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Association between polymorphism of the complement 5 gene with the occurrence, severity, and long-term outcome of ischemic stroke in Chinese

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Background and Purpose: The inflammatory response has been described to involve in the development of atherosclerosis. The complement system appears as an important part of the inflammatory response to participate in the process of atherosclerosis and plays an increasingly important role in atherosclerosis-related diseases such as cerebrovascular especially in ischemic stroke (IS). The aim of this study was to determine whether the single-nucleotide polymorphism (SNP) of the complement 5 gene (C5 rs17611, A>G) independently influences the occurrence, severity, and long-term outcome in Chinese IS patients.

Methods: C5 rs17611 genetic variants were investigated in 494 IS and 330 controls using PCR-LDR. Severity was assessed by the National Institutes of Health Stroke Scale at the time of admission. 308 patients were assessed 90 days post-stroke using the Modified Rankin Scale to determine stroke outcome.

Results: Presence of the C5 polymorphism was not associated with the incidence of ischemic stroke in the mass (P=0.541), but a significant association existed between the C5 rs17611 AA genotype and the occurrence of IS large artery atherosclerosis (LAA) subtype (P=0.031) even persisted after adjustment for covariates (OR=1.522; 95% CI=1.095-2.116; P=0.012). We also found the relationship between atheromatous plaque and C5 rs17611 gene polymorphism (P=0.02). But no association was found between genotypes and the severity & the outcome of stroke (P=0.978; p=0.296).

Conclusions: Genetic factors, particularly the C5 polymorphism, might contribute to the risk of IS LAA subtype independent of other known predictors of the risk. Meanwhile the C5 rs17611 polymorphism was also associated with atheromatous plaque. However, we didn't find the correlation between the polymorphism and the severity & the long-term outcome of IS.

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