

ABSTRACT

Background: Tuberculosis (TB) remains a major global health problem, particularly among individuals co-infected with Human Immunodeficiency Virus (HIV). HIV-induced immunosuppression alters the clinical and radiological presentation of pulmonary TB, often leading to atypical chest X-ray findings that complicate diagnosis. CD4 count is a key indicator of immune status in HIV-infected patients and is believed to influence radiographic manifestations of TB. However, data regarding the relationship between chest X-ray findings and CD4 counts in TB-HIV co-infected patients in Indonesia remain limited.

Objective: To analyze chest X-ray patterns in patients with active pulmonary tuberculosis co-infected with HIV and to determine their relationship with CD4 counts at RSUP Dr. Sardjito.

Methods: This study employed an observational analytical design. Data were collected from TB-HIV co-infected patients treated at RSUP Dr. Sardjito. Chest X-ray findings, including nodular shadows, consolidation, cavitation, lymphadenopathy, pleural effusion, miliary pattern, and lung zone involvement, were evaluated and correlated with CD4 count levels. Statistical analyses included univariate, bivariate (Kruskal–Wallis), and multivariate regression analyses to assess the association between radiological features and CD4 counts.

Results: Patients with lower CD4 counts tended to present with atypical chest X-ray findings, such as consolidation, miliary shadows, lymphadenopathy, and involvement of middle to lower lung zones, while cavitary lesions were less frequently observed. Statistically significant associations were found between CD4 count levels and several radiographic features, indicating that immune status influences the radiological presentation of pulmonary TB in HIV-infected patients.

Conclusion: Chest X-ray manifestations of pulmonary tuberculosis in HIV co-infected patients are significantly associated with CD4 counts. Lower CD4 levels are correlated with more atypical radiographic patterns. Understanding this relationship can improve diagnostic accuracy and clinical management of TB-HIV co-infected patients, particularly in settings with high disease burden.

Keywords: *Tuberculosis, HIV, Chest X-ray, CD4 Count, TB HIV co-infection*