic and clinical data were collected including DXA results. Statistical analysis was performed with STATA. Hazard ratios (HR) were calculated through cox regression, adjusted to age and degree of dependence.

Results: From a total of 522 patients, 214 performed DXA (77.6% female; median (min-max) age 82 (65-99) years; 65.4% autonomous). Twenty seven patients died (median days until death=457, min 160, max 1049) and 18 had a subsequent fracture (median days until refracture 343.5, min 160, max 1049); 129 patients maintained follow-up. Mean serum total femur BMD, g/cm² (SD) was 0.7 (0.14) and mean total femur T-score (SD) was -2.6, (1.1). 127 (59.3%) patients had T-score ≤-2.5. After multivariable analysis, higher femur BMD and T-score were predictors of better survival outcome (HR 0.01, $p=0.023$; HR 0.67, $p=0.038$, respectively). Nevertheless, none of them predicted refracture outcome. (HR: 0.08; 95%CI [0.01-5.16]; $p=0.240$; HR: 0.81; 95%CI [0.51-1.28]; $p=0.361$).

Conclusion: DXA is important in the management of patients with bone fragility syndromes. Our sample suggests that femur BMD/T-score had significant impact on survival outcome. Thus it can be a predictor of mortality with relevant role in daily practice.

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FRI0489

THE ASSOCIATION BETWEEN CT-MEASURED BONE ATTENUATION AND PREVALENT VERTEBRAL FRACTURES IN THE THORACIC SPINE DIFFERS ACCORDING TO VERTEBRAL FRACTURE LOCATIONS

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Background: Subjects with prevalent vertebral fractures (VFs) have lower bone mineral density (BMD) in the lumbar spine and hip than subjects without prevalent VFs. However, VFs are not equally distributed across the thoracic spine. They occur preferentially at T7-T8 and T11-T12, which are the highest loaded vertebral regions during daily activities (1).

Objectives: We evaluated the association of BMD with prevalent VFs at non-preferential locations (nprVFs: T4-T6 and T9-T10) and at preferential locations (prVFs: T7-T8 and T11-T12).

Methods: Baseline CT images of T4-T12 in smokers with and without COPD were analysed for the presence of VFs according to Genant. Bone attenuation (BA), expressed in Hounsfield units (HU), was measured in all non-fractured vertebrae. Linear regression was used to compare mean BA and logistic regression was used to estimate the association between BA and prevalent VFs. All analyses were adjusted for age and sex.

Results: Prevalent VFs were most frequently located at T7-T8 (in >6% of vertebrae) and T11-T12 (in >4% of vertebrae).

At subject level and compared to subjects without prevalent VFs, mean BA of all non-fractured vertebrae was significantly lower in subjects with any prevalent VFs (-21%, $p<0.0001$). There was a significant progressive trend ($p<0.0001$) in decrease in mean BA of all non-fractured vertebrae between subjects with only prVFs (-15%), with only nprVFs (-25%, $p<0.05$ vs prVFs) and with both nprVFs and prVFs combined (-32%, $p<0.0001$ vs prVFs) (all $p<0.0001$ compared to subjects without VF).

At each individual non-fractured vertebral level, each BA decrease of 50 HU was associated with a 2.0-2.5 increased odds of any prevalent VF, a 1.5-1.9 increased odds of only prVF, a 2.2-3.4 increased odds of only nprVF and a 3.8-4.6 increased odds of nprVF and prVF combined.

Conclusion: In addition to BA, other factors such as vertebral load during daily activities may determine the location of a VF. The location of a VF may be a potential *in vivo* marker of the load/strength ratio of bone.

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