

Tumor Necrosis Factor-Alpha Gene Polymorphisms in Iraqi patients with Chronic Periodontitis

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Abstract

Background: Chronic periodontitis is an inflammatory disease of bacterial etiology that results in the destruction of tooth supporting tissues, tooth mobility, and tooth loss. The inflammatory response of the periodontal tissues to infection is influenced by environmental and genetic factors. The polymorphism of tumor necrosis factor-alpha (TNF- α) has been reported to influence the expression of TNF- α , thereby playing a role in the pathogenesis of periodontitis.

Objective: To study the genotyping of tumor necrosis factor- α at position (-308) and to find out whether any associations exist between the severity of periodontitis and the gene polymorphisms.

Patients and Methods: The study groups included 50 patients with chronic periodontitis and 20 healthy controls with clinically healthy periodontium with an age range of 25-50. Everyone were analyzed for polymorphism of TNF- α gene at position (-308). Periodontal parameters used in this study were plaque index (PLI), gingival index (GI), probing pocket depth (PPD), clinical attachment level (CAL) and bleeding on probing (BOP). Five ml of venous blood was collected from all patients and controls. DNA was extracted from blood samples, and then the results of electrophoresis of polymerase chain reaction (PCR) products for this cytokine were subjected for sequencing and to locate the positions of possible mutations.

Results: The results of sequencing for the tumor necrosis factor- α gene showed higher frequency of mutations in patient samples as compared to healthy control samples. A highly significant difference was found in the frequency of mutations among the six samples (4 patients and 2 controls) $p=0.0002$.

Conclusion: The results of this study indicates that the (-308) polymorphism in TNF- α gene is associated with the susceptibility to chronic periodontitis.

Key words: Chronic periodontitis, genetic factors, tumor necrosis factor- α , single nucleotide polymorphism.

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