

中文題目：類風溼性關節炎患者之脆折性骨折的風險因子-單一醫學中心的配對病例對照研究

英文題目：Risk Factors Analysis of Fragility Fractures in Rheumatoid Arthritis: A Single-center, Matched Case-control Study

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**Background:** To explore the risk factors of fragility fracture in patients with rheumatoid arthritis (RA)

**Methods:** This RA registry study was conducted at Chang Gung Memorial Hospital in Kaohsiung (CGMHK) for RA-related osteoporosis/fracture. Consecutive RA patients in outpatient clinic since September 1, 2014 to December 16, 2020, were enrolled. The demographics, clinical characteristics, lifestyle, evidence or history of previous fragility fracture, risk factors in Fracture Risk Assessment Tool (FRAX®) and FRAX score of each participant were recorded. The participants were grouped as previous fracture group (group A) and no previous fracture group (group B). The possible risk factors were analyzed initially. To explore the independent risk factors pertained to RA, we excluded the traditional risk factors, eg. age and gender, of fragility fracture in the analysis by using propensity score matching (fracture vs. non-fracture, 1:2). The participants were re-grouped as previous fracture group (group F) and no previous fracture group (group N)

**Results:** A total of 682 patients were enrolled, of whom 209 patients (30.6%) had previous fracture at registration. The median age was 59 (14) years old and 582 (85.3%) was female. The uni-variable analysis disclosed, older in age (OR, 1.06 (1.05-1.08),  $p < 0.001$ ), female (OR, 1.68(1.01-2.78),  $p = 0.004$ ), lower body height (OR, 1.07(1.05-1.10),  $p < 0.001$ ), less tea consumption (OR, 2.25(1.37-3.69),  $p = 0.001$ ), less coffee consumption (OR, 1.67(1.02-2.71),  $p = 0.04$ ), higher HAQ score (OR, 2.05(1.63-2.59),  $p < 0.001$ ), higher mean DAS28 score (OR, 1.27(1.04-1.54),  $p = 0.017$ ), longer disease duration (OR, 1.04(1.02-1.06),  $p < 0.001$ ), steroid exposure (OR, 2.71(1.52-4.83),  $p = 0.001$ ), lower bone mineral density (BMD) of femoral neck (FN) (OR, 27.79(6.08-127.12),  $p < 0.001$ ), lower BMD at hip (OR, 13.91(4.06-47.63),  $p < 0.001$ ), lower BMD at spine (OR, 12.93(4.35-38.45),  $p < 0.001$ ), higher intact parathyroid hormone (iPTH) level (OR, 1.01(1.00-1.02),  $p = 0.005$ ), higher blood urea nitrogen (BUN) level (OR, 1.05(1.02-1.09),  $p = 0.002$ ), higher creatinine level (OR, 2.70(1.37-5.32),  $p = 0.004$ ), lower platelet count (OR, 1.00 (1.00-1.01),  $p =$

0.006), presence of comorbidity (OR, 1.82(1.29-2.55),  $p = 0.001$ ), were associated with fragility fracture in RA. The multi-variable analysis revealed that older in age (OR, 1.04(1.01-1.07),  $p = 0.006$ ), less tea consumption (OR, 2.08(1.02-4.20),  $p = 0.043$ ), higher HAQ score (OR, 1.75(1.23-2.50),  $p = 0.002$ ), steroid exposure (OR, 2.41(1.07-5.41),  $p = 0.034$ ), higher iPTH level (OR, 1.01(1.00-1.03),  $p = 0.015$ ), higher BUN level (OR, 1.09(1.03-1.15),  $p = 0.003$ ), were independent risk factors of fragility fracture in RA patients.

After propensity score matching, a total 441 patients were included. F and N group included 147 and 294 participants, respectively. Uni-variable analysis indicated that higher HAQ score (OR, 1.67 (1.27-2.22),  $p < 0.001$ ), longer disease duration (OR, 1.03 (1.01-1.05),  $p = 0.009$ ), steroid exposure (OR, 2.42(1.25-4.69),  $p = 0.009$ ), higher iPTH level (OR, 1.01(1.00-1.02),  $p = 0.029$ ), and lower body height (OR, 1.04 (1.01-1.06),  $p = 0.014$ ), younger menopausal (OR, 1.08(1.02-1.16),  $p = 0.013$ ), lower BMD at FN (OR, 8.25(1.48-45.91),  $p = 0.016$ ), lower BMD at hip (OR, 4.14(1.03-16.69),  $p = 0.046$ ), lower ALT level (OR, 1.01(1.00-1.02),  $p = 0.042$ ), lower alkaline phosphatase level (OR, 1.01(1.00-1.02),  $p = 0.029$ ) were associated with fragility fracture in RA. While multi-variable analysis disclosed that lower BMD at hip (OR, 10.44(1.20-90.61),  $p = 0.033$ ), younger menopausal (OR, 1.09(1.01-1.17),  $p = 0.024$ ) and higher iPTH level (OR, 1.02(1.00-1.03),  $p = 0.028$ ) were independent risk factors of fragility fracture in RA patients.

**Conclusions:** In addition to age and gender. lower hip BMD, younger menopausal and higher iPTH level were independent risk factors of fragility fracture in RA patients.