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In-vitro analysis of cytokines responses of visceral leishmaniasis and pulmonary tuberculosis patients to homologous and heterologous antigen stimulation

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Background: Leishmaniasis-tuberculosis co-infection has been reported many times mainly in the east region of Africa, but little is known about the immunological interactions of the co-infection. A case control study was carried out to analyze *in vitro* cytokines responses in visceral leishmaniasis (VL) patients and pulmonary tuberculosis (TB) patients.

Method: The cytokine profiles of 30 leishmaniasis patients, 30 tuberculosis patients and 10 healthy individuals were compared after stimulation with live Leishmania Promastigotes and BCG. Th-1 (IFN-γ and TNF-α), Th-2 (IL-10) and inflammatory cytokine IL-15 were measured in the supernatants of stimulated whole blood samples whole blood using ELISA.

Results: The concentration of Th-1 cytokines (IFN-γ and TNF-α) were significantly higher in the supernatants of stimulated whole blood of VL patients compared with TB patients mainly when stimulated by *L.donovani* antigen. Th-2 cytokine IL-10 was significantly produced by whole blood of TB patients particularly stimulated with BCG. A significant concentration was detected in stimulated whole blood of VL and TB patients compared by healthy controls.

Conclusion: The Th-1 cytokines expressions to the homologous antigen stimulation in visceral leishmaniasis patients were higher compared to the non-stimulated which suggests a strong adaptive response. Meanwhile, the Th-2 cytokine IL-10 expression to the homologous antigen stimulation in TB patients was higher than the non-stimulated which led to strong suppression the protective Th-1 cytokines expression. This finding suggests that a re-occurring TB infection may generate a weak protective immune response which could lead to a more persistent infection.

Biography

Hadeel Faisal Gad has graduated from faculty of Veterinary Medicine, University of Khartoum in 2002 and earned her PhD degree in Immunology in 2013 from Institute of Endemic Diseases, studying the cellular immunology of Pulmonary Tuberculosis and Visceral Leishmaniasis co-infection. She investigates the role of gene mutations as a susceptibility to the two diseases co-infection. She worked as a part time Lecturer and Researcher at King Saud University.

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