Abbott, Lilly, Amgen, MSD, Will, Bio Minerals and Roche, Consultant for: Research support, consultant and/or speaker fees from: Pfizer, Abbott, Eli Lilly, Amgen, MSD, Roche, UCB, BMS, Novartis, Will-Pharma, Speakers bureau: Research support, consultant and/or speaker fees from: Pfizer, Abbott, Eli Lilly, Amgen, MSD, Roche, UCB, BMS, Novartis, Will-Pharma, Speakers bureau: Pfizer, Abbott, Lilly, Amgen, MSD, Will, Bio Minerals and Roche

DOI: 10.1136/annrheumdis-2019-eular.5349

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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Disclosure of Interests: Yuji Hirano: None declared, Yasuhide Kanayama: None declared, Kyosuke Hattori: None declared, Daisuke Kihira: None

declared, Naoki Ishiguro Grant/research support from: AbbVie, Asahi Kasei, Astellas, Chugai, Daiichi-Sankyo, Eisai, Kaken, Mitsubishi Tanabe, Otsuka, Pfizer, Takeda, and Zimmer Biomet, Consultant for: Ono, Speakers bureau: Astellas, Bristol-Myers Squibb, Daiichi-Sankyo, Eli Lilly, Pfizer, and Taisho Toyama, Toshihisa Kojima Grant/research support from: Chugai Pharmaceutical (Investigator Initiated Study), Novartis, Nippon Kayaku, Eli Lilly, Eisai, Speakers bureau: Chugai Pharmaceutical, Takeda Pharmaceutical, Pfizer, Eli Lilly Japan, Bristol Myers Squibb, Ono Pharmaceutical, Daiichi Sankyo, Astelas, UCB, Janssen Pharmaceutical, Tanabe Mitsubishi,

DOI: 10.1136/annrheumdis-2019-eular.1889

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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Disclosure of Interests: Ambre HITTINGER: None declared, Jean-Hugues Salmon Speakers bureau: Janssen Novartis, jean paul eschard: None declared, Isabelle CHARLOT-LAMBRECHT: None declared
DOI: 10.1136/annrheumdis-2019-eular.3033

FRI0492 CALCULATING FRAX SCORE IN CLINICAL PRACTICE: PITFALLS AND PROBLEMS

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Background: Osteoporosis related fractures cause significant morbidity and mortality. FRAX score uses clinical risk factors and country-specific data in addition to Bone Mineral Density (BMD) to assess patients with high 10-year risk of hip (>3%) or major osteoporotic (>20%) fracture. We noticed discrepancies between radiologist reported and physician calculated FRAX scores at our hospital. We hypothesized that providers are calculating FRAX score differently as BMD in the FRAX calculator is an optional input variable.

Objectives: This study was initiated to see the differences in results when FRAX score is calculated using T-score, BMD and no BMD and how this difference can influence treatment.

Methods: Retrospective chart review of 1200 DEXA reports from 2013 to 2015 was done. Patients between ages of 40-90 years with T-score ranging from ≤ -1 to >-2.5 at femoral neck were included in the study. Patients already on osteoporosis therapy and/or with T-score ≤ -2.5 or >-1 were excluded.

Pertinent risk factors were obtained from chart review. 237 patients met inclusion criteria and 3 separate FRAX scores were calculated using a) Femoral neck BMD b) T-score c) no BMD value. FRAX score reported by radiologist in the chart was also reviewed. Subsequently, FRAX scores obtained using T-score, no BMD value and radiology reported scores were compared against FRAX score calculated using femoral neck BMD (gold standard)

Results:

Table 1. shows demographic information for 237 patients who met inclusion criteria.

Demographics	
Race	
Hispanic	131 (54.8%)
Black	71 (29.9%)
Caucasian	15 (6.3%)
Asian	20 (8.5%)
Average Age	67 $\pm$ 10.5 years
Sex	
Male	11 (4.7%)
Female	226 (95.3%)
Average Height	159.3 $\pm$ 7.6 cm
Average Weight	71 $\pm$ 13 kg
BMI	27.9 $\pm$ 4.9
Previous fracture	13 (5.4%)
Current smoking	14 (5.9%)
Steroid use	48 (20.3%)
RA	26 (11%)
Secondary osteoporosis	8 (3.4%)
Alcohol use	3 (1.3%)

When FRAX score calculated using BMD was compared with FRAX score calculated without BMD, number of patients with high 10-year fracture probability decreased from 49 to 11 patients, which was a statistically significant decrease of 77.6% ($p<0.001$).

When data was stratified according to age, there was significant overestimation of risk in patients >65 years ($p<0.0001$) when FRAX was calculated without BMD.

Conclusion: FRAX score calculation without BMD leads to both statistically and clinically significant overdiagnosis especially in elderly.

Interchanging T score and BMD to calculate FRAX score leads to same treatment decision.

Further education of providers regarding FRAX score is needed.

Many providers are not aware that if BMD column is left blank, it defaults the calculation to no BMD. A pop up alerting the user "no machine was selected so the calculation will default to no BMD which can lead to overestimation of risk" in FRAX tool might be helpful to avoid miscalculation.

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Table 2. shows difference in risk estimation when different FRAX score assessments were compared against gold standard femoral neck BMD.

FRAX Scores Compared	Discrepancy in Risk estimation	Overestimation	Underestimation	McNemar's test
No BMD vs. BMD FRAX	52/237 (16%)	52	0	$p<0.0001$
Reported FRAX vs. BMD FRAX	6/237 (2.4%)	2	4	$p=0.414$
T-score vs. BMD FRAX	1/237 (0.4%)	1	0	$p=0.317$

McNemar's test was used to compare difference in risk estimation and although the difference in absolute FRAX score values was statistically significant in all groups ($p<0.0001$), difference in risk estimation based on FRAX score was statistically significant only in BMD vs. no BMD comparison.

Disclosure of Interests: Navneet Kaur: None declared, Barbara Mendez: None declared, Avneet Vig: None declared, Beverly Johnson Shareholder of: ownership of johnson and johnson stock over 10,000 USD, Consultant for: I am a consultant for the rheumatology education group, Employee of: I have been paid indirectly by pharma as a consultant for the rheumatology education group, Tony Francis: None declared

DOI: 10.1136/annrheumdis-2019-eular.1462

FRI0493 CLINICAL EFFICACY OF DENOSUMAB IN PATIENTS WITH OSTEOPOROSIS BETWEEN RHEUMATOID ARTHRITIS AND PRIMARY OSTEOPOROSIS; 24 MONTHS OF FOLLOW-UP

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Background: Denosumab (DMB) is a fully human monoclonal antibody to the receptor activator of nuclear factor-kappaB ligand (RANKL) that blocks its binding RANK, inhibiting the development and activity of osteoclasts, decreasing bone resorption, increasing bone density and reducing fracture risk. Also DMB is a useful therapeutic agent for both rheumatoid arthritis (RA-OP) and primary osteoporosis (P-OP). However there is still few comparative study of clinical efficacy of DMB between RA-OP and P-OP.

Objectives: To compare the clinical efficacy of DMB in patients with osteoporosis between rheumatoid arthritis and primary osteoporosis for 24 months.

Methods: RA patients diagnosed according to the 2010 ACR/EULAR criteria. RA-OP and P-OP patients met at least one of the following criteria were eligible; a bone mineral density T score of -2.5 or less at the lumbar spine or total hip and either one or more moderate or severe vertebral fractures or two or more mild vertebral fractures. All patients were initiated DMB from between October, 2013 and August, 2016. The final study cohort of 61 RA-OP and 50 P-OP patients received continuous DMB therapy more than 24 months. The DMB dose was 60mg at once every 6 months. In all cases native or activated vitamin D has been used. We reviewed the results for 24 months about the increase and decrease of bone mineral density(BMD) of lumbar spine(LS) and total hip (TH) by DEXA and bone turnover markers, intact n-terminal propeptide type I procollagen(PINP) and tartrate-resistant acid phosphatase form 5b (TRACP-5b).

Results: In the patients of RA-OP (n=61) and P-OP (n=50), the number of female was each 56(92%) and 45(90%) cases($p=0.741$). The mean age was 72.7 ± 7.5 and 76.8 ± 7.8 years old ($p=0.006$); disease duration of RA-OP patients was 12.6 ± 12.9 years; the body mass index was 20.4 ± 2.7 and 20.3 ± 3.0 ($p=0.687$) and the FRAX was 27.2 ± 15.7 and 24.6 ± 11.1 ($p=0.745$). Clinical findings related to RA-OP at baseline were as follows; CRP 0.8 ± 1.1 ; DAS-CRP 3.28 ± 1.36 ; HAQ 1.16 ± 1.04 in RA-OP patients and in the patients of RA-OP and P-OP, bone turnover markers and bone mineral density at baseline were as follows; PINP 57.7 ± 32.2 and 64.0 ± 32.7 $\mu\text{g/l}$ ($p=0.151$); TRACP-5b 563