Interleukin-6 rs1800795 polymorphism is not a risk factor of hypertension.

Sheng Yue1,2, Jian Jia3, Ning Zhang1, Yi-Yang Zhan1*, Hai-Xia Ding4

1Department of Geriatric Cardiology, the First Affiliated Hospital with Nanjing Medical University, Nanjing, Jiangsu, PR China
2Department of Emergency, Luo Yang Central Hospital affiliated to Zhengzhou University, Luoyang, Henan, PR China
3Department of General Medicine, the First Affiliated Hospital with Nanjing Medical University, Nanjing, Jiangsu, PR China
4Department of Geriatric Neurology, the First Affiliated Hospital with Nanjing Medical University, Nanjing, Jiangsu, PR China

Abstract

The role of IL-6 rs1800795 polymorphism in the development of hypertension has been inclusive. Therefore, the purpose of our study was to determine whether there is an association between IL-6 rs1800795 polymorphism and hypertension risk. PubMed, Embase and China National Knowledge Infrastructure (CNKI) were searched till Jun 2017. A total of 7 case-control studies with 1231 cases and 1122 controls were included. We did not found a significant association between IL-6 rs1800795 polymorphism and the susceptibility to hypertension (OR=0.94; 95% CI, 0.71-1.24; P=0.67). In the subgroup analysis of race, both Asian (OR=1.52; 95% CI, 0.15-15.48; P=0.73) and Caucasian (OR=1.01; 95% CI, 0.84-1.21; P=0.92) with IL-6 rs1800795 polymorphism did not show significant associations. In conclusion, this meta-analysis suggested that IL-6 rs1800795 polymorphism was not associated with the risk of hypertension.

Keywords: IL-6, Hypertension, Genetic, Association.
**Statistical analysis**

The intensity of the relationship between IL-6 rs1800795 polymorphism and the susceptibility to hypertension was calculated with the OR and respective 95% CI. Heterogeneity between selected studies was inspected using chi-square-based Q test, with P value more or less than 0.05, representing the absence or presence of significant heterogeneity. The random-effects model was chosen to calculate the pooled OR. The subgroup analysis was carried out by race. In the sensitivity analysis, we excluded the study without HWE. The presence of publication bias was assessed by a visual inspection of a funnel plot. All statistical tests were used by the Reviewer Manager software.

**Results**

**Characteristics of the studies**

Characteristics of the included studies were shown in Figure 1. A total of 7 case-control studies with 1231 cases and 1122 controls were included. Two studies were conducted in Asians and five studies were performed in Caucasians. One study was not in HWE.

**Meta-analysis**

As shown in Figure 1, we did not found a significant association between IL-6 rs1800795 polymorphism and the susceptibility to hypertension (OR=0.94; 95% CI, 0.71-1.24; P=0.67). In the subgroup analysis of race, both Asian (OR=1.52; 95% CI, 0.15-15.48; P=0.73) and Caucasian (OR=1.01; 95% CI, 0.84-1.21; P=0.92) with IL-6 rs1800795 polymorphism did not show significant associations. In the sensitivity analysis, the results were not altered when the study without HWE was excluded. Publication bias was not found in Figure 2.

**Discussion**

In this study, a total of 7 case-control studies with 1231 cases and 1122 controls were included. We did not found a significant association between IL-6 rs1800795 polymorphism and the susceptibility to hypertension. In the subgroup analysis of race, both Asian and Caucasian with IL-6 rs1800795 polymorphism did not show significant associations. In the sensitivity analysis, the results were not altered.

Kim et al. suggested that rs1800795 SNP of IL-6 gene was not related to arterial thromboembolic events [12]. Lorente et al. suggested that IL-6 promoter polymorphism (-174 G/C) might be a favourable genotype in septic patients showing lower serum IL-6 levels and lower risk of death within 30 d [13]. Ruiz-Padilla et al. found that IL-6 -174G/G genotype confers higher risk of failure in therapeutic response to LEF in Mexicans and if confirmed in other populations this can be used as promissory genetic marker to differentiate risk of therapeutic failure to LEF [14]. Kumar et al. suggests that IL-6 gene polymorphisms are not associated with the risk of intracerebral haemorrhage [15]. Hongmei et al. suggested that IL-6 -592G>C polymorphism was correlated with the risk of coronary artery disease [16].
Some limitations were existed in this meta-analysis. First, many of the original studies did not adjust for potentially important confounders. Second, the inconsistency of the base line characteristics between the studies, such as age and gender, might increase the selection bias. Third, due to the lack of original information of the entire data, we did not evaluate interactions of gene and environmental factors in all pooled studies.

In conclusion, this meta-analysis suggested that IL-6 rs1800795 polymorphism was not associated with the risk of hypertension.

References


*Corresponding to*

Yi-Yang Zhan
Department of Geratic Cardiology
The First Affiliated Hospital with Nanjing Medical University
Nanjing
Jiangsu
PR China