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Distribution of ACE I/D Polymorphism in the Patients of Diabetes and Nephropathy in Pakistan

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ABSTRACT Diabetes mellitus (DM) is a chronic metabolic syndrome that can lead to serious vascular complications. Diabetic nephropathy (DN) has been established as the leading cause of deaths in diabetes due to ESRF. The association between ACE gene polymorphism and onset of DN has not been explored in Pakistani diabetic patients. This study investigates the possible association of insertion (I) and deletion (D) polymorphism of ACE gene in patients of diabetes with and without nephropathy. Total 296 diabetic patients without nephropathy (DM), 168 with nephropathy (DN) and 150 normal healthy individuals were selected followed by informed consent. Fasting blood samples were collected for biochemical analyses and PCR amplification was done to genotype the DNA, for ACE I/D using specific primers. In DM group, the ACE genotypes were distributed as II, 41.55%, DD, 8.45% and ID, 50%. In DN patients, II, 10.71%, DD, 30.95% and ID, 58.33%. The II and DD genotype, and I and D allele distributions were significantly different in DN vs. DM patients (χ^2=9.879, P=0.00167). The I/D genotypes and allele distributions were significantly different in DM patients vs. controls (χ^2=22.252, P=0.00000239). The DN patients have significantly higher prevalence of D allele and DD genotype in comparison to DM. Results indicated a clear association of D allele polymorphism in ACE gene with nephropathy in patients of diabetes. It is suggested that D allele polymorphism may be considered as genetic risk factor and disease marker for nephropathy in diabetes.