A. Lorenzo: None declared, Nieves Martín: None declared, Carlos Rodríguez-Lozano: None declared

DOI: 10.1136/annrheumdis-2019-eular.928

Table

Age, mean (SD)	73.4 (10)
BMI, mean	27.4
Fracture type, N (%)	
Forearm	71 (18)
Hip	132 (34)
Humerus	77 (20)
Vertebra	52 (13)
Others	49 (13)
FRAX items, N (%)	
Previous fracture	51 (13)
Hip fracture of parents	36 (9)
Smoking	81 (21)
Corticoids	24 (6)
Rheumatoid arthritis	4 (1)
Secondary osteoporosis	17 (4)
Alcohol	68 (18)
Densitometry (%)	
Normal	30
Osteopenia	43
Osteoporosis	26
FRAX, mean (SD)	
Major fracture	8.4 (5)
Hip fracture	4.3 (4)
Treatment prescribed, (%)	
Biphosphonate or equivalent	68
Referral to primary care	64
Persistence at 12 months	53

FRI0496 OSTEOPOROSIS IN PRIMARY CARE – ARE WE MISSING A TRICK?

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Background: Globally various incentive schemes have been employed in primary care to improve early diagnosis and management of several rheumatic conditions. In the UK, the Primary Care Quality and Outcomes Framework (QOF) rewards general practices for the provision of 'quality care' and helps to fund further improvements in the delivery of clinical care. Currently, there is one quality indicator in place for secondary prevention of osteoporosis. In order to help establish an integrated care pathway encompassing the whole patient journey between primary and secondary care, we undertook a detailed survey of two GP practices.

Objectives: The aims of the exercise were to identify the utility of quality indicator and any gaps in the model of care for the high-risk osteoporosis patients.

Methods: An independent service evaluation tool was employed to interrogate the IT system used in the GP surgeries. All patients over the age of 65 were extracted from the database and FRAX analysis was undertaken. Those with medium to high FRAX score (i.e. ten-year risk of >20% for major osteoporotic fracture and/or >5% for hip fracture) were captured to explore whether they were offered further evaluation and bone-sparing therapy as necessary.

Results: Of 18,248 patients registered in the multi-cultural urban practices, 6796 were >65 years old. 793 had pre-defined moderate-high FRAX score. 300 (37%) had a confirmed diagnosis of osteoporosis. Median age was 78 (range 65-103 years). 249 (83%) were women. 88.5% were White and remaining of other ethnicities.

20/300 (6.6%) had been coded to have ever sustained a fragility fracture. 178 (59.3%) were prescribed bone-sparing therapy with five people taking it for over five years. 91% were prescribed oral therapy (78% alendronic acid, 10% risedronic acid and 3% others) and remaining had parenteral therapies. Of the 27 patients not receiving any treatment, 11 (30%) were incorrectly coded. The remainder's reasons for lack of treatment include intolerance, poor adherence and comorbidities.

Conclusion: This study highlights the inadequacy of quality indicators in the overall management of osteoporosis burden in primary care. It relies heavily on active identification process for high-risk individuals and correct coding of fragility fracture. However the vast majority of patients with moderate-high risk, based on case finding strategy advised by international bodies e.g. FRAX, remain hidden. Less than 10% of patients with confirmed osteoporosis fulfil the quality outcome in this survey. The QOF

hence fails to reflect the nature of disease burden in the primary care thereby risking the management strategies skewed towards too small a cohort and missing the big picture. It is clear that quality indicators for osteoporosis need to be aligned to risk stratification model. This will allow better identification of at-risk individuals and improved care pathway for patients requiring bone active therapies.

Disclosure of Interests: Sultana Parvin: None declared, Manraj Barhey: None declared, Talib Abubacker: None declared, Muhammad Khurram Nisar Grant/research support from: Muhammad Nisar undertakes clinical trials and received support (including attendance at conferences, speaker fees and honoraria) from Roche, Chugai, MSD, Abbvie, Pfizer, BMS, Novartis, Celgene, Mallinckrodt, UCB and Lilly, Consultant for: Muhammad Nisar undertakes clinical trials and received support (including attendance at conferences, speaker fees and honoraria) from Roche, Chugai, MSD, Abbvie, Pfizer, BMS, Novartis, Celgene, Mallinckrodt, UCB and Lilly, Speakers bureau: Muhammad Nisar undertakes clinical trials and received support (including attendance at conferences, speaker fees and honoraria) from Roche, Chugai, MSD, Abbvie, Pfizer, BMS, Novartis, Celgene, Mallinckrodt, UCB and Lilly

DOI: 10.1136/annrheumdis-2019-eular.206

FRI0497 TRABECULAR BONE SCORE AND MALNUTRITION IN A COHORT OF SYSTEMIC SCLEROSIS PATIENTS

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Background: Systemic sclerosis (SSc) is a connective tissue disease characterized by initial microvascular damage, immune system activation and progressive fibrosis of the skin and internal organs. Gastrointestinal (GI) involvement induce malnutrition due to gastroesophageal symptoms, GI dysmotility and malabsorption that are related to fibrosis of bowel wall and bacterial overgrowth(1). Therefore the disease is associated with secondary osteoporosis with a few studies evaluating the bone microarchitecture(2).

Objectives: To evaluate a relationship between malnutrition and bone microarchitecture detected by trabecular bone score (TBS) in SSc patients.

Methods: 38 patients (6 male and 32 female) fulfilling ACR 2013 criteria for SSc underwent DXA to detect quantitative lumbar spine bone mineral density and TBS. DXA also assess body composition with a software that provides the physician quantitative parameters, including free fat mass index (FFMI), that identifies the patient with malnutrition (values <15 kg/m² in women and 17 kg/m² in men), according to the ESPEN criteria (3). Body mass index was calculated for all SSc patients and every patient completed a diary reporting GI symptoms possibly related to intestinal dysbiosis. Fasting blood samples were obtained in order to analyse some biochemical parameters of malnutrition (total proteins(g/L), albumin(g/L), serum total cholesterol(mg/dl) and blood lymphocyte count (N/mm³). Continue variables were summarized as mean and standard deviation(SD) or median and inter quartile range (IQR), discrete variables were summarized with count and percentage. Correlation was tested with Pearson or Spearman method. T-test was used to compare TBS between dichotomic groups. Uni and multivariate linear regression models were used as well the Multiple R-squared variation was applied. The multivariate linear regression was performed with a stepwise approach to select the best model using highest AIC criteria.

Results: The mean age of patients was 64.2±11.3 years with mean disease duration 19.2±7.6 years. 36.8% of patients was found malnourished. The univariate analysis showed that only higher age of patients correlated to lower TBS(p<0.001). The R-squared of multivariate linear regression showed that about 45% of the TBS variations(TBSv) can be explained by the variation of the following variables (age, disease duration, lymphocyte count). Age explains about 25% of the TBSv. Older patients had lower TBS, with approximately 0.05 points of TBS loss every decade(p = 0.001). The presence of symptom possibly related to intestinal dysbiosis, added to the model, might explain about 12% more of TBSv. Patients with symptom related to bacterial overgrowth had lower TBS respect to patients without(-0.08), regardless of other variables(p=0.002). Disease duration, added to the model, further explains about 4% more of TBSv and suggest a trend between highest disease duration (regardless of other variables) and higher TBS(p = 0.103). Lymphocyte count added to

the model also seems to explain about 4% more of TBSv, in fact lowest number (regardless of other variables) appear to have interference on TBS ($p = 0.020$)

Conclusion: This study shows that a more severe microarchitectural bone defect correlates with gastrointestinal involvement in term of symptom related to intestinal disbiosis and with selected blood biochemical markers of malnutrition.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.6918

FRI0498 HIGH SERUM URIC ACID LEVEL IS ASSOCIATED WITH LOWER INCIDENCE OF OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN: DATA FROM THE KOREAN NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY

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Background: Osteoporosis is one of the most common morbidities in postmenopausal women. Although serum uric acid (SUA) accounts for about 50% of extracellular antioxidant activity, the role of hyperuricemia in osteoporosis, a condition characterized by high oxidative stress level, has not been investigated in a Nation-wide scale.

Objectives: The aim of this study is to evaluate an association between SUA and incidence of osteoporosis in postmenopausal women.

Methods: Data of postmenopausal women from the 2016 Korean National Health and Nutrition Examination Survey were included and retrospectively analyzed. Weighted prevalence and logistic regression analysis were used to determine the incidence of osteoporosis and the effect of SUA on osteoporosis in postmenopausal women.

Results: One-thousand three-hundred eighty-two (weighted $n = 7,064,137$) of postmenopausal women were observed. Of these, 401 (29.0%, weighted $n = 1,880,586$) women developed osteoporosis. Mean age of participants was 63.2 years and mean of SUA was 4.4 mg/dL. The effect of SUA on osteoporosis in postmenopausal women was not statistically significant according to univariable logistic regression (OR 0.977, 95% CI 0.855–1.116, $p = 0.729$). However, SUA was negatively associated with incidence of osteoporosis in postmenopausal women with statistical significance after adjusting for age, obesity, amount of drink, smoking, intake of calcium, rheumatoid arthritis, thyroid diseases, and loss of activity (OR 0.867, 95% CI 0.752–0.999, $p = 0.048$).

Conclusion: Our data demonstrated that high SUA is associated with lower incidence of osteoporosis in postmenopausal women. This result suggests a protective role of SUA in metabolic bone diseases.

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Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2019-eular.6523

FRI0499 EFFICACY OF POSTMENOPAUSAL OSTEOPOROSIS TREATMENT BY COMBINATION OF DENOSUMAB WITH PLAIN VITAMIN D OR WITH ANALOG OF VITAMIN D ALFACALCIDOL

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Background: The superiority of the treatment of osteoporosis (OP), using the combination of alendronate (ALN) and alfacalcidol ($1\alpha D3$) to ALN treatment with cholecalciferol (D3) in both genders, has been demonstrated¹.

Objectives: To compare the efficacy of two-year OP treatment with denosumab (Dnab) with D3 to the treatment of Dnab with $1\alpha D3$.

Methods: Retrospective study included 58 postmenopausal OP patients treated at the Institute of Rheumatology in Belgrade. Average age was 74.5 ± 16.22 years, bone density (BMD) on the lumbar spine (L1L4) was $1.102 \pm 0.0878 \text{ g/cm}^2$, total hip (TH) $0.728 \pm 0.0324 \text{ g/cm}^2$, femoral neck (FN) was $0.600 \pm 0.1281 \text{ g/cm}^2$, and the bone quality expressed as trabecular bone score (TBS) was 1.222 ± 0.3457 , at study inclusion. BMD and TBS were measured using Hologic Prodigy DXA device. All women had primary OP, and 50% had fracture in the adult age. Average serum level 25 (OH) D3 was $29.8 \pm 6.67 \text{ ng/mL}$. Out of all, 68.4% patients had previous OP treatment, during 4.2 ± 3.45 years, 55.2% had used oral bisphosphonates (BF), 8.62% parenteral BF, 3.44% strontium ranelate, while one patient (1.72%) received a full course of teriparatide. Patients were assigned by the doctor's decision to be treated either by combination of Dnab 60mg s.c. every 6 months and D3 800–1000 IU daily ($N = 29$) or Dnab and $1\alpha D3$ $1 \mu\text{g}$ daily ($N = 29$). Safety was monitored clinically and laboratory at six-month intervals - serum calcium (Ca), ionised Ca, phosphorus, 24 hours of calciuria, incidence of falls and fractures. Serum 25 (OH) D3 and parathormone (PTH) were observed once a year, as well as BMD and TBS. Analytical statistical analysis was done by student t - test and Fisher's test.

Results: The patients were mutually comparable in term of age, previous fractures, BMD and TBS, laboratory findings, previous OP treatment. After 2 years of study treatment, there was no significant difference in the increase in BMD on the L1L4 between Dnab plus D3 and Dnab plus $1\alpha D3$ group (6.4% vs. 6.5%), as well as on the TH (3.3% vs 3.4%). Statistically significantly higher BMD on FN (2.0% vs 5.9%, $p < 0.001$), as well as TBS increase (2% versus 6.7%, $p < 0, 05$) in Dnab plus $1\alpha D3$ group was found. Serum calcitriol was higher (30.54 vs 35.1 ng/mL), while PTH was statistically significant in Dnab plus $1\alpha D3$ group (48.6 vs 31.2 pg/mL , $p < 0.001$) at the end of study. The incidence of hypocalcaemia was 2.3% in the Dnab plus D3 group, and 1.0% in the Dnab plus $1\alpha D3$ group, hypercalcaemia was not found in any. The clinical fractures incidence after 2 years of follow-up was 6.9% in Dnab with D3 and 3.44% in the Dnab plus $1\alpha D3$ group, which was not statistically significant, as well as occurrence of falls, recorded more frequently in Dnab plus D3 group (31% vs. 13.8%).

Conclusion: Dnab in combination with $1\alpha D3$ is more effective and equally safe OP treatment compared to Dnab with D3, in term of increasing FN BMD and improvement of bone micro-architecture.

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Disclosure of Interests: Katarina Pasalic: None declared, Snezana Novkovic: None declared, Katarina Gasic: None declared, Nemanja Damjanov Grant/research support from: Abbvie, Pfizer and Roche, Consultant for: Abbvie, Gedeon Richter, Merck, Novartis, Pfizer and Roche., Speakers bureau: Abbvie, Gedeon Richter, Merck, Novartis, Pfizer and Roche.

DOI: 10.1136/annrheumdis-2019-eular.3208