

Frailty and Risk of Fractures in Patients with Rheumatoid Arthritis: Data from the Ontario Best Practices Research Initiative (OBRI)

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Abstract

Background/Purpose:

Measuring the degree of frailty can help screen, quantify and predict future risk of adverse health outcomes at a clinical research level and at a healthcare policy level. The evidence assessing the relationship between frailty and risk of adverse health outcomes in rheumatoid arthritis (RA) patients remains limited and sparse in the literature. Therefore we aimed to assess the relationship between frailty and risk of fractures in patients with RA, using data from the Ontario Best Practices Research Initiative (a clinical registry of patients with RA in Ontario, Canada).

Methods:

Patients' data were collected from the participating rheumatologists every 6 months, and from OBRI interviewers every 3 months in the first two years and every 6 months afterwards. The primary outcome was incident fractures during follow-up that led to a hospitalization or emergency room (ER) visit. Frailty was measured as a frailty index (FI) of deficit accumulation that included 32 health-related deficits consisting of 17 co-morbidities, 16 symptoms and signs, and 9 activities of daily living. The FI ranged from 0 to 1, with a higher FI indicating higher frailty. Student's t-test was used for comparison of FI between patients with and without a fracture during follow-up.

Results:

There were 3,153 patients (78% females, mean age 57.5 years) included for analyses. Patients' mean FI at baseline was 0.21 (standard deviation [SD]: 0.17), and the age-invariant 99% upper limit was 0.52. During the mean follow-up of 3.7 years, there were 125 incident fractures reported. As shown in **Table 1**, patients experiencing a fracture were older, more likely to be females, and had a longer RA duration, compared to patients without a fracture. The FI was significantly higher in patients with a fracture compared to controls (0.25 vs. 0.21, $p < 0.001$).

Conclusions:

RA patients experiencing an incident fracture were significantly frailer than patients who did not experience a fracture. Measuring the grades of frailty may assist with the assessment and management of RA patients to predict and reduce their fracture risk.

Table 1. Comparison of baseline characteristics between RA patients with a fracture leading to hospitalization or ER visit and patients without fractures during follow-up

Baseline characteristics	Incident fracture that lead to a hospitalization or ER visit		
	Yes (n =125)	No (n = 3,028)	P value
Age: mean (SD), years	61.9 (11.9)	57.3 (12.9)	< 0.001
Female: n (%)	109 (87%)	2,319 (78%)	0.013
RA duration: mean (SD), years	11.6 (11.4)	8.2 (9.7)	0.002

BMI: mean (SD), kg/m ²	26.5 (5.0)	27.0 (5.6)	0.33
Family history of RA: n (%)	49 (39%)	970 (32%)	0.11
Smoking: n (%)	20 (16%)	504 (17%)	0.82
Alcohol drinking: n (%)	34 (27%)	828 (27%)	0.93
Osteoporosis medication use: n (%)	44 (35%)	826 (27%)	0.059
FI: mean (SD)	0.25 (0.12)	0.21 (0.12)	< 0.001

ER = emergency room; SD = standard deviation; RA = rheumatoid arthritis; BMI = body mass index; FI = frailty index