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 AGTIR 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 AGTIR 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.