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Title: Study of TNF-α & IFN-γ concentration levels of serum in TB patients & control healthy groups by ELISA & evaluation their polymorphisms by PCR-RFLP

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Abstract: Background and Objectives: Cellular resistance to tuberculosis (TB) infection depends on signals from mycobacterium tuberculosis-specific T lymphocytes activating mycobacterial killing mechanisms in infected macrophages. The network of soluble factors, or cytokines, responsible for these cellular communications has been progressively unraveled over the last 3 decades; however, new regulatory and effectors cytokines continue to be discovered. Infection of a host with a pathogen first result in activation of cells of the innate immune response including effectors molecules including cytokines such as TNF-α & IFN-γ. The aim of this study was to investigate the frequency of TNF-α, IFN-γ alleles, evaluating serum concentration of TNF-α and IFN-γ and relationship of between susceptibility to TB and TNF-α and IFN-γ gene variations.

Material & Methods: Study was prospective case-control 93 patients with smear positive tuberculosis selected from MASIH DANESHVARI HOSPITAL. They were matched with 103 controls without any history TB. Genotype of 5 regions of TNF-α and 1 region of IFN-γ were distinguished by PCR-RFLP method, and level of serum concentration between case & control groups were evaluated by ELISA method. Data were analyzed with Mann-Whitney U & earning the cut off analyzed with ROC curve for ELISA method and the results of PCR-RFLP method were analyzed by SPSS, Fisher exact and X2.

Results: In PCR-RFLP method, the results showed a significant difference at TNF-308 and TNF-857 between two group of controls and patients (P-Value < 0.05). In ELISA method a significant difference between the control group and patient group in IFN-γ was observed (P-Value < 0.05). Also a cut off point as a serologic marker between the positive and negative states, for rapid TB examination about IFN-γ was found; the cut off for IFN-γ was 0.19.

Conclusion: Mutation in TNF-308 and TNF-857 regions were identified significantly and in none of the other TNF-α and IFN-γ regions weren’t observed this. In this study, ELISA method suggest that mycobacterial pathogens are frequently associated with production of cytokines such as IFN-γ and serologic tests considering the cut off patients, help us to detect TB in cases that we want to earn results rapidly.

Cytokine, Tuberculosis, IFN-γ, TNF-α, PCR-RFLP, ELISA test

Presentation: Poster