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Candidate Gene Polymorphisms of Renin Angiotensin System and Essential Hypertension in a South Indian Tamilian Population

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ABSTRACT Genetic variants of renin angiotensin system (RAS) gene play a significant role in the pathogenesis of essential hypertension and cardiovascular diseases. In the present study, we investigated the association of RAS gene polymorphisms with hypertension by analyzing the polymorphisms *ACE* ID, *AGT* T207M, M268T and *AGT1R* A1166C in 462 hypertensive patients and 444 healthy subjects. Genotyping was determined by allele specific PCR, PCR-RFLP and RT-PCR Taqman assay. The *ACE* ID heterozygous (OR=1.5: 95% CI: 1.0-2.3, p<0.05) and ACE DD homozygous genotype (OR=1.7: 95% CI: 1.2-2.8, p<0.01) was found to be significantly associated with hypertension. There was no significant association between *AGT* T207M, M268T and *AGT1R* A1166C gene polymorphisms and hypertension. Gender-specific analysis showed *ACE* ID heterozygous genotypes were positively associated with hypertension among male hypertensives (OR=1.9: 95% CI: 1.1-2.6, p<0.01). Significant gene-gene interaction was observed between *ACE* ID and *AGT* M268T polymorphisms (OR=2.0; 95% CI: 1.2-3.5, p<0.01). Our results suggest that *ACE* ID polymorphism is associated with hypertension. Further, gene-gene interaction between *ACE* ID and *AGT* M268T gene polymorphisms further modified the risk of essential hypertension.