The Relationship between Multidrug-resistant Tuberculosis (MDR-TB) and CD4 Levels in HIV with Pulmonary Tuberculosis Patients in Phramongkutklao Hospital, Bangkok, Thailand

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Background: Tuberculosis is the leading opportunistic disease and cause of death in patients with HIV infection. Thailand is one of the 14 countries in the world with high burden of TB, TB/HIV, and MDR-TB. Estimated HIV seroprevalence among the incident TB cases is 13-24%. TB cases with MDR-TB are 2% of new cases and 19% of retreatment.

Objective: To describe drug susceptibility patterns divided in groups by CD4 in new sputum-smear positive tuberculosis and HIV-seropositive patients in Pramongkutklao Hospital.

Methods: A retrospective cohort study was conducted during the year 2010-2017. All data of new sputum-smear positive pulmonary TB and HIV patients (18 years old) were reviewed. The relationship between drug susceptibility patterns and CD4 levels were analyzed by using Pearson correlation.

Results: A total of 50 incident patients with pulmonary TB and HIV-seropositive, mean age of 39 years, 41 (82%) male and 9 (18%) female, were included. Mean CD4 count was 127.63 cell/mm3 and 9.87%. The proportion of patients with resistance to isoniazid was 22%, followed by rifampicin (14%), ethambutol (4%), and streptomycin (24%). Prevalence of multidrug-resistant tuberculosis and HIV-positive patients was 6%. Median CD4 were 64.69 and 147.5 cells/mm3 for pulmonary TB and HIV-positive patients who had streptomycin-resistant and streptomycin-susceptible Mycobacterium tuberculosis strains, respectively (P=0.029). The correlation between CD4 levels and streptomycin-resistant strain tended to be significant when CD4 was < 100 cells/mm3. No significant associations were observed between other drugs or multidrug-resistant tuberculosis and CD4 levels.

Conclusion: Among pulmonary TB with HIV-positive patients, low CD4 levels may predict streptomycin-resistant mycobacterium tuberculosis strains, especially in whom with CD4 < 100 cells/mm3.

Keywords: Tuberculosis, Drug resistance, HIV, Thailand