ABSTRAK

AKURASI DIAGNOSIS BERDASAR DETEKSI GEN CXCL10 PADA URIN SEBAGAI BIOMARKER UNTUK PENEGAKKAN DIAGNOSIS TUBERKULOSIS PARU

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LATAR BELAKANG : Pada tahun 2017, sebanyak 1,3 juta orang di seluruh dunia meninggal akibat TB. Di Indonesia, kasus TB yang terdeteksi dan terlaporkan sebesar 53 % pada tahun 2017. Penegakkan diagnosis adalah komponen penting dalam tercapainya target penurunan insidensi dan prevalensi TB. Karena sulitnya pasien mengeluarkan dahak, diperlukan suatu metode pemeriksaan menggunakan spesimen yang lebih mudah untuk dikumpulkan, seperti urin. Salah satu biomarker dalam urin yang bisa digunakan untuk penegakkan diagnosis TB paru adalah IP-10, yang dapat diwakili oleh gen CXCL10. Penelitian ini bertujuan menganalisis akurasi diagnosis berdasar deteksi gen CXCL10 pada urin pasien *suspect* TB paru.

METODE : Penelitian ini merupakan jenis penelitian observatif laboratorium dengan rancangan penelitian *cross-sectional* menggunakan teknik *consecutive sampling* yang bertujuan untuk menentukan akurasi diagnosis berdasar deteksi gen CXCL10 pada urin sebagai biomarker untuk penegakkan diagnosis TB paru di RSUD Dr. Soetomo Surabaya pada periode November 2019 hingga Maret 2020 dengan menggunakan data primer berupa hasil pemeriksaan gen CXCL10 menggunakan PCR dan data sekunder berupa rekam medis manifestasi klinis TB paru, Tes Cepat Molekuler GeneXpert MTB/RIF (Cepheid, Canada), pemeriksaan laboratorium darah lengkap, pemeriksaan fisik, dan foto radiologis thorax yang kemudian diolah dengan IBM SPSS Statistics 26.

HASIL : Hasil Tes Cepat Molekuler GeneXpert MTB/RIF (Cepheid, Canada) dan kriteria klinis foto radiologis *thorax* menunjukkan hasil positif sebesar 44,4% dan 69,4% pada penegakkan diagnosis TB paru. Terdapat 0% hasil positif dari hasil deteksi gen CXCL10 pada urin orang sehat, 2,8% hasil positif dari hasil deteksi gen CXCL10 pada urin pasien dengan hasil GeneXpert positif, 2,8% hasil positif dari hasil deteksi gen CXCL10 pada urin pasien dengan manifestasi klinis positif, 2,8% positif dari hasil deteksi gen CXCL10 pada urin, dan 0% positif dari hasil kultur urin.

KESIMPULAN : Secara keseluruhan, akurasi metode penegakkan diagnosis TB paru berdasarkan deteksi gen CXCL10 pada urin belum bisa diukur. Diperlukan penelitian lebih lanjut dengan data variabel klinis lebih lengkap, ruang lingkup yang lebih luas, jumlah sampel lebih banyak, metode real-time PCR untuk mendeteksi gen CXCL10 pada urin, dan juga komparasi dengan metode lain untuk mendeteksi gen CXCL10.

KATA KUNCI : Tuberkulosis, CXCL10, Biomarker, Urin, Diagnosis

ABSTRACT

ACCURACY OF DIAGNOSIS BASED ON DETECTION OF CXCL10 IN URINS AS BIOMARKERS FOR ESTABLISHING THE DIAGNOSIS OF LUNG TUBERCULOSIS

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BACKGROUND : *In 2017, as many as 1.3 million people worldwide died from TB. In Indonesia, TB cases were detected and reported by 53% in 2017. Diagnosis is an important component in achieving the target of decreasing TB incidence and prevalence. Because of the difficulty in coughing the phlegm, an examination method using specimen which could be easier to collect, such as urine, is needed. One of biomarkers in urine that can be used to diagnose pulmonary TB is IP-10, which can be represented by the CXCL10 gene. This study aims to analyze the accuracy of diagnosis based on detection of the CXCL10 gene in the urine of patients suspected with pulmonary TB.*

METHOD : *This is an observative laboratory research with a cross-sectional study design using consecutive sampling technique that aims to determine the accuracy of diagnosis based on detection of the CXCL10 gene in urine as a biomarker for the diagnosis of pulmonary TB in Dr. Soetomo General Hospital in Surabaya from November 2019 until March 2020 using primary data in the form of CXCL10 gene examination results using PCR and secondary data in the form of medical records of clinical manifestations of pulmonary TB, GeneXpert MTB / RIF Molecular Rapid Test (Cepheid, Canada), complete blood count, physical examination, and thorax radiograph which are then processed using IBM SPSS Statistics 26.*

RESULTS : *The results of the GeneXpert MTB / RIF Molecular Rapid Test (Cepheid, Canada) and clinical radiological criteria of the thorax showed positive results of 44.4% and 69.4% respectively in the diagnosis of pulmonary TB. There are 0% positive results from the detection of the CXCL10 gene in the urine of healthy people, 2.8% positive results from the detection of the CXCL10 gene in the urine of patients with positive GeneXpert results, 2.8% positive results from the detection of CXCL10 gene in the urine of patients with positive clinical manifestations, 2.8% positive results from detection of the CXCL10 gene in urine, and 0% positive from urine culture results.*

CONCLUSION : *Overall, the accuracy of establishing a diagnosis of pulmonary TB based on the detection of the CXCL10 gene in urine cannot be measured. Further research is needed with more various clinical variable data, wider scope, bigger sample sizes, real-time PCR methods for detecting CXCL10 genes in urine, and also comparison with other methods for detecting CXCL10 genes.*

KEYWORDS : *Tuberculosis, CXCL10, Biomarker, Urine, Diagnosis*