The effect of CYP2C19*17 on platelet aggregation in patients with acute coronary syndrome and percutaneous coronary intervention in Russian population

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Background

The aim of this study was to assess the impact of CYP2C19*17 on low platelet reactivity (PRU<85 for VerifyNow assay) in clopidogrel-treated patients with acute coronary syndrome (ACS) and percutaneous coronary intervention (PCI).

Material and methods

A total of 81 (64 males and 17 females) patients with ACS and PCI participated in the study. The mean age of patients enrolled was 63.9 ± 10.9 years. We measured platelet reactivity using VerifyNow P2Y12 assay. Genomic DNA was extracted from venous blood. CYP2C19*17 alleles was determined by real-time polymerase chain reaction (Real-Time PCR). Fisher's exact test was used to assess CYP2C19*17 allele frequency between patient with normal platelets reactivity (PRU>85) and low platelets reactivity (PRU<85). A P-value < 0.05 was considered statistically significant.

Results

From the 81 patients, included in research and genotyping by CYP2C19*17, 57(70%) were wild type homozygous (CC), 23 (28%) were heterozygotes (CT) and 1 (2%) was homozygous for the T-allelic variant (TT). C-allele frequency was 84.6% and incidence of T-allele was 15.4%. Genotype frequencies didn't deviate significantly from Hardy-Weinberg equilibrium ($p=0.42$, $\chi^2=0.06$). There were statistically significant differences in CYP2C19*17 allele frequency between patients with low platelet reactivity (LPR) (PRU<85) and in patients with a normal platelet reactivity (PRU>85): OR, 11.2; 95% CI, 1.18 to 106.32; $p=0.0253$).

Conclusion

Carriers of CYP2C19*17 allelic variant have the higher risk of developing LPR and risk of bleeding events, respectively. Further research with large data is needed to prove the result of this study.