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Original Article

Increased Expression of Interleukin-17A in the Lesional Skin Indicates Increase of Serum Antibody Anti-phenolic Glycolipid-I in Leprosy Patients

Hendra Gunawan[1], Marlinda Nur Annissa[1], Raiva Farah Dwiyana[1], Erda Avriyanti[1], Oki Suwarsa[1]
[1]Department of Dermatology and Venereology, Faculty of Medicine, Universitas Padjadjaran-Dr. Hasan Sadikin Hospital, Bandung, West Java, Indonesia

Abstract

Background: In lepromatous type of leprosy, the serum titer of the antibody against phenolic glycolipid (PGL)-I-a-specific antigen in leprosy that is produced by B cell is high. Whereas, the interleukin (IL)-17A expressed by T-helper 17 cells could induce B-cell differentiation. The role of IL-17A in leprosy is still unknown. Hence, this study aimed to assess a correlation between IL-17A expression in the lesional skin and anti-PGL-I immunoglobulin (Ig)M serum levels in leprosy patients. **Methods:** This study was performed in Leprosy Clinic, Dr. Hasan Sadikin Hospital Bandung, Indonesia, using a cross-sectional analytical study. A punch biopsy obtained from 49 leprosy patients was included through consecutive sampling for measurement of IL-17A expression in the skin by immunohistochemistry scoring (histoscore). Furthermore, the anti-PGL-I IgM level in serum is evaluated by enzyme-linked immunosorbent assay. **Results:** The IL-17A expressions in the skin biopsies of tuberculoid (TT), borderline tuberculoid (BT), mid-borderline (BB), borderline lepromatous (BL), and lepromatous leprosy (LL) patients using histoscore were 1.00, 2.31, 4.63, 5.06, and 10.14, respectively, and they showed significant differences ($P = 0.0001$). The titer of anti-PGL-I IgM levels was 89 pg/ml, 555 pg/ml, 1.244 pg/ml, 1.920 pg/ml, and 23.591 pg/ml in TT, BT, BB, BL, and LL patients, respectively, and they showed significant differences ($P = 0.005$). The results of Rank–Spearman correlation analysis between IL-17A expression in the skin and anti-PGL-I IgM serum levels were as follows: $r = 0.767$ and $P = 0.0001$. **Conclusion:** These results suggested that the increase of IL-17A expression in the lesional skin indicates the increase of anti-PGL-I IgM serum levels in leprosy.

Keywords: Anti-phenolic glycolipid-I immunoglobulin M, interleukin-17A, leprosy

Introduction

Leprosy is a chronic granulomatous disease caused by *Mycobacterium leprae*,[1,2] which mainly affects the peripheral nerves and the skin.[1-3] The important diversity of clinical and pathological findings related to leprosy is a result of the variable levels of cellular and humoral immunity to *M. leprae* among the patients affected by it.[3,4] The abnormality of CD + T-lymphocyte immunological function is the most important pathogenesis in leprosy. The T-helper (Th) 17 cell, a new kind of CD4 + T-cell subpopulation found recently, highly produces interleukin (IL)-17 or IL-17A.[5] The presence of IL-17A mRNA in the skin of lepromatous patients but not in tuberculoid (TT) type was performed by Ciree *et al.*[6] However, the role of IL-17A in leprosy is still unknown.[7]

Lepromatous type of leprosy is known for high anti-phenolic glycolipid (PGL)-I immunoglobulin (Ig) M serum levels[8] and the *M. leprae*-specific antigen.[1-4] This anti-PGL-I IgM is produced by B cells,[9] while IL-17A also expressed by Th17 cells that could induce B-cell differentiation.[10] Thus, we want to know the correlation of IL-17A expression in the skin and anti-PGL-I IgM in leprosy patients.

Methods

Patients

This study was an observational analytical study within cross-sectional design. Forty-nine leprosy patients (9 females

Address for correspondence: Dr. Hendra Gunawan, Department of Dermatology and Venereology, Faculty of Medicine, Universitas Padjadjaran-Dr. Hasan Sadikin Hospital, Jl. Pasteur No. 38, Bandung, West Java 40161, Indonesia.
E-mail: endagunawan@yahoo.com

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