ABSTRACT

Introduction:
Tuberculosis (TB) is one of the leading causes of death worldwide
and human immunodeficiency virus (HIV) co-infection poses a great challenge
in its control. Furthermore, diagnosis of TB in HIV co-infected subjects is not
straightforward. Early diagnosis of TB is important in the control of TB both for
treatment of patients and curbing transmission to others in the community. This study
aimed at identifying biomarker response to tuberculosis specific antigens (ESAT-6
and CFP-10) which could improve diagnosis of tuberculosis and differentiate between
active and latent tuberculosis.

Methodology:
Eighty active tuberculosis and HIV negative (n=36), active tuberculosis
and HIV positive (n=26), latent tuberculosis and HIV negative (n=11) and tuberculosis
negative and HIV negative (n=7) subjects were recruited from another ongoing
study. Luminex multiplex cytokine assay was performed to determine the levels of
17 cytokines/chemokines in QFT supernatants. The antigen-dependent biomarkers
were determined by subtracting the concentration of cytokine in the nil tube from the
antigen tube.

Results:
Interleukin 2, IFNγ and IL1ra were produced in significantly high amounts
in antigen stimulated whole blood from M.tuberculosis infected compared to controls
who were quantiFERON® TB Gold negative and HIV negative. Interleukin 1α, IL2,
MIP1α and TNFα were produced in significantly higher amounts in ESAT 6 and
CFP 10 stimulated whole blood from participants with latent TB infection (LTBI)
compared to active TB.

Conclusion:
Interferon gamma, IL2 and IL1ra can be useful biomarkers of TB.
However, IFNγ, IL2 and IL1ra cannot be relied on in the diagnosis of TB among HIV
patients especially those who are severely immunosuppressed. Interleukin 2, MIP1α,
and IL1α have poor sensitivity in discriminating active TB and LTBI and therefore
they cannot be used individually.