

ABSTRAK

Latar belakang: Eritema Nodosum Leprosum (ENL) atau reaksi lepra tipe 2 merupakan keadaan inflamasi akut dan rekuren pada penderita lepra tipe multibasiler yang ditandai dengan munculnya nodul eritematosa yang nyeri, disertai gejala sistemik seperti demam, malaise, artralgia, neuritis, serta keterlibatan berbagai organ. Salah satu sitokin utama yang berperan dalam patogenesis adalah *Tumor Necrosis Factor-alpha* (TNF- α), yang berkontribusi dalam aktivasi dan infiltrasi neutrofil serta memperberat kerusakan jaringan. Peningkatan TNF- α diduga berkaitan dengan derajat keparahan klinis ENL dan menyebabkan berbagai morbiditas dan kebutuhan terapi immunosupresif jangka panjang, yang berisiko menimbulkan berbagai efek samping. Namun, bukti ilmiah yang menunjukkan hubungan kadar TNF- α serum dengan derajat keparahan klinis pada ENL di Indonesia masih terbatas.

Tujuan: Penelitian ini bertujuan untuk menganalisis hubungan kadar TNF- α serum dengan derajat keparahan ENL.

Metode: Penelitian dengan desain potong lintang (*cross-sectional*) ini dilakukan di Poliklinik Kulit dan Kelamin RSUP Sardjito Yogyakarta dan rumah sakit afiliasi dengan total subjek penelitian berjumlah 42 subjek pasien lepra multibasiler dengan ENL yang memenuhi kriteria inklusi dan eksklusi. Penilaian derajat keparahan ENL dilakukan menggunakan ENL *Severity Scale* sementara kadar TNF- α diukur melalui pemeriksaan serum menggunakan metode *Enzyme-Linked Immunosorbent Assay* (ELISA). Analisis korelasi antara kadar TNF- α serum dan derajat keparahan ENL dilakukan menggunakan uji korelasi Spearman.

Hasil: Hasil penelitian ini menunjukkan rerata kadar TNF- α serum 35.76 ± 23.41 pg/mL dan median 27.53 pg/mL (Q1-Q3:22.61–36.03). Skala ENLIST menunjukkan rerata 7.38 ± 4.55 dan median 6 (Q1-Q3: 5–9). Hubungan kadar TNF- α serum dengan derajat keparahan ENL menunjukkan korelasi kuat ($r = 0.890$; $p < 0,001$).

Kesimpulan: Kadar TNF- α serum memiliki korelasi kuat dengan derajat keparahan ENL.

Kata kunci: ENL, ENLIST, lepra multibasiler, severitas, sitokin proinflamasi, TNF- α

ABSTRACT

Background: Erythema Nodosum Leprosum (ENL), also known as type 2 leprosy reaction, is an acute and recurrent inflammatory condition occurring in patients with multibacillary leprosy. It is characterized by the appearance of painful erythematous nodules accompanied by systemic manifestations such as fever, malaise, arthralgia, neuritis, and involvement of multiple organs. One of the key cytokines involved in its pathogenesis is Tumor Necrosis Factor-alpha (TNF- α), which contributes to neutrophil activation and infiltration, thereby exacerbating tissue damage. Elevated TNF- α levels are thought to be associated with the clinical severity of ENL and may lead to significant morbidity as well as the need for long-term immunosuppressive therapy, which carries the risk of various adverse effects. However, scientific evidence regarding the association between serum TNF- α levels and the clinical severity of ENL in Indonesia remains limited.

Objective: This study aimed to analyze the relationship between serum TNF- α levels and the severity of ENL.

Methods: This cross-sectional study was conducted at the Dermatology and Venereology Outpatient Clinic of Sardjito General Hospital, Yogyakarta, and its affiliated hospitals. A total of 42 patients with multibacillary leprosy and ENL who met the inclusion and exclusion criteria were enrolled. The severity of ENL was assessed using the ENL Severity Scale, while TNF- α levels were measured from serum samples using the Enzyme-Linked Immunosorbent Assay (ELISA) method. Correlation analysis between serum TNF- α levels and ENL severity was performed using Spearman's correlation test.

Results: The mean serum TNF- α level was 35.76 ± 23.41 pg/mL, with a median of 27.53 pg/mL (IQR 22.61–36.03). The ENLIST score showed a mean of 7.38 ± 4.55 and a median of 6 (IQR 5–9). The association between serum TNF- α levels and ENL severity demonstrated a strong positive correlation ($r = 0.890$; $p < 0.001$).

Conclusion: Serum TNF- α levels were strongly correlated with the severity of ENL as assessed by the ENLIST scale.

Keywords: ENL, ENLIST, multibacillary leprosy, severity, proinflammatory cytokines, TNF- α