Angiotensin converting enzyme polymorphism

In Homo sapiens, the gene encoding ACE is located on the long arm of chromosome 17 (17q23). The gene is 21 kilo bases (kb) long and comprises 26 exons and 25 introns. In the National Center for Biotechnology Information (NCBI) records, more than 160 ACE gene polymorphisms are listed, most of which are single nucleotide polymorphisms (SNPs). Only 34 of those polymorphisms are located in coding regions; 18 of them are missense mutations.

Genetic association studies about associations between angiotensin-converting enzyme (ACE) polymorphisms and intracranial hemorrhage (ICH) generated conflicting results. In this study, a meta-analysis was performed to better assess the relationship between ACE polymorphisms and ICH.

METHODS: PubMed, Medline, Embase and CNKI were searched for eligible studies. We calculated odds ratios (ORs) and 95% confidence intervals (CIs) to evaluate associations between ACE polymorphisms and ICH.

RESULTS: Totally 39 studies with 3839 cases and 5353 controls were analyzed. Pooled analyses showed that ACE I/D polymorphism was significantly associated with ICH in overall population (dominant model: p<0.0001, OR=0.70, 95%CI 0.60-0.82, I2=58%; recessive model: p<0.0001, OR=1.95, 95%CI 1.57-2.43, I2=66%; allele model: p<0.0001, OR=0.68, 95%CI 0.60-0.78, I2=75%). Further subgroup analyses yielded similar significant results in East Asians and South Asians, but not in Caucasians.

This meta-analysis suggested that ACE I/D polymorphism might affect individual susceptibility to ICH in both East Asians and South Asians. These results indicated that this polymorphism could be used to identify individuals at higher susceptibility to ICH in Asians [1].

1)
Li Z, Wang S, Jiao X, Wei G. Genetic association of angiotensin-converting enzyme I/D polymorphism with intracranial hemorrhage: an updated meta-analysis of 39 case-control studies. World Neurosurg. 2019 Jun 21. pii: S1878-8750(19)31656-0. doi: 10.1016/j.wneu.2019.06.104. [Epub ahead of print] PubMed PMID: 31233928.