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Association of Angiotensin-Converting Enzyme (ACE) Gene Polymorphism and Angiotensin II Type 1 Receptor (AGTR1) Gene Polymorphism and Diabetic Nephropathy

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ABSTRACT

Polymorphisms in angiotensin-converting enzyme (ACE) gene and angiotensin II type 1 receptor (AGTR1) gene have been assessed in previously multiple studies for association with diabetic nephropathy (DN), but results are still controversial. The aim of our study was to find out the role of ACE (I/D) and AGTR1 (A1166C) in genetic susceptibility of diabetic nephropathy in Belarusian population. The present case-control study investigated the association of the I/D polymorphism in the ACE gene and A1166C polymorphism in the AGTR1 gene with DN. The study included 101 patients with type 1 and type 2 diabetes (67 subjects with DN) and 100 normal controls. DNA was isolated from peripheral blood leucocytes, and genotyped using allele specific PCR (ACE ID) or PCR (AGTR1) methods. Genotype frequencies of the ACE (I/D) and AGTR1 (A1166C) polymorphisms were in accordance with the Hardy-Weinberg equilibrium. In subjects with DN, the frequencies of the DD, ID and II genotypes (ACE) were 0.409; 0.227 and 0.364 respectively. The frequencies of the AA, AC and CC genotypes (AGTR1) were 0.554; 0.355 and 0.091 respectively. We found no significant association of the ACE I/D polymorphism with DN in genotype, allele, dominant, and recessive models. Homozygosity for the A allele, of the AGTR1 (A1166C) polymorphism, was associated with increased risk of DN (OR=3.06; 99%CI=1.02-9.08), independently of the other associated variables: age, duration of diabetes, sex and HbA1c. Our data did not reveal significant association of the ACE I/D polymorphism with diabetic nephropathy. The risk of having diabetic nephropathy was increased in patients homozygous for the A1166 allele AGTR1 gene. However, more investigations are required to further this association.

Nothing to Disclose: VV, AS, VM, EN, MZ, KZ, TM