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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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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FR10490

GOAL-DIRECTED TREATMENT OF OSTEOPOROSIS IN PATIENTS WITH RHEUMATOID ARTHRITIS USING DENOSUMAB FOR THREE YEARS

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Background: Osteoporosis (OP) is frequently concomitant with rheumatoid arthritis (RA). Effective treatment have to be performed in OP in RA (RAOP). Denosumab (DMB) is one of the promising drugs for the treatment of RAOP. We reported results of 12-month DMB treatment for RAOP from Japanese multicenter registry study (TBCR-BONE) in EULAR2016¹. Recently treatment goal of OP was reported from American society for bone and mineral research and National Osteoporosis Foundation (ASBMR-NOF) working group (Goal-Directed Treatment)². This progress report advocated that the goal of treatment is a T-score > -2.5 at femoral neck, total hip (TH) or lumbar spine (LS) by DXA if the primary reason for starting treatment was T-score < -2.5 at that skeletal site. The Working Group judged that it was intuitively reasonable to expect that initial treatment should offer at least a 50% chance of achieving the treatment goal within 3 to 5 years of starting therapy.

Objectives: The aim of this retrospective study is to evaluate whether 3-year DMB treatment can achieve treatment goal of OP reported recently from TBCR-BONE.

Methods: This study used 78 female RAOP patients who completed 3-year DMB treatment for RAOP. 36 patients in whom baseline T-score of LS-BMD were -2.5 or less were included in LS-BMD analysis. 52 patients in whom baseline T-score of TH-BMD were -2.5 or less were included in TH-BMD analysis in the same way. As was in clinical setting in Japan, 60mg DMB was administered every 6 months with vitamin D3 agent. Patients' characteristics, time course of T-score and baseline characteristics related to achievement of treatment goal (T-score > -2.5) were investigated.

Results: Baseline characteristics of 78 patients: Mean age was 71 years. RA duration was 17 years. Prednisolone user was 32%. LS-BMD analysis (n=35) T-score was significantly increased (-3.5 at baseline, -3.0 at 1 year, -2.9 at 2 years, -2.8 at 3 years). The rates of patients who achieved treatment goal were 30.6% at 1 year, 38.9% at 2 years and 44.4% at 3 years (Fig1A). The achiever had significant lower baseline fracture risk by FRAX (20.1% vs. 33.9%; p=0.013), significant lower baseline mHAQ (0.45 vs. 1.05; p=0.03) and significant lower baseline T-score of LS-BMD (-3.0 vs. -3.9; p<0.01) than the non-achiever did. TH-BMD analysis (n=52) T-score was significantly increased (-3.2 at baseline, -3.0 at 1 year, -2.9 at 2 years, -2.9 at 3 years). The rates of patients who achieved treatment goal were 19.2% at 1 year, 28.8% at 2 years and 25.0% at 3 years (Fig1B). The achiever had significant lower baseline bone turn over marker (P1NP and TRACP-5b) and significant lower baseline T-score of TH-BMD (-2.6 vs. -3.3; p<0.01) than the non-achiever did. Cut-off values at baseline for achievement of treatment goal calculated using receiver operating characteristic analysis was -3.4 in LS-BMD and -2.7 in THBMD.

Conclusion: This study suggested that achievement of treatment goal in RAOP is not possible in LS-BMD and in TH-BMD when 3-year DMB was used as treatment for RAOP. Longer duration or earlier initiation of DMB treatment is necessary to achieve the goal. Although response in LS-BMD was related to fracture risk and physical function, response in TH-BMD was related to bone turnover. We will report 5-year results in the future.

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Fig1. Change of percentage of patients with T-score > -2.5
A: results of lumbar spine bone mineral density (n=36)
B: results of total hip bone mineral density (n=52)

FR10491

MANAGEMENT OF SECONDARY OSTEOPOROSIS FRACTURES IN FRACTURE LIAISON SERVICE OF REIMS HOSPITAL IN FRANCE: STUDY AT 25 MONTHS OF FOLLOW-UP

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Background: Osteoporosis is a major public health issue, progressing with the aging of the population and responsible for nearly 400,000 fractures/year in France. Fracture Liaison Services (FLS) are systems of detection and secondary prevention of osteoporotic fractures. These systems are recognized as effective by international scientific societies.

Objectives: The aim of this study was to evaluate the efficiency of Reims Hospital FLS protocol after 25 months of implementation.

Methods: We performed an ambispective monocentric observational study at the Reims Hospital between April 2016 and May 2018. We included patients over 50 years who were hospitalized in the orthopedic department for osteoporotic fractures. These patients were evaluated clinically, biologically and radiographically during a one-day hospitalization in the rheumatology unit. Therapeutic compliance and fracture recurrence were assessed in consultation at 3-month and 1-year telephone interviews.

Results: Sixty-four/242 patients (26.4%) identified in orthopedic service were included. The average age was 72 years old with a sex ratio of 1:10. The most common fracture was the proximal end of the femur for 25 patients (39%). Fifty-five patients (85.9%) had an indication for osteoporosis treatment, the most prescribed was zoledronic acid for 45 patients (81.9%). Twenty-four/55 patients (43.6%) started their treatment and 22/24 (91.7%) were still treated at one year.

One patient (1.63%) died within the follow-up period. Twelve/55 patients (21.8%) presented a new fall and 7/55 patients (12.7%) experienced a new fracture.

Comparative analysis of observant versus non-observant population groups at 1 year showed that non-observant patients had significantly more recurrent falls (93.54% versus 68.18%, p = 0.024) and received treatment of zoledronic acid (93.56% versus 63.64%, p = 0.010).

Further analysis showed that our low rate of initiation treatment was due to difficulties in implementing bisphosphonates, mainly because of the dental care needed. However, we observed a high rate of treatment adhesion at 1 year, once the treatment is started. During this study, we identified 2 areas of improvement: therapeutic education to improve patient adherence and fall risk factors to decrease recurrent fall rate.

Conclusion: There is a real benefit to the establishment of this FLS with a high rate of therapeutic compliance at 1 year follow-up. However there are opportunities for improvements in treatment initiation through patients therapeutic education.

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