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Association of allelic polymorphisms of the Matrix Gla-protein system genes with acute coronary syndrome in the Ukrainian population

V. Yu. Garbuzova1, D. A. Stroy2, V. E. Dosenko2, O. A. Obukhova1, O. V. Ataman1
1 Sumy State University
2, Rymskogo-Korsakova Str., Sumy, Ukraine, 40007;
2 Bogomoletz Institute of Physiology, NAS of Ukraine
4, Bogomoletz Str., Kyiv, Ukraine, 01024
vikgarbuzova@yandex.ru

Calcification of the vascular wall is a prognostic factor for the outcome of acute coronary syndrome (ACS). Matrix Gla-protein system, which includes MGP, VDR, VKOR, GGCX, BMP-2 is an important factor in vessels protection of ectopic calcifi cation. Polymorphisms of genes, which encode the structure of these proteins, determine their activity and may affect the intensity of calcification and the consequences of ACS.
Aim. The association between ACS and polymorphic variants of Matrix Gla-protein system genes: *MGP* (rs1800802, rs1800801, rs4236), *VDR* (rs2228570, rs1544410, rs7975232, rs731236), *GGCX* (rs699664), *VKORC1* (rs2359612), *BMP-2* (rs2273073), was analyzed. **Methods**. Venous blood of 118 patients with ACS and 234 healthy individuals (control group) was used for genotyping. Polymorphisms of Matrix Gla protein system genes were examined by PCR-RFLP methodology. **Results**. The risk of ACS in carriers of minor allele *A/A* (rs1800801) is 2.8 times higher; G/G (rs1544410) 2.1 times higher; A (rs699664) and C (rs2359612) 2 times higher than in carriers of the major allele. The best classification model is a two-component model that includes polymorphisms rs1800801 and rs4236 of the MGP gene (predictive ability is 63 % for MDR and 68 % for the Random forest method). The coincidence of similar orientation genotype variants for chosen polymorphism[s] was associated with a high risk of developing ACS: in the heterozygote genotype it increased by 2.1 times, and in the homozygote for the minor allele genotype, by 6.3 times.
Conclusion. There is an association between ACS and some polymorphic variants of Matrix Gla-protein system genes: *MGP* (rs1800801), *VDR* (rs1544410), *GGCX* (rs699664), *VKORC1* (rs2359612). This indicates a higher risk of complications in the ACS patients with the following genotypes: *A/A* (rs1800801), *G/G* (rs1544410), *A/A* (rs699664) and *C/C* (rs2359612).
Keywords: acute coronary syndrome, allelic polymorphism, matrix Gla-protein.

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