Complex Genetic Disorders, Genetic Susceptibility to Infections

AB027. Promoter polymorphism rs9332978 in the *CYP4A11* gene is a novel susceptibility marker for coronary heart disease

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Background: CYP4A11 is a major cytochrome P450 in humans involved in the biosynthesis of 20-hydroxyeicosatetraenoic acids, products of arachidonic acid metabolism with important functions in the cardiovascular system. Several studies in Asian populations have been done to investigate associations between polymorphisms of the *CYP4A11* gene and the risk of hypertension and coronary artery disease (CAD). The present study was designed to investigate association between common single nucleotide polymorphisms (SNP) rs3890011, rs9332978 and rs9333029 of *CYP4A11* and the risk of CAD in Russian population.

Methods: DNA samples from 1,323 unrelated individuals comprising 637 patients with angiographically diagnosed CAD and 686 age- and sex-matched healthy subjects were genotyped for the polymorphisms using by the Mass-ARRAY 4 system.

Results: SNPs rs9332978 and rs3890011 were associated with the risk of CAD at a log-additive genetic model: odds ratios adjusted for sex, age and hypertension were 1.42 (95% CI: 1.14–1.78, P=0.002) and 1.21 (95% CI: 1.02–1.24, P=0.03), respectively. These SNPs were in a linkage disequilibrium (D' =0.974, P<0.0001). Haplotype G-C-A (rs3890011, rs9332978 and rs9333029) of *CYP4A11* showed a significant association with increased risk of CAD: odds ratio adjusted for sex, age and hypertension was 1.42 (95% CI: 1.13–1.79, P=0.003).

Conclusions: To our knowledge, this is the first study reporting association between SNP rs3890011 of *CYP4A11* and the risk of CAD in Caucasians. Moreover, we found for the first time that polymorphism rs9332978 in the promoter of *CYP4A11* could be a novel genetic marker of susceptibility to CAD. Further studies in independent races and ethnicities are required to confirm associations between polymorphisms of *CYP4A11* and CAD and to assess whether the studied SNPs are informative markers in disease prediction for the purposes of personalized medicine.

Keywords: Coronary artery disease (CAD); disease susceptibility; cytochrome P450 4A11; single nucleotide polymorphisms (SNP)

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