

ABSTRACT

**ANALYSIS OF FADD AND RIP3 EXPRESSION NECROPTOSIS
MACROPHAGE IN ACTIVE PULMONARY TUBERCULOSIS PATIENT WITH
HYPERVIRULENT STRAIN *Mycobacterium tuberculosis* INFECTION**

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Background: Hypervirulent strains of *Mycobacterium tuberculosis* are able to inhibit apoptosis and trigger necroptosis macrophage. Unlike necrosis, necroptosis has the kinetics of death through extrinsic and intrinsic signalling cell.

Objective: To analyze developing necroptosis macrophage in the infection of hypervirulent strains of *Mycobacterium tuberculosis* in pulmonary TB patients.

Methods:

Mycobacterium tuberculosis isolate was taken from Bronchoalveolar lavage (BAL) in active pulmonary TB patients using bronchoscopy. The PCR was carried out using primary targets of *TbD1* and *RD9* for DNA extraction from BAL. The strains identification was done by sequencing using BLAST. FADD and RIP3 expressions were assessed by immunocytochemistry. The TNF α level was measured by ELISA sandwich indirect.

Results:

This study obtained thirty new and active pulmonary TB patients, 24 isolates of the hypervirulent homologous of Beijing Strains and 6 isolates of the *M. bovis* BCG homologous strain. The sample number 6 shows genetic variations such as deletion base A the nucleotide sequence number 277, this sequence is different from the referrens strain Beijing. Women were more infected with tuberculosis. Age ranges from 21-40 were more found to be infected. Laborer was the most found occupation. Apoptosis macrophage and FADD were be lower in hypervirulent strains of *Mycobacterium tuberculosis* infection ($p < 0.05$). RIP3 expression was be lower in hypervirulent strain infections ($p > 0.05$). The TNF α level was be lower in hypervirulent strains of *Mycobacterium tuberculosis* ($p > 0.05$).

Conclusion:

In Surabaya, a hypervirulent strain of homologous Beijing strain and a non-virulent strain of homologous *M. bovis* were found. Macrophage necroptosis developed in tuberculosis patients could be used as the way to treat tuberculosis in the future through necroptotic pathways.

Keywords: *Mycobacterium tuberculosis*, active pulmonary TB patients, hypervirulent strain, TNF α level, necroptosis macrophage, bronchoalveolar lavage