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Molecular Detection of Helicobacter Pylori and Its Association with TNFα-308 Polymorphism in Cardiovascular Diseases

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Abstract : Cardiovascular diseases (CVD) are the most important cause of death in industrialized and developing countries such as Iran. The most important risk factors for the CVD, genetic factors and chronic infectious agents, such as Helicobacter pylori, can be mentioned. The TNFα gene is one of the most important anti-inflammatory cytokines that can affect the sensitivity, efficacy, and ability of the immune response to chronic infections. Some TNF-α gene polymorphisms, including the replacement of the G nucleotide G with A at position 308 in the promoter region of TNF-α, increase the transcription of cytokines in the target cells and thus predispose a person to chronic infections. This study examines the TNF-α 308 polymorphism and its association with Helicobacter pylori infection in this disease. This study was a case-control study in which 154 patients were examined as cases or patients with symptoms of myocardial infarction or angina and 160 as controls or healthy subjects. All of the subjects at different ages were given venous blood and age, BMI, cholesterol, LDL, and HDL were determined. DNA was extracted from the specimens, and the cagA gene from H. pylori and the TNF-α-308 polymorphism were determined by PCR in patients and healthy subjects. Statistical analysis was performed with Epi Info software. The results showed that the frequency of H. pylori infection in the patients and healthy group were 53.23% (82 out of 154) and 47.5% (76 out of 160). There was no significant difference in H. pylori outbreak between the two groups. The frequencies of TNF-α-308 genotype for GG, GA, and AA in patients were 0.17, 0.49, and 0.34, respectively, whereas for controls 0.47, 0.35, and 0.18 for GG, GA, and AA, respectively. The frequency of genotype analysis of TNF-α-308 polymorphisms in both patients and healthy groups showed that there was a significant difference in the frequency of genotypes and the AA genotype was higher in the affected individuals. Also, there was a significant relationship between the genotype and the contamination with H. pylori and changes in cholesterol, LDL, and HDL levels were observed. The results of the study indicate that H. pylori detection in individuals with AA genotype in people under 50 years of age can play an important role in early diagnosis and treatment of cardiovascular disease.

Keywords : Helicobacter pylori, TNFα gene, cardiovascular diseases, TNFα-308 polymorphism
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