A CROSS-SECTIONAL STUDY ON RELATIONSHIP BETWEEN POLYMORPHISM OF ET-1 RS5370 (G5665T OR LYS198ASN) GENE AND ARTERIAL HYPERTENSION

Senanayake Hettiarachchi
Mudiyanselage Heshan Chamaka[1],
Obuhovich A.R.[1], Yahnovets I.N.[2]

[1]Grodno State Medical University,
[2]Grodno University Clinic

Relevance. Arterial hypertension (AH) is a global health crisis increasing stroke and heart failure risks. As well as the style of patients, genetic predisposition also can cause AH and other cardiovascular related complications. Genomic research on Lys198Asn polymorphism of endothelin-1 gene shows correlation of higher risk of ischemic thromboembolic stroke [1]. Also findings suggest the Lys198Asn polymorphism of EDN1 gene is associated with risks like ischemic stroke [2].

Target. To study the relationship between ET-1 rs5370 (Lys198Asn) polymorphism and the presence of AH.

Research methods. This cross-sectional study analyzed 203 Belarusian patients: 143 people (70.40%) with AH and 61 people (29.60%) without AH. AH was defined as according to standard clinical guidelines BP 140/90 mmHg, which was measured twice or the confirmed use of antihypertensive therapy. Genomic DNA was isolated from leukocytes; EDN1 rs5370 (G5665T) genotyping utilized PCR-RFLP or real-time PCR for GG, GT, and TT variants. All patients signed the consent for participation.

Results and their discussion. In this study on the ET-1 rs5370 gene polymorphism, the group with AH exhibits specific genotype frequencies of GG at 47.80%, GT at 18.70%, and TT at 3.90%. For the participants without hypertension, the observed genetic distribution consists of the GG genotype at 16.70%, the GT genotype at 12.30%, and the TT genotype at 0.50%. These individual percentages provide the baseline data for each regarding the genetic variants within the study population. When comparing the two groups, the GG genotype is far more prevalent in hypertensive individuals (47.80%) than in those without hypertension (16.70%). The GT genotype also occurs at a higher rate in the hypertensive group (18.70%) compared to the normotensive group (12.30%). Furthermore, the TT genotype shows a notable difference, appearing in 3.90% of hypertensive subjects while only representing 0.50% of those without the condition. This comparative analysis shows that all three genotypes are more frequent in the presence of arterial hypertension.

Conclusions. The findings indicate a strong association between ET-1 rs5370 polymorphism and hypertension. The higher frequency of GG (47.80%), GT (18.70%), and TT (3.90%) genotypes in hypertensive subjects compared to normotensive ones

suggests that these variants, particularly the GG genotype, are linked to increased risk of arterial hypertension.

LITERATURE

1. Influence of Lys198Asn polymorphism of endothelin-1 gene on ischemic atherothrombotic stroke characteristics / T. B. Oleshko, I. S. Chaika, T. M. Oleshko, V. Y. Harbuzova // Wiadomości Lekarskie. – 2020. – Vol. 73, № 4. – P. 657–661.

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A CROSS-SECTIONAL STUDY ON RELATIONSHIP BETWEEN POLYMORPHISM OF ENOS RS1799983 GENE AND ARTERIAL HYPERTENSION

Senanayake Hettiarachchi Mudiyanselage Heshan Chamaka[1], Antuhevich E. I.[2], Obuhovich A. R.[1]

[1]Grodno State Medical University,
[2]Grodno university clinic

Relevance. Arterial hypertension (AH) is a global health burden linked to stroke and myocardial infarction. Molecular methods which identify hereditary roots, specifically the eNOS rs1799983 polymorphism show association to AH [1]. Many factors determine this condition, yet genetic factors play a key role. Studies around the world shows that genetic factors may influence AH such as the TT genotype of NOS3 (rs1799983) and AA genotype of IGFBP3 (rs11977526) are significant genetic risk factors for AH in Brazilian women of African descent [2]. Also the T allele, 1particularly in the TT genotype, acts as a significant risk factor, with a notably stronger association observed in Asian populations [3].

Target. To study the relationship between eNOS rs1799983 polymorphism and the presence of AH.

Research methods. In a study of 182 patients at Grodno University Clinic, 145 (79%) were hypertensive (SBP≥140; DBP>90), and 37 (20%) were normotensive. Blood pressure was measured twice. The eNOS rs1799983 polymorphism (GG, GT, TT) was analyzed using PCR-RFLP. All patients signed the consent for participation.

Results and their discussion. In this cross-sectional study on the eNOS rs1799983 gene polymorphism, the hypertensive group displays a genotype distribution of GG at 47.80%, GT at 27.50%, and TT at 4.40%. Within the group of individuals without AH, the recorded frequencies for these specific genotypes were GG at 10.40%, GT at 9.20%, and TT at 0.50%. These individual data points characterize the genetic profile for both study groups regarding the presence or absence of AH.