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Cohort study on the association between the AQP7, AQP9 gene polymorphisms in patients with hypertension and the risk of stroke

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Objectives: To explore the association between the AQP7, AQP9 genes polymorphisms in patients with hypertension and the risk of stroke in Chinese; and the possible gene-gene and gene-environment interactions.

Methods: The stroke cases and the patients with hypertension were recruited from the follow-up cohort study of hypertension which established in 2010 in Jiangsu Province. The patients with stroke for the first time during the past 6 years were the cases groups, the patients with hypertension were the control groups which were chosen according to the inclusion criteria (paired with each stroke case): same gender, the age between ±3 years, the same place of residence, and the rate of case and control was 1:3. Genotyping of 5 SNPs in AQP7 (rs2989924, rs3758269, rs2542743) and AQP9 (rs57139208, rs16939881) was performed by the polymerase chain reaction assay.

Results: The results of single SNP analysis showed that rs2989924 was associated with the risk of stroke in this case-control study, the frequency distribution was statistically significant; compared to AA+AG genotype, GG genotype significantly increased the risk of stroke, with an adjusted OR of 1.741(95% CI: 1.232-2.461). After adjusted confounders, CC+TT genotype of rs3758269 can decreased the risk of stroke, with an adjusted OR of 0.669 (95% CI: 0.450-0.994), compared to CC genotype. Based on the stratified analysis, recessive genotype model of rs2989924 significantly increase the risk of stroke in male, over 60 years old, BMI(kg/m2)≥25, and central obesity in hypertension patients, with an adjusted OR of 2.23 (95% CI:1.32-3.77), 2.20(95% CI:1.41-3.44), 2.35(95% CI:1.45-3.81) and 1.81(95% CI:1.22-2.70). Before adjusted confounders rs3758269 has nothing to do with the stroke, but after adjusted confounders, rs3758269 was associated with decreased risk of stroke in over 60 years old and BMI(kg/m2)≥25, with an adjusted OR of 0.48(95% CI:0.25-0.94) and 0.43(95% CI:0.24-0.77) in dominant genotype model. No gene-gene interaction and linkage disequilibrium were observed.

Conclusions: SNPs rs2989924, rs3758269 were associated with the risk of stroke in Chinese Han population. No association between rs2542743, rs57139208, rs16939881 and the risk of stroke was found.

Speaker Biography

Xiang Quanyong, Professor of Nanjing Medical University, Southeast University, is now working in the Department of Chronic non-communicable Disease Control and Prevention, Jiangsu Province Center for Disease Control and Prevention, China, deputy director of the department. He is a member of Chinese Hypertension Federation. His current main research activities are: 1) monitoring and analyzing of the prevalence of cardiovascular and cerebrovascular diseases, especially the control and prevention of Hypertension; 2) Diabetes control and prevention; 3) control and prevention of the risk factors for non-communicable disease, especially for Tobacco Control. He has published several papers in International Journal, Such as: Arch Toxicol, J Hum Genet, Oncotarget, J Diabetes Res, and so on.

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