ABSTRAK

Latar Belakang: Artritis reumatoid (AR) merupakan penyakit autoimun inflamasi kronik yang dapat menyebabkan peningkatan aktivitas penyakit dan penurunan kepadatan tulang. Interleukin-6 (IL-6) berperan dalam proses inflamasi sistemik dan metabolisme tulang melalui stimulasi aktivitas osteoklas. Hubungan antara kadar IL-6 serum dengan aktivitas penyakit dan kepadatan tulang pada pasien AR usia 18–50 tahun masih perlu diteliti lebih lanjut.

Tujuan: Penelitian ini bertujuan menganalisa hubungan antara kadar IL-6 serum dengan derajat aktivitas penyakit berdasarkan skor DAS28-LED dan tingkat kepadatan tulang berdasarkan nilai *Z-score BMD* pada pasien artritis reumatoid usia 18–50 tahun.

Metode: Penelitian ini merupakan penelitian analitik observasional dengan desain belah lintang pada 40 pasien artritis reumatoid. Kadar IL-6 serum diperiksa, aktivitas penyakit dinilai menggunakan skor DAS28-LED, dan kepadatan tulang dinilai berdasarkan nilai *Z-score BMD* menggunakan DXA. Analisa bivariat dilakukan menggunakan uji korelasi Spearman. Analisa multivariat dilakukan menggunakan regresi linear berganda dengan mengontrol usia, jenis kelamin, penggunaan steroid, *rheumatoid factor*, lama sakit artritis reumatoid, dan indeks massa tubuh.

Hasil: Terdapat hubungan antara kadar IL-6 serum dan skor DAS28-LED pada pasien artritis rheumatoid (rho = 0,117 ; p = 0,472) dan nilai *Z-score BMD* (rho = 0,066 ; p = 0,686), namun tidak bermakna secara statistik . Setiap peningkatan kadar IL-6 serum sebesar 1 pg/mL diperkirakan diikuti peningkatan skor DAS28-LED sebesar 0,02 poin, dan penurunan nilai *Z-score BMD* sebesar 0,009 poin. Indeks massa tubuh berhubungan dengan *Z-score* BMD (r = 0,462; p = 0,003). Setiap peningkatan indeks massa tubuh sebesar 1 kg/m² diperkirakan meningkatkan nilai *Z-score* BMD sebesar 0,101.

Kesimpulan: Terdapat hubungan antara kadar IL-6 serum dengan derajat aktivitas penyakit berdasarkan skor DAS28-LED dan kepadatan tulang berdasarkan nilai *Z-score BMD* pada pasien artritis reumatoid, namun tidak bermakna secara statistik.

Kata Kunci: artritis reumatoid, IL-6, DAS28-LED, *bone mineral density*, kepadatan tulang, Z-score BMD, indeks massa tubuh

ABSTRACT

Background: *Rheumatoid arthritis (RA) is a chronic inflammatory autoimmune disease that may increase disease activity and reduce bone mineral density. Interleukin-6 (IL-6) plays an important role in systemic inflammation and bone metabolism through osteoclast activation. The relationship between serum IL-6 levels, disease activity, and bone mineral density in RA patients aged 18–50 years remains unclear.*

Objective: *This study aimed to analyze the relationship between serum IL-6 levels and disease activity based on DAS28-ESR, as well as bone mineral density based on BMD Z-score, in patients with rheumatoid arthritis aged 18–50 years.*

Methods: *This was an observational analytic study with a cross-sectional design involving 40 patients with rheumatoid arthritis. Serum IL-6 levels were measured, disease activity was assessed using DAS28-ESR, and bone mineral density was evaluated using BMD Z-score obtained from DXA examination. Bivariate analysis was performed using Spearman correlation. Multivariate analysis was performed using multiple linear regression adjusted for age, sex, steroid use, rheumatoid factor, disease duration, and body mass index.*

Results: *There was an association between serum IL-6 levels and DAS28-ESR scores in patients with rheumatoid arthritis (rho = 0.117; p = 0.472), as well as between serum IL-6 levels and BMD Z-score (rho = 0.066; p = 0.686); however, these associations were not statistically significant. Each 1 pg/mL increase in serum IL-6 level was estimated to be associated with a 0.02-point increase in DAS28-ESR score and a 0.009-point decrease in BMD Z-score. Body mass index was significantly associated with BMD Z-score (r = 0.462; p = 0.003). Each 1 kg/m² increase in body mass index was estimated to increase the BMD Z-score by 0.101 points.*

Conclusion: *Serum IL-6 levels were associated with disease activity as assessed by DAS28-ESR scores and bone mineral density as assessed by BMD Z-score in patients with rheumatoid arthritis; however, these associations did not reach statistical significance.*

Keywords: *rheumatoid arthritis, IL-6, DAS28-ESR, bone mineral density, BMD Z-score, body mass index.*