Influence of COL1A2 gene variants on the incidence of hypertensive intracerebral hemorrhage in a Chinese population

D.Z. Tian, W. Wei and Y.J. Dong

Department of Neurosurgery, Cardiovascular Specialist Units, Affiliated Hospital of Yanan University, Yanan, China

Corresponding author: D.Z. Tian
E-mail: tiandezz@sina.com

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ABSTRACT. Type I collagen (transcribed by COL1A1 and COL1A2 genes) is important for maintaining vessel wall elasticity and is a critical part of the extracellular matrix. We conducted a case-control study to investigate the role of the COL1A2 rs42524 polymorphism in the development of hypertensive intracerebral hemorrhage. Between January 2012 and December 2014, a total of 227 patients with hypertensive intracerebral hemorrhage and 227 controls were selected from the Affiliated Hospital of Yanan University (China). Genotyping of the COL1A2 rs42524 polymorphism was performed using polymerase chain reaction coupled with restriction fragment length polymorphism. By logistic regression analysis, we found that the CC genotype was associated with increased risk of hypertensive intracerebral hemorrhage as compared to the GG genotype (OR = 12.67, 95%CI = 3.03-112.11). In a dominant model, the GC + CC genotype of the COL1A2 rs42524 polymorphism was associated with a 2.57-fold increased risk of hypertensive intracerebral hemorrhage as compared to the GG genotype. In a recessive model, the CC genotype of the COL1A2 rs42524 polymorphism was correlated with a higher risk of hypertensive intracerebral hemorrhage as compared to the GG + GC genotype.
The GC and CC genotypes of the COL1A2 rs42524 polymorphism were associated with a substantial risk of hypertensive intracerebral hemorrhage among patients who consumed alcohol and used tobacco. In conclusion, our study suggests that the COL1A2 rs42524 polymorphism is associated with the development of hypertensive intracerebral hemorrhage, particularly in conjunction with tobacco use and alcohol consumption.

**Key words:** Type I collagen; COL1A2; Polymorphism; Hypertensive intracerebral hemorrhage