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Role of T-regulatory cells in severity of pulmonary TB

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Introduction: Tuberculosis due to *Mycobacterium tuberculosis* is 1 of the 3 major killers among infectious diseases. Deciphering the interactions between *M. tuberculosis* and the innate and adaptive immune compartments of the host is critical for understanding the pathogenesis of tuberculosis and for designing effective immunotherapeutic interventions.

Aim: The aim of this study was to evaluate the hematological parameters (HB level, differential leukocyte count), ESR, lymphocyte subpopulations {CD4⁺, CD8⁺ T-cell, CD4⁺/CD8⁺ ratio, CD19⁺ (B-lymphocytes), CD4⁺25⁺ (T-reg)}, CD14⁺ (monocytes), and CD3⁻CD(16+56)⁺ natural killer (NK) populations in 50 patients with active pulmonary tuberculosis (APT_B) compared to 30 healthy subjects (HCs). The results also compared the correlation between these subpopulations percentages and disease severity in patients with APT_B according to X-ray findings.

Methods & Materials: Peripheral blood mononuclear cells were isolated from EDTA anti-coagulated blood samples obtained from healthy donors and patients with pulmonary tuberculosis. These patients had clinical symptoms of tuberculosis and positive tuberculin skin test results; the presence of acid-fast bacilli was verified in sputum samples and positive TB culture by automated BACTEC 960 TB culture system. Blood samples were collected after obtaining written informed consent, using protocols approved by our institutional ethics committee.

Results: There was a significant decrease ($P < 0.01$) in the HB level and the lymphocytic count. While the neutrophil count ($P < 0.001$) and ESR ($P < 0.0001$) were significantly higher in the APT_B patients. The CD4⁺/CD8⁺ ratio was significantly lower ($P < 0.05$) in APT_B patients. The percentages of CD3⁻CD19⁺ cells were significantly lower ($P < 0.01$) in APT_B patients than in HCs. The percentages of CD4⁺, CD8⁺, CD3⁻CD19⁺, CD14⁺, and CD3⁻CD(16+56)⁺ cells showed no significant difference in different groups of disease severity of APT_B patients. However, there was a significant increase in the CD4⁺25⁺ cells in the group of APT_B patients with advanced disease than in the mild disease severity group. ($P < 0.05$)

Conclusion: Tuberculosis remains one of the most deadly diseases in the world affecting an astonishing number of the world's population. It is estimated that each year more than 9 million new cases of tuberculosis occur and approximately 2 million persons die from the disease. Ninety-five percent of the tuberculosis cases occur in developing countries.

Biography

Fadwa Abdel Reheem is working as a Lecturer in faculty of medicine, Fayoum University, Egypt. She has been graduated from faculty of Medicine from Cairo University in 2001. She completed her Master Degree in Clinical Pathology from Cairo University in 2008 and received Medical Doctorate Degree in Clinical Microbiology from Fayoum University in 2013. She has many contributions in teaching at organization of the International Course for Clinical Immunology for Infectious Disease in 2009, 2010 and 2011 in Faculty of Medicine, Fayoum University.

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