defined by a daily prednisone equivalent dose above 2.5 mg for more than 3 months. Age, female sex, BMI and treatment with proton pump inhibitors (PPIs) as predefined risk factors according to published evidence, as well as clinically relevant factors associated with a p-value <0.05 in univariable analyses, after correction for multiple comparison, were implemented into a multivariable logistic regression model.

Results: A total of 932 patients fulfilling the ACR/EULAR 2013 classification criteria were included in the study, followed prospectively in two university hospitals: Lille (n=485) and Berlin (n=447; of which 72 were patients of the Rh-GIOP prospective cohort). The two cohorts were studied separately. The prevalence of OP was 32% in Berlin and 23% in Lille (p<0.003), fragility fractures occurred in 22% and 18% respectively. Multivariable analysis in the Berlin cohort (Figure 1A) indicated that higher age (OR 1.05 [95% CI 1.03 to 1.07], p<0.001), female sex (OR 2.70 [95% CI 1.29 to 5.65], p<0.009), diffuse skin extent (OR 5.03 [95% CI 2.50 to 10.10], p<0.001), low BMI (OR 0.94 [95% CI 0.88 to 0.99], p=0.008), WHO-GC III-IV dyspnea (OR 2.08 [95% CI 1.16-3.67], p=0.014), receiving GCs (OR 1.78 [95% CI 1.10 to 3.17], p=0.026) or PPIs (OR 1.87 [95% CI 1.10 to 4.16], p=0.013) were associated with OP. In the Lille cohort, multivariable analysis (Figure 1B) confirmed the association of OP with higher age (OR 1.06 [95% CI 1.04 to 1.08], p<0.001), GCs use (OR 4.48 [95% CI 2.42 to 8.26], p<0.001), and with anti-topoisomerase I antibody positivity (OR 2.22 [95% CI 1.18 to 4.16], p=0.013).

Conclusion: Our data support a multifactorial etiopathogenesis of OP in SSc: besides common risk-factors for OP such as higher age, female sex, and BMI, several disease specific characteristics were associated with OP, such as SSc severity as reflected by diffuse skin extent and presence of antitopoisomerase I antibodies as well as severe dyspnea and SSc treatment (PPIs and GCs). These findings help to identify patients with SSc at particular risk for OP in clinical practice.

References:

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Figure 1. Determinants of OP in two cohorts of SSc patients. (A) Berlin (n=447), (B) Lille (n=485).

Keywords: Osteoporosis


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Background: Despite widespread availability of effective bone protective medications and knowledge that minimal trauma fractures (MTFs) identify those at high risk of re-fracture, treatment of osteoporosis following MTF is poor. An effective way to address this gap is establishment of a fracture liaison service (FLS) where a fracture liaison coordinator coordinates case-finding and bone health management, usually in collaboration with a local medical “champion”.

Objectives: To determine the effect of a Fracture Liaison Service (FLS)/Osteoporosis Refracture Prevention (ORP) programme on refracture rates.

Methods: Coffs Harbour (population 80 000) on the mid-north coast of New South Wales (NSW, Australia’s most populous state), had a FLS established in July 2012. The comparator was the similar-sized city of Port Macquarie, located 160 km south which did not have an FLS established until 2019. The study population was residents aged ≥ 50 years with a fracture diagnosis recorded on hospital admission and ED presentation data. Trends in one- to five-year cumulative re-fracture rates were calculated using Kaplan–Meier methods accounting for follow-up time and deaths and adjusted for age, sex and fracture type. Trends in one- to five-year cumulative re-fracture rates from year of index fracture were also calculated. Annual health service utilisation associated with re-fracture was calculated using the total number of public hospital admissions, ED presentations and outpatient sessions. Any admission or ED prey admission with a fracture diagnosis occurring within 28 days of index fracture or re-fracture was considered part of the same episode of care.

Results: In those aged ≥50 yo, compared to “business and usual” (BAU), there was a 7% reduction in total fractures (n=6190 observed, versus n=6628 projected BAU, 95% confidence interval [95CI] 6270 - 6985, p<0.002) and a 9% reduction in total re-fractures (n=1703 observed, versus 1869 projected BAU, 95% CI 1768 - 1970; p=0.002) over the 7-year study period for Coffs Harbour. This reduction was...
not observed in Port Macquarie or in the rest of the state of NSW. Cumulative adjusted fractures rates for Coffs Harbour were as follows: 1-year 7%, 2-years 13%, 3-years 19%, 4-years 24%, 5 years 29%. Females had higher fractures rates compared to males and having a diagnosis of osteoporosis at time of index fracture was associated with higher fractures rates.

**Conclusion:** An FLS/ORP programme is associated with a reduction in total fractures and fractures rates. However, fracture rates were higher in Coffs Harbour, a rural centre, compared to pooled statewide data.

**REFERENCE:** NIL.

**Disclosure of Interests:** None Declared.

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**OP0246**

**ROMOSOZUMAB VERSUS DENOSUMAB IN HIGH-RISK PATIENTS WITH GLUCOCORTICOID-INDUCED OSTEOPOREISIS: A PILOT RANDOMIZED CONTROLLED TRIAL**

**Keywords:** Clinical trials, Osteoporosis, Randomized control trial

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**Method:** A pilot randomized controlled trial.

Method: Adult patients (≥18 years) who were receiving daily prednisolone dose of ≥5mg/day for ≥12 months and had moderate/high risk of osteoporotic fracture (a history of fragility fracture, DXA T score ≤-2.5 [age ≥40 years] or Z scores ≤-3.0 [age <40 years] or high risk of 10-year major fracture estimated by FRAX) were included. Participants were given daily calcium and vitamin D and existing bisphosphonates were discontinued. Subjects were randomized by blocks to receive either ROMO (210mg SC monthly) or DEN (60mg SC every 6 months) for 12 months, followed by DEN (60mg every 6 months) for 12 more months in both arms. The primary efficacy end point was the change in bone mineral density (BMD) at the lumbar spine from baseline to month 12. Secondary end points included BMD change at the non-dominant hip and femoral neck at month 12, change in bone turnover markers, new vertebral fractures, change in BMD at the hip and spine at month 24 and adverse events.

**Results:** Of 70 patients recruited, 63(90%) completed the study (age 62.6±9.1 years; 96% women; 35 each assigned to ROMO or DEN). Underlying medical diseases were systemic lupus erythematosus (51%), rheumatoid arthritis (29%), inflammatory myopathies (9%) and others. The mean prednisolone dose at entry was 6.6±3.9mg/day. Osteoporosis at spine/hip/femoral neck and a history of fragility fracture was present in 34(48.6%) and 35(50%) patients, respectively. Oral bisphosphonates were being used in 33(47%) patients prior to first dose of the study drugs. While the baseline demographics and osteoporosis risk factors were not significantly different between the two groups, ROMO-treated patients had lower hip/femoral neck BMD and serum vitamin D3 levels than those treated with DEN. At month 12, a significant increase in spine BMD was observed in both the ROMO (+7.3±4.5%; p<0.001) and DEN (+2.3±3.1%; p<0.001) groups of patients. The inter-group difference in spine BMD at month 12 was statistically significant after adjustment for baseline BMD values, age, sex, osteoporosis risk factors and the cumulative prednisolone doses in 12 months (p<0.001). The corresponding increase in hip BMD were +1.6±3.3% (p=0.01) in the ROMO group and +1.6±2.6% (p=0.003) in the DEN group. No significant inter-group difference in hip BMD was observed after adjustment for the same confounding factors. The increase in femoral neck BMD from baseline to month 12 was not significant in both groups. In DEN-treated patients, both serum CTX (-34.7±54.8%; p=0.002) and P1NP (-35.1±43.3%; p<0.001) dropped significantly from baseline to month 12. However, in the ROMO group, a non-significant drop in CTX (-18.1±76.9%; p=0.18) but increase in P1NP (+1.7±70.3%; p=0.89) was observed. Only one new vertebral fracture developed in the ROMO group at 12m. The commonest adverse event (AE) was self-limiting injection site pain/redness, which was significantly more common in ROMO-treated patients. Post-injection musculoskeletal pain was reported in 2 and 3 patients in the ROMO and DEN group of patients, respectively.

Mild hypocalcemia and hypercalcemia were observed in 2 DEN-treated patients. No serious AEs were reported. The 24m data of this study are pending.

**Conclusion:** Romosozumab was superior to denosumab in raising the spine BMD and hip BMD at month 12 in chronic GC users with high fracture risk. Both drugs were well-tolerated. Romosozumab may offer a new treatment option for GIOP in high-risk patients.

**REFERENCES:** NIL.

**Disclosure of Interests:** None Declared.

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**OP0248**

**GENETIC EVIDENCE REVEALS THE CAUSAL RELATIONSHIP BETWEEN OSTEOPOREISIS AND CARDIOVASCULAR DISEASE**

**Keywords:** Cardiovascular disease, Osteoporosis

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**Method:** A pilot open randomized controlled trial.

We selected three different sites [femoral neck bone mineral density (FN BMD), forearm BMD (FA BMD) and lumbar spine BMD (LS BMD)] from the whole genome significance level related to the 12 CVDs were from the published summary statistics. IVW was selected as the primary analytical method to evaluate the causal relationship between OP and CVD through bi-directional MR and provide a new strategy for clinical prevention, treatment, and nursing of OP and CVD.

**Results:** We performed a “leave-one-out” approach for the sensitivity analysis. Results: LS-BMD had a direct causal relationship with myocardial infarction(MI) and coronary heart disease(CHD)[MI-related analysis: odds ratio (OR) = 1.101, 95% confidence interval (CI) = (1.033,1.174), p = 0.003; CHD-related analysis: OR (95% CI) = 1.105 (1.043,1.170), p = 0.001]. FN BMD will increase the risk of large-artery atherosclerotic stroke(LAS), small-vessel stroke(SVS), coronary artery disease(CAD) and CHD[LAS-related analysis: OR (95% CI) = 1.152 (1.014,1.308), p = 0.029; LV-related analysis: OR (95% CI) = 1.139 (1.019,1.258), p = 0.026; CAD-related analysis: OR (95% CI) = 1.086 (1.023,1.056), p = 0.007, CHD-related analysis: OR (95% CI) = 1.086 (1.023,1.154), p = 0.007]. At the same time, SVS, cardioembolic stroke(CES) and any stroke(AS) will increase the possibility of FN BMD[LAS-related analysis: OR (95% CI) = 1.051 (1.006,1.095), p = 0.024; CES-related analysis: OR (95% CI) = 1.034 (1.006,1.063), p = 0.018; AS-related analysis: OR (95% CI) = 1.074 (1.020,1.131), p = 0.004].

**Conclusion:** OP and CVD might mutually have a significant causal effect on each other. Our results supported the view that increased BMD is more likely to lead to cardiovascular events, and stroke may lead to increased FN BND.

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