

INTISARI

Latar Belakang: Limfadenitis tuberkulosis merupakan manifestasi terbanyak tuberkulosis ekstraparu. Penegakan diagnosis limfadenitis tuberkulosis sulit dilakukan karena gambaran klinis klasik kurang terlihat dan diagnosis rutin yang sering dilakukan secara histopatologi gambarnya mirip pada penyebab penyakit lain sehingga diperlukan adanya pemeriksaan penunjang yang secara cepat mampu mendiagnosis infeksi tuberkulosis. *Mycobacterium tuberculosis* mensekresikan protein pada fase awal pertumbuhan yang disebut *early secretory antigen target 6* (ESAT-6) yang terlibat dalam invasi, faktor virulensi yang menentukan respon imun, perkembangan lesi granuloma dan diferensiasi jaringan granulomatosa pada limfadenitis tuberkulosis.

Tujuan: Mengetahui proporsi limfadenitis tuberkulosis dan limfadenitis granulomatosa. Menganalisis ekspresi ESAT-6 pada limfadenitis tuberkulosis dengan diagnosis histopatologi dan dengan deteksi *insertion sequence* (IS) 6110 pada *Mycobacterium tuberculosis*.

Metode: Analitik observasional retrospektif non eksperimental dengan pendekatan *cross-sectional*. Sampel penelitian berjumlah 50 blok parafin jaringan limfonodi yang terdiagnosis limfadenitis tuberkulosis dan limfadenitis granulomatosa kemudian dilakukan deteksi *insertion sequence* (IS) 6110 dan dianalisis ekspresi ESAT-6 dengan metode *real time* PCR.

Hasil: Dari sampel penelitian berjumlah 50, pasien yang terdiagnosis histopatologis tuberkulosis lebih tinggi pada usia 16 sampai 30 tahun sebanyak 10 orang (41,7%) dan pada yang berjenis kelamin perempuan sebanyak 15 orang (60%). Hasil uji statistik Mann-Whitney menunjukkan peningkatan secara signifikan ekspresi mRNA ESAT-6 pada limfadenitis TB dibandingkan dengan limfadenitis granulomatosa yang terdiagnosis secara histopatologi ($p=0,004$) dan juga terdapat peningkatan ekspresi secara signifikan mRNA ESAT-6 pada limfadenitis TB dengan deteksi positif gen IS6110 ($p<0,0001$).

Kesimpulan: Ekspresi mRNA ESAT-6 memiliki potensi sebagai petanda dalam membantu penentuan diagnosis limfadenitis TB.

Kata Kunci: Tuberkulosis, ESAT-6, *real time* PCR

ABSTRACT

Background: Tuberculous lymphadenitis is among the most common presentation of extra pulmonary tuberculosis. Diagnosis of tuberculous lymphadenitis can be an enigma owing to its varied clinical manifestation and also due to low sensitivity of conventional bacteriological methods to confirm the presence of *Mycobacterium tuberculosis*. Early secretory antigen target 6 (ESAT-6) released early during infection by *M. tuberculosis* which played roles in granuloma formation or tissue that determine the degree of disease, invasion, virulence factors that determined the immune responses.

Objective: The present study was designed to analysis the potential diagnostic application of ESAT-6 with real time PCR and to compare with histopathological diagnostic and also conventional molecular diagnosis tuberculosis based on the detection of insertion sequence (IS) 6110.

Methods: A total 50 formalin fixed paraffin embedded tissue were diagnosed based on histopathological features as tuberculous lymphadenitis (50%) and granulomatous lymphadenitis (50%). Conventional PCR was performed targeting IS6110 insertion element of *Mycobacterium tuberculosis* complex and the expression of ESAT-6 using real time PCR.

Results:

Fourty-one percent of the patients with histopathological diagnosis lymphadenitis tuberculosis were aged between 16 to 30 years. Two third (60%) of the patients were women. Sixteen (64%) of the tuberculous lymphadenitis and 13 (52%) of the granulomatous lymphadenitis confirmed by histopathology, were positive by IS6110-PCR. Genes ESAT-6 significantly upregulated in 25 samples with confirmed by histopathological diagnosis tuberculous lymphadenitis ($p = 0,004$) and in 29 samples were positive by IS6110-PCR ($p < 0,0001$).

Conclusion: Genes ESAT-6 mRNA expression can be considered as a biomarker for tuberculous lymphadenitis, in patients in whom histopathologic diagnostic that did not confirm the presence of *Mycobacterium tuberculosis*.

Keywords: Tuberculosis, ESAT-6, real time PCR