RINGKASAN

ASOSIASI POSITIVITAS *NONTUBERCULOUS MYCOBACTERIA* DENGAN DERAJAT KEPARAHAN PASIEN TUBERKULOSIS PARU

Nontuberculous Mycobacteria (NTM) penyebab utama penyakit infeksi paru dilaporkan meningkat di Eropa, Amerika Utara, Afrika Selatan, dan Asia. Salah satu faktor risiko terjadinya NTM adalah Tuberkulosis. Indonesia merupakan negara *high burden* TuberkulosisNamun, informasi meningkatnya penyakit paru akibat bakteri NTM masih belum banyak diketahui.

Penelitian ini bertujuan untuk mengetahui adanya asosiasi positivitas terdeteksinya NTMdan derajat keparahan pasien TB paru dan bermanfaat untuk data informasi spesies NTM serta dasar penanganan pasien dengan *suspect* infeksi NTM maupun TB.

Tahap penelitian meliputi 40 sampel isolat tersimpan *Mycobacterium* periode bulan Desember 2014-Desember 2015. Pasien yang terdiagnosis *suspect* TB dilakukan identifikasi dan *diferensiasi* NTM dan *M.tuberculosis complex*menggunakan *immunochromatography* tes antigen MPT64. Selanjutnya identifikasi spesies NTM dengan metode pemeriksaan PCR 16S rRNA menggunakan primer Mb 246 dan MbR247 dan dilanjutkan PCR *nested* dengan primer Mb1 dan MbR7 . Tahapan selanjutnya sekuensing (ABI 377 *system*) di Laboratorium ITD Surabaya. Data hasil sekuensing dianalisis menggunakan BLAST NCBI untuk mengetahui homologi terhadap data *GenBank* . Derajat keparahan pasien TB paru didasarkan pada skor TB Bandim modifikasi berdasarkan data rekam medis pasien yang terdiagnosis TB yang diperoleh dari 5 gejala yaitu batuk, batuk darah, sesak nafas, nyeri dada dan keringat malam hari serta 5 tanda dari pemeriksaan klinis meliputi anemia, nadi lebih dari 90x/ menit, positif kelainan auskultasi dan suhu$> 37^o$ C.

Hasil penelitian menunjukkan 40 isolat Mycobacterium spp teridentifikasi 20 isolat positif NTM. Pola derajat keparahan pasien TB paru yang terdeteksi NTM positif berdasarkan Skor TB Bandim menunjukkan derajat keparahan sedang dan berat sejumlah 4/ 20 (20%) dan 80% menunjukkan derajad ringan. Hasil identifikasi spesies NTM antara lain *Mycobacterium kansasii (30%), Mycobacterium gordonae (5%), Mycobacterium parascrofulaceum (2,5%), Mycobacterium simiae (2,5%) Mycobacterium avium (2,5%), Mycobacterium terrae(2,5%).*Penelusuran data rekam medis menunjukkan data demografi pasien usia rerata 50 tahun, dan berjenis kelamin laki-laki. Pada pasien yang positif

terdeteksi NTM diketahui mempunyai riwayat pengobatan TB sejumlah 10(50%) , dengan signifikansi p = 0,02. Kelainan Diabetes melitus didapatkan pada 7 (35%)pasien dengan signifikansi p= 0,17. Data positivitas NTM dihubungkan dengan derajat keparahan pasien TB paru diperoleh asosiasi yang signifikan dengan nilai p = 0,03.

Atas dasar informasi hasil penelitian ini dapat dijadikan informasi terbaru teridentifikasinya NTM pada pasien TB paru. Untuk itu perlu penelitian lebih lanjut tentang kepastian infeksi NTM berdasarkan kriteria ATS 2007 dan dilanjutkan studi profil sensitivitas antimikroba strain NTM, untuk penanganan pasien.

SUMMARY

Assosiation Positivity of *Nontuberculous Mycobacteria* (NTM) and

Severity of Pulmonary Tuberculosis Patients

Nontuberculous Mycobacteria (NTM) lung infections is the leading cause of illness reported to be increasing in Europe, North America, South Africa and Asia. Tuberculosis is a risk factor for NTM. Indonesia is a high burden TB however increasing information NTM lung disease caused by bacteria NTM is not widely known.

This study aimed to detect an association of positivity detection of NTM and the severity of pulmonary TB patients and beneficial to update NTM species in patients with TB and the basic treatment of patients with NTM or TB infection.

This study conducted 40 samples stored isolates of *Mycobacterium spp i*n the period December 2014-December 2015 from patients diagnosed with suspected TB. Identification and differentiation for NTM and *M. tuberculosis complex* has used immunochromatography MPT64 antigen test. Furthermore NTM species was identified by PCR method using 16S rRNA used primer Mb 246 and MbR247 ,followed by nested PCR with primers MB1 and MbR7 at Laboratory ITD Surabaya. Sequencing results with ABI 377 system were analyzed using NCBI BLAST homology to the data to determine the *GenBank.*

The severity of pulmonary TB patients is based on TB Bandim score modifications from medical records of patients who were diagnosed pulmonary TB. TB Bandim score were based on five symptoms which were cough, haemoptoe, shortness of breath, chest pain and night sweat, and the 5 signs of clinical examination including anemia, pulse more of 90x / minute, positive abnormal auscultation and temperature> 37° C.

The results showed 40 isolates of *Mycobacterium spp* identified 20 positive isolates. The pattern of the severity of pulmonary TB patients were detected positive by Score TB NTM Bandim indicate the severity of moderate and severe amount of 4/20 (20%) and 80% showed mild degree. NTM species identification results include *Mycobacterium kansasii* (30%), *Mycobacterium gordonae* (5%), *Mycobacterium parascrofulaceum* (2.5%), *Mycobacterium simiae* (2.5%) *Mycobacterium avium* (2.5%), *Mycobacterium terrae* (2 5%). A search of medical records patient demographic data shows the average patients age was 50 years, and male. 10 (50%) of Patients detected NTM known previous of TB treatment , with a significance of p = 0.02. Diabetes mellitus was found in 7 (35%) patients with a significance of p = 0.17. The positivity NTM is associated with severity of pulmonary TB patients gained significant associations with p =0.03.

These informations of this study can be used as information on the identification of NTM in pulmonary TB patients. Further research conducted to diagnose certainty of NTM infection is based on the criteria of the ATS 2007 and continued

studies of antimicrobial sensitivity profile NTM strains, for the treatment of patients.

ABSTRACT

Assosiation Positivity of *Nontuberculous Mycobacteria* (NTM) and

Severity Pulmonary Tuberculosis Patients

Deby Kusumaningrum

Purpose:The research aims to detect a positive association between*Non tuberculous Mycobacteria* and the severity of pulmonary Tuberculosis patients and to find out what spesies of NTM is detected in patients with pulmonary TB.

Method: This study was conducted 40 isolat *Mycobacteria* at laboratory Clinical Microbiology Soetomo Hospital from patient TB .Colonies were then examined using immunochromatographic antigen MPT 64, then a molecular test was performed using PCR and sequencing.

Result: The result showed from 40 samples were used, 20 *isolat*were NTM and 20 *M.tuberculosis complex*. Sequencing of 20 samples were positive by PCR 116SrRNA, and detected *Mycobacterium kansasii (30%), Mycobacterium gordonae (5%), Mycobacterium parascrofulaceum (2,5%), Mycobacterium simiae (2,5%) Mycobacterium avium (2,5%), Mycobacterium terrae(2,5%).* Clinical severity by Bandim TB score from patients medical record showed asignificant assosiation between positivity of NTM detection and the severity among Tuberculosis patients , with p value =0,03.

Conclusion: This finding suggest that NTM infection detection is associated with disease severity of pulmonary TB..

Key word: *Nontuberculous Mycobacteria*, Severity Class, Tuberculosis