POLYMORPHISMS IN THE PROMOTER REGION OF THE BASIC FIBROBLAST GROWTH FACTOR GENE ARE NOT ASSOCIATED WITH MYOCARDIAL INFARCTION IN THE SLOVENE POPULATION WITH TYPE 2 DIABETES

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Introduction

Basic fibroblast growth factor (bFGF) is a multifunctional growth factor that induces endothelial cell and smooth muscle cell proliferation and stimulates angiogenesis. bFGF expression is upregulated in diabetes mellitus and is implicated in diabetes-induced vascular complications. Polymorphisms within the promoter region of the bFGF gene could interfere with existing transcription factor binding sites or produce new binding sites, and thus influence the bFGF gene expression.
In this case-control cross-sectional study we investigated a possible association between the bFGF gene polymorphisms and MI among patients with type 2 diabetes in the Slovene population (Caucasians).

Methods

In the cross-sectional study we investigated the association of genetic polymorphisms (-553T/A, -834T/A and -921C/G) in the promoter region of the bFGF gene with myocardial infarction (MI) in a group of patients with type 2 diabetes. The study population consisted of 443 subjects with type 2 diabetes of more than 10 years' duration: 149 patients with MI (MI group) and 294 patients (control group) with no history of coronary disease (CAD), no signs of ischemia on electrocardiogram and no ischemic changes during submaximal stress testing. The bFGF gene polymorphisms were evaluated as described previously. Moreover, we were interested in the effect of the polymorphisms (-553T/A, -834T/A and -921C/G) of the bFGF gene on the BFGF serum level. Chi-square test was used to compare discrete variables and to compare genotype distributions. Statistical analysis was performed using the SPSS program for Windows 2000 version 13 (SPSS Inc., Chicago, Illinois). Statistical significance was set at $p < 0.05$.

Results

The bFGF genotype distributions in patients (MI group) and controls were compatible with Hardy-Weinberg expectations (BFGF-553: MI group $\chi^2 = 0.48$, $p = 0.488$; controls $\chi^2 = 1.1$, $p = 0.29$; bFGF-834: MI group $\chi^2 = 0.31$, $p = 0.577$; controls $c^2 = 0.344$, $p = 0.557$; bFGF-921: MI group $\chi^2 = 3.37$, $p = 0.066$; controls $\chi^2 = 3.38$, $p = 0.065$).
The -553 T/A polymorphism (dominant model: OR = 0.9, 95 % CI = 0.5–1.7, p = 0.7), the -834 T/A polymorphism (dominant model, OR = 1.0, 95 % CI = 0.5–2.1, p = 0.9) and the -921 C/G polymorphism (dominant model, OR = 1.3, 95 % CI = 0.7–2.0, p = 0.36) of the bFGF gene were not found to be risk factors for myocardial infarction in patients with type 2 diabetes. Moreover, In the study an association between the gene polymorphism of the BFGF gene and the BFGF serum level was demonstrated.

Conclusion

The polymorphisms -553 T/A, -834 T/A and -921 of the bFGF gene are not risk factors for myocardial infarction in patients with type 2 diabetes, therefore they cannot be used as genetic markers for myocardial infarction in Caucasians with type 2 diabetes.