Diagnostics and biomarkers

PO - (8392) - SPUTUM MYCOBACTERIUM LOAD AND CYTOKINES BIOMARKER OF STIMULATED WHOLE BLOOD CELLS IN SPUTUM SMEAR NEGATIVE PULMONARY TUBERCULOSIS SUDANESE PATIENTS.

Omer, Mona (Sudan)¹
1 - Institute of Endemic Diseases - University of Khartoum

ABSTRACT

Background:
Improvement of the diagnosis of smear negative PTB patients and identification of possible immune factors associated with the negative result of sputum will enable early and accurate diagnosis of smear-negative PTB. This study aimed to measure the mycobacterium load in sputum samples of smear negative patients and identify cytokines markers associated with smear negative active pulmonary tuberculosis.

Methods:
Sputum and heparinized blood samples were collected from 40 smears negative, 40 smear positive PTB patients and 21 healthy controls. All sputum samples were analyzed by direct ZN stain and conventional PCR to confirm the infection and characterized the bacteria. The load of bacteria in sputum samples was measured using Real-time PCR. Blood samples were stimulated with sonicated MTB H37Rv. TH1 (TNF-α, IFN-γ, IL-1β) and TH2 (IL-10) cytokines were measured using ELISA technique.

Results:
Eight patients were grade 3+, 23 were grade 2+, 9 were grade 1+ and 40 were negative on smear. 87.5% of smear negative were positive by PCR. Smear negative PTB Patients produced high concentration of IFN-γ compared with smear positive. IL-10 and TNF-α concentration were significantly lower in smear negative compared with smear positive. IL-1β was not significantly different between smear negative and smear positives. Both smears negative and smears positive samples produced significantly high IL-10 and TNF-α cytokine compared with the healthy controls, while IFN-γ production was significantly lower in MTB patients. A highly significant correlation between MTB load and cytokines were detected. The mean concentration of IFN-γ was higher in stimulated blood samples of patients with lower bacterial load. In contrast, IL-10 and TNF-α concentration were higher in patients with high bacterial load. The TNF-α and IL-1β were good biomarkers for diagnosis of smear negative.

Conclusions:
Smear negative PTB produced high TH1 cytokine and low regulatory cytokine than smear positive.