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Gender Specific Association of Insertion/Deletion Polymorphism of the Human Angiotensin Converting Enzyme Gene with Essential Hypertension

B. A. Bhavani¹, T. Padma^{1*}, B. K. S. Sastry² and N. Krishna Reddy²

1. Department of Genetics, Osmania University, Hyderabad 500 007, Andhra Pradesh, India

2. Department of Cardiology, CARE Hospital, Nampally, Hyderabad 500 001, Andhra Pradesh, India

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ABSTRACT The pattern of angiotensin-converting enzyme (*ACE*) gene insertion/deletion (*I/D*) polymorphism in the Indian population is poorly known. The population has cultural and linguistic differences and lived in an environment that varied significantly from one region to another. There is controversy regarding the association of the Angiotensin-converting enzyme insertion/deletion polymorphism with essential hypertension and variation in blood pressure. In the present study we examined the importance of *ACE* (*I/D*) polymorphism as a determinant of hypertension and to assess the potential modifying effect of gender on *ACE* gene in Indian population. The *ACE* *I/D* polymorphism was assayed by PCR amplification of *ACE* gene in 200 hypertension patients and 200 controls. The genotypic and allelic frequencies were observed to be deviated significantly from Hardy-Weinberg equilibrium ($p < 0.05$). The DD and ID genotypes were found to be strongly associated with hypertension in men with an odds ratio 2.25 (95% confidence level (CI), 1.14 to 4.42) and 2.20 (95% CI, 1.27 to 3.80) respectively, ($p < 0.01$). Further, a linear relationship was observed between diastolic pressure and allele D in men but not in women. The data thus provide evidence in favor of an association of *I/D* polymorphism at the *ACE* locus (17q23) with essential hypertension. Moreover, these results highlight the potential importance of gender-dependent interactions between genetic background and expression of hypertensive phenotype. It further prompts the need for the confirmatory studies in large population-based samples.

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