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THE RELATIONSHIP OF ANGIOTENSIN I CONVERTING ENZYME GENE I/D POLYMORPHISM AND ANGIOTENSIN CONVERTING ENZYME 2 GENE A9570G POLYMORPHISM WITH ATRIAL FIBRILLATION

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Objective To investigate the potential association of angiotensin I converting enzyme (ACE) gene I/D polymorphism and angiotensin converting enzyme 2 (ACE2) gene A9570G polymorphism with atrial fibrillation.

Methods A total of 305 patients were recruited and divided into two groups: the atrial fibrillation group (148 cases) and control group (157 cases). The control group was matched to cases on the age, gender, presence of left ventricular dysfunction, presence of coronary heart disease, presence of diabetes and presence of primary hypertension. The ACE gene I/D polymorphism and ACE2 gene A9570G polymorphism were genotyped with polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) and gene sequencing approach.

Results The genotype distribution and allele frequencies of ACE gene I/D was not different between the atrial fibrillation groups and control ($p=0.841$; OR=0.948, 95% CI: 0.680 to 1.322, $p=0.755$, respectively). In male subgroup, there was no statistical difference between the atrial fibrillation groups and control in ACE2 gene A9570G polymorphism (OR=1.670, 95% CI: 0.873 to 3.193, $p=0.120$). However, in the male with atrial fibrillation subgroup, left atrial dimension and right atrial dimension in subjects carrying G genotype were larger than that of subjects with A genotype (37.0 ± 4.4 mm vs 40.1 ± 6.4 mm, $p=0.028$; 36.5 ± 4.4 mm vs 40.1 ± 5.7 mm, $p=0.010$, respectively). In female subgroup, The genotype distribution and allele frequencies of ACE2 gene A9570G polymorphism were not different between the atrial fibrillation groups and control ($p=0.286$; OR=1.415, 95% CI: 0.885 to 2.264, $p=0.146$, respectively). In the female with atrial fibrillation subgroup, there was no statistical difference in left atrial dimension and right atrial dimension ($p=0.924$, $p=0.432$, respectively).

Conclusion The genotype distribution and allele frequencies of ACE gene I/D and ACE2 gene A9570G polymorphism were not significantly correlated with atrial fibrillation. However, in the male subgroup with atrial fibrillation, the G genotype in ACE2 gene A9570G polymorphism may be a risk factor for prediction of atrial enlargement. This was not found in the female subgroup with atrial fibrillation.