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Original Article

Haplotype Analysis of RAGE Gene Polymorphisms and Association with Increased Risk of Diabetic Nephropathy

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ABSTRACT

Background: The present study aimed at evaluating the association between the -429T/C and -374T/A polymorphisms of RAGE (Receptor for Advanced Glycation End Products) gene promoter and diabetic nephropathy as well as examining its possible application as candidate markers of diabetic nephropathy among the population of Qazvin, Iran.

Methods: In this study, the diabetic patients were divided into the two groups of with or without nephropathy. The frequency of genotype and allele were determined using TETRA-Primer ARMS-PCR. Hardy-Weinberg equilibrium test and correlation of polymorphisms, odds ratio (OR), and FAMHAP software were used for haplotype analysis.

Results: Based on our data, the CC genotype of -429T/C polymorphism may play a protective role against the development of nephropathy (OR=0.586, 95%; CI: 0.158-2.167) while, the AA genotype may be associated with increased risk of the disease (OR=1.889, 95%; CI: 0.454-7.854). Allele's analysis revealed that the C allele of -429T/C polymorphism maybe protective against the appearance of nephropathy (OR=0.794, 95%; CI: 0.48-1.314) whereas, the A allele may be related to increased risk for nephropathy (OR=1.452, 95%; CI: 0.783-2.695). Haplotype analysis demonstrated that there was no significant correlation between the two -429T/C and -374T/A SNPs (χ^2=5.125, p value=0.135). However, it was found that the CA haplotype may have a protective effect against the development of nephropathy (OR=0.48, 95%; CI: 0.14-1.64) while, the TA haplotype may increase the risk of the disease (OR=2.06, 95%; CI:1.01-4.23).

Conclusion: Overall, no correlation between the -374T/A and -429T/C polymorphisms and the haplotypes in RAGE gene and the occurrence of diabetic nephropathy, was established.

Keywords: Nephropathy, Type 2 Diabetes, Haplotype, Receptor for Advanced Glycation End Products, SNP, Iran

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