

ABSTRACT

The Effect of Tuberculosis Treatment on Interferon Gamma Induced Protein-10 Levels and Chest Radiology Images in New Bacteriologically Confirmed Pulmonary TB Patients in Bandar Lampung

By
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Background: Pulmonary tuberculosis (PTB) remains a major global health problem, particularly in high-burden countries such as Indonesia. Monitoring treatment response traditionally relies on sputum examination and chest radiography. Interferon-gamma inducible protein 10 (IP-10) has emerged as a promising biomarker, but its association with radiological improvement is not well established. **Objective:** To evaluate the effect of PTB treatment on serum IP-10 levels and chest radiographic findings, and to assess the relationship between these parameters. **Methods:** A prospective cohort study was conducted on 35 newly diagnosed bacteriologically confirmed PTB patients in Bandar Lampung. Patients underwent a 2-month intensive-phase treatment with first-line anti-TB drugs. Serum IP-10 levels were measured by ELISA, and chest radiographs were evaluated before and after treatment. Statistical analyses used the Wilcoxon Signed Ranks Test and Cochran's test; $p < 0.05$ was considered significant. **Results:** Mean IP-10 levels significantly decreased from 473.59 pg/mL to 225.32 pg/mL ($p < 0.001$). Chest radiography showed significant improvement in lesion type ($p < 0.001$), with extensive lesions reduced from 77.14% to 25.71% and complete resolution of cavitary and miliary lesions. The reduction in IP-10 levels was strongly associated with radiological improvement ($p < 0.001$). **Conclusion:** Intensive-phase TB treatment significantly reduced serum IP-10 levels and improved radiological outcomes. IP-10 may serve as a valuable non-sputum biomarker for monitoring treatment response in PTB patients.

Keywords: Pulmonary tuberculosis, IP-10, chest radiography, biomarker, TB treatment.

ABSTRAK

Pengaruh Pengobatan Tuberkulosis Terhadap Kadar Interferon Gamma Induced Protein-10 Dan Gambaran Radiologi Toraks Pada Pasien Tb Paru Kasus Baru Terkonfirmasi Bakteriologis Di Kota Bandar Lampung

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Latar Belakang: Tuberkulosis paru (TB paru) masih menjadi masalah kesehatan global, khususnya di negara dengan beban tinggi seperti Indonesia. Pemantauan respons pengobatan umumnya mengandalkan pemeriksaan sputum dan radiologi toraks. Interferon-gamma inducible protein 10 (IP-10) telah diidentifikasi sebagai biomarker potensial, namun hubungannya dengan perbaikan radiologis belum banyak dilaporkan. **Tujuan:** Menilai pengaruh pengobatan TB paru terhadap kadar IP-10 serum dan gambaran radiologi toraks, serta menganalisis hubungan antara keduanya. **Metode:** Penelitian kohort prospektif dilakukan pada 35 pasien TB paru kasus baru terkonfirmasi bakteriologis di Kota Bandar Lampung. Semua pasien menjalani fase intensif pengobatan 2 bulan dengan OAT lini pertama. Kadar IP-10 diukur menggunakan metode ELISA, dan gambaran radiologi toraks dinilai sebelum dan sesudah pengobatan. Analisis statistik menggunakan Wilcoxon Signed Ranks Test dan uji Cochran dengan tingkat kemaknaan $p < 0,05$. **Hasil:** Rerata kadar IP-10 menurun signifikan dari 473,59 pg/mL menjadi 225,32 pg/mL ($p < 0,001$). Gambaran radiologi toraks menunjukkan perbaikan bermakna ($p < 0,001$), dengan penurunan lesi luas dari 77,14% menjadi 25,71% dan resolusi total lesi kavitas serta milier. Penurunan kadar IP-10 berhubungan signifikan dengan perbaikan gambaran radiologi ($p < 0,001$). **Kesimpulan:** Pengobatan fase intensif selama dua bulan secara signifikan menurunkan kadar IP-10 serum dan memperbaiki gambaran radiologi toraks. IP-10 berpotensi menjadi biomarker non-sputum yang efektif untuk memantau respons terapi TB paru.

Kata kunci: Tuberkulosis paru, IP-10, radiologi toraks, biomarker, pengobatan TB.