APOLIPOPROTEIN E GENETIC VARIATION AND STATIN THERAPY APPOINTMENT

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Introduction: Dyslipidemia is an important risk factor for cardiovascular disease due to the significant influence of cholesterol on atherosclerosis. Several genetic variants in genes related with triglyceride (TG) metabolism has been described, including LPL, apolipoprotein A5 and apolipoprotein E (Apo E) are associated with dyslipidemia by involvement to lipid metabolism. The combined analysis of these polymorphisms could produce clinically meaningful complementary information. Changes in TG levels are now considered an independent cardiovascular risk factor; hence, the study of combined variants in genes involved in TG metabolism may help explain part of the risk for CVD. The most informative polymorphisms within the Apo E gene are the Arg158Cys (rs7412) and Cys112Arg (rs429358) which define Apo E gene alleles, epsilon2, 3 and 4 (£2, £3 and £4).

Methods: Healthy volunteers aged 50-75 years randomly selected from registers of the polyclinics in Astana. Biochemical analysis blood was performed from serum for the total cholesterol (TC), TG, and level of HDLs and LDLs on COBAS Integra 400. Genomic DNA was extracted from peripheral blood using the Promega Wizard® Genomic DNA Purification Kit. The SNP genotyping was performed by Real-Time PCR using TaqMan assay on 7900HT Fast System (Applied Biosystems, USA).

Results: The APOE genotypes were clustered into 3 groups: £2/E2+£2/£3, e3/e3, e3/e4+ £4/E4 due to the small number of participants with E2/E2 (n=2), and E4/E4 (n=12) genotypes (minor allele frequency, MAF<5%). Analysis was performed by ANOVA for the potential effect of Apo E variants on individual cardiometabolic risk factors. Apo E gene variants showed statistically significant association with TC level in analysis stratified by ethnicity, age and sex ($p=0.002$). In addition, sex and BMI stratified analysis showed significant association with LDL levels ($p<0.001$)

Conclusions: Allelic polymorphism of Apo E gene is good genetic prognostic marker of lipid metabolism and related diseases. Also it has effect on response to statins, which are widely used in lipid lowering therapies, on personalized level. Considering information mentioned above genetic screening for Apo E genotype should to be performed prior statin therapy appointment.

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