

Effects of ACE polymorphisms and other risk factors on the severity of coronary artery disease

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ABSTRACT. Coronary artery disease (CAD) is a multifactorial disease influenced by genetic and environmental factors. Major risk factors of CAD are hypertension, hyperlipidemia, smoking, family history and obesity. Also polymorphisms in the angiotensin-I converting enzyme (*ACE*) gene can associate with CAD. The relationship between ACE polymorphisms and other risk factors is not well understood in CAD, likely due to the complex interrelation of genetic and environmental risk factors. The aim of this study was to investigate the associations of CAD risk factors and *ACE* polymorphisms in patients with CAD. We enrolled 203 consecutive

patients and 140 healthy subjects in the study. The severity of CAD was evaluated according to the number of vessels with significant stenosis. *ACE* insertion (I)/deletion (D) genotype was determined by PCR. The frequency of the DD genotype was significantly higher in patients. D allele frequency was higher among CAD subjects when compared to the control group. The number of stenotic vessels were found to be statistically associated with a high frequency of DD polymorphism and D allele and a low frequency of I allele in patients, especially in male patients. The control group displayed II and ID genotypes more frequently than did the patients. The *ACE* I/D genotype was associated with hyperlipidemia and smoking history. We consider that the DD polymorphism and D allele may affect the severity of CAD, while I allele may have a protective effect. In conclusion, the *ACE* I/D genotype may interact with conventional risk criteria in determining the risk of CAD.

Key words: Multifactorial disease; Hyperlipidemia; Obesity; Smoking; Angiotensin-I converting enzyme