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Fracture liaison service: an opportunity for rheumatologists to focus on secondary fracture prevention

OP0215

THE RISK OF FIRST AND SUBSEQUENT FRACTURES IN PATIENTS WITH RHEUMATOID ARTHRITIS IN THE UK

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Background: Osteoporosis is a well-known complication of rheumatoid arthritis (RA) (1). NICE advises that health providers do not routinely assess fracture risk in people with RA aged under 50 years unless they have other major risk factors. However, studies suggest that young people with RA are at increased fracture risk even before age 50 years (2-4).

Objectives: To measure the incidence and risk of first and subsequent fracture in adults with RA aged under 50 in the UK.

Methods: A retrospective observational cohort study with matched control using data from Clinical Practice Research Datalink (CPRD) of adults ≥ 18 years with diagnosis of RA recorded from 1987 to 2016. Patients were followed from index date to the first fracture and subsequent fracture. Cases were adults with a new diagnosis of RA with at least one day of follow-up during the period. These cases were matched to 3 controls by age, sex, GP surgery and calendar year. The date of RA diagnosis date is the index date for cases and their matched controls. CPRD data has a high level of data validity in reporting of fractures but subsequent fractures may be recorded more than once. In this analysis when subsequent fractures were of the same body part the fracture had to occur at least 6 months after the previous fracture to be classified as a "subsequent fracture". "First fracture" is the first fracture occurring after the index. "Subsequent fracture" is the fracture occurring after the first fracture. "Pre-index fracture" is a fracture that occurs before the index date.

Results: The characteristics of the study population are shown in Table 1.

Variable	Case (n=11,120)	Control (n=33,364)
	N (%)	N (%)
Age group 0-9	1,542 (13.87)	4,654 (13.95)
40-49	3,430 (30.85)	10,308 (30.90)
	6,148 (55.29)	18,402 (55.16)
Gender (female)	8,232 (74.03)	24,676 (73.96)
Glucocorticoid prescription ≤ 6 months before index	830 (7.46)	371 (1.11)
Pre-index fracture	1,648 (14.82)	4,251 (12.74)
First fracture	954 (8.57)	1,995 (5.97)
Subsequent fracture	197 (1.77)	354 (1.06)

The incidence rate of first fracture for cases was 9.02 per 1000-person years (95% CI 8.46-9.61), for controls 6.85 per 1000-person years (95% CI 6.55-7.15). The incidence rate ratio (IRR) for first fracture was 1.32 (95% CI 1.220-1.426; $p=0.00$). The incidence rate of subsequent fracture was 1.78 (95% CI 1.55-2.05) per 1000-person years for cases and 1.17 (1.05-1.29) per 1000 -person years for controls. The IRR for subsequent fracture was 1.53 (95% CI 1.283-1.833; $p=0.00$). A Cox's proportional hazards model was used to estimate the hazard (or risk) of first and subsequent fracture for cases and controls stratified by age. Those with a pre-index fracture and with a glucocorticoid prescription prior to the index date had significantly higher hazard ratios for first and subsequent fracture. Women had a higher hazard ratio for first fracture.

Conclusion: This study shows that the incidence of fracture in patients with RA aged under 50 is significantly higher than in matched controls. This is true for the first fracture and for the subsequent fracture and is significantly higher for women in those under 50 for first fractures.

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OP0216

IDENTIFICATION AND MANAGEMENT OF PATIENTS AT INCREASED RISK OF OSTEOPOROTIC FRACTURE: IMPLEMENTATION OF IMMINENT RISK FACTOR IN STANDARD DAILY PRACTICE FOR BONE MINERAL DENSITY ASSESSMENT AND PATIENT MANAGEMENT

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Background: Osteoporotic fractures are common and associated with significant morbidity, mortality, and healthcare resource use. The role of the recency of fracture has been shown for both vertebral and non-vertebral fracture risk. However, several patient characteristics contributing to imminent risk for fracture have not been well defined. Furthermore, the inclusion of imminent fracture risk in standard practice remains a challenge.

Objectives: to evaluate electronic recording of osteoporosis patients' data using online proforma to request DXA scan, analyse the correlations and the applicability of imminent fracture risk (ImFR) identification and the WHO fracture risk assessment tool (FRAX) for the prediction of osteoporotic fractures in standard practice and its implication on the patients' management.

Methods: 368 patients referred for DXA scanning were included in this work. The online referral form for DXA scanning includes 4 main components: Risk factors for osteoporosis (6 factors) to be completed by the referring doctor; 2. the 8 fracture risk factors identified in FRAX; 3. Risk factors for falls (5 factors) [1] and its score graded as low, moderate and high; 4. Risk factors for ImFR and a question Yes/No regarding the presence of ImFR. For the patients who had fracture in the last 24-months, potential risk factors during the period before fracture were assessed. The BMD as well as 10-years probability of fracture risk were analysed in patients with ImFR and those without. Risk stratification and correlation analyses were applied to analyse the associations between ImFR and FRAX-based probabilities versus BMD at different sites. Data from patients with and without recent fracture were used to identify factors associated with imminent risk for fracture.

Results: Of the 368 subjects, 181 (46.9%) were diagnosed as osteoporotic, and 187 (40.9%) were diagnosed as osteopenic. There was no significant difference on comparing the FRAX-based 10-year major osteoporotic fracture probability and hip osteoporotic fracture probability estimated with and without considering the BMD. Keeping the other factors constant, patient with ImFR had significantly ($p < 0.01$) lower BMD at both spine and hip in contrast with those without history of ImFR or history of fracture more than 10-years ago. Using data from 24- months before fracture, factors significantly associated with ImFR were high falls risk, older age, poorer functional disability and hand grip, specific comorbidities (central nervous system disease, inflammatory arthritis, Alzheimer's disease, parkinsonism, psychosis) steroid therapy and intake of drugs targeting CNS,. There was no significant difference ($p > 0.05$) on comparing FRAX estimated 10-year fracture probabilities in those with ImFR compared to those who had previous fracture more than 2-years ago.

Conclusion: It is important to include the ImFR in the referral for BMD assessment. In patients with osteoporosis or osteopenia and no recent fracture, high falls risk, older age, poorer health status, comorbidities were predictive of imminent risk for fracture. Identification of patients with imminent fracture risk may help identify and risk stratify those patients most in need of immediate and appropriate treatment to decrease fracture risk.

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