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Insertion/deletion polymorphism of *angiotensin converting enzyme* gene in Egyptian patients with essential hypertension and type 2 diabetes mellitus

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Background: Angiotensin converting enzyme (ACE) is a key component in renin angiotensin aldosterone system, which performs a pivotal role in blood pressure regulation and volume homeostasis. The relation of ACE gene insertion/deletion (I/D) polymorphism with hypertension (HTN) and type 2 diabetes mellitus (T2DM) has been investigated in various populations with conflicting results.

Objective: The aim of this study is to evaluate the distribution of ACE gene (I/D) polymorphism and its plasma level in Egyptian patients with essential hypertension and T2DM.

Patients & Methods: This study included 120 patients (40 with HTN, 40 with T2DM and 40 with HTN and T2DM) and 30 healthy controls. Fasting lipid profile, blood glucose, serum insulin, glycated hemoglobin and HOMA-IR were measured. Plasma ACE level was determined using ELISA method. Genotyping of ACE I/D polymorphisms were analyzed by polymerase chain reaction.

Results: The ID genotype and D allele were significantly higher in patients with HTN, T2DM and T2DM with HTN ($P<0.001$) than in controls. The II genotype and I allele were significantly higher in the controls. Plasma ACE level was significantly elevated in all patient groups versus the control group ($P<0.001$). Plasma ACE level was considerably increased in DD genotype as compared to other genotypes ($P<0.001$). Plasma ACE level and ID genotype were the most significant predictors for HTN (OR: 6.63, 4.88 respectively) and T2DM (OR: 6.09, 5.82 respectively).

Conclusion: ID genotype and D allele of ACE gene polymorphism and high plasma ACE level might be risk factors for essential hypertension and T2DM.