Prothrombin Gene Mutation (G20210A) is Not Associated with Nonvalvular Atrial Fibrillation with Ischemic Stroke in Turkish Population

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Background: Prothrombin G20210A is a genetic variant that approximately doubles or triples the risk of forming blood clots in the veins. The polymorphism is located in a noncoding region of the prothrombin gene (3 untranslated region nucleotide 20210), replacing guanine (G) with adenine (A). The variant causes elevated plasma prothrombin levels (hyperprothrombinemia). Prothrombin is the precursor to thrombin, which plays a key role in causing blood to clot (blood coagulation). Prothrombin G20210A can thus contribute to a state of hypercoagulability. Atrial fibrillation (AF) is the commonest sustained cardiac arrhythmia, which confers a high risk of mortality and morbidity from stroke and thromboembolism. We aimed to investigate prothrombin G20210A mutation in patients with AF who have had a stroke or in healthy controls.

Methods: Prothrombin G20210A mutation was analysed in 70 patients with nonvalvular AF who have had a stroke and 70 healthy individuals with no documented episode of AF matched for age, race and sex. Prothrombin G20210A mutation was identified by polymerase chain reaction (PCR) method. Distribution of prothrombin G20210A alleles (allel G, allel A) and genotypes (Normal (GG) genotype, heterozygous (GA) or homozygous (AA) mutant genotype) were determined in study population. Demographic characteristics and risk factors for AF and stroke were evaluated in the study groups.

Results: There was no significant difference with respect to age and gender between groups. There was no statistical difference in genotype distribution among the groups. The genotype distribution in nonvalvular AF who have had a stroke group was as follows: normal genotype (GG) frequency was 59 (84.3%) and heterozygous mutant genotype (GA) frequency was 11 (15.7%). The genotype distribution in control group was as follows: normal genotype (GG) frequency was 65 (92.9%) and heterozygous genotype (GA) frequency was 5 (7.1%). Homozygous genotype (AA) was not detected in both groups. There was no statistically significant difference among groups.

Conclusions: Our results suggest that prothrombin G20210A mutation appears not to be associated with nonvalvular AF with ischemic stroke in Turkish population.