



The influence of genes polymorphism of the renin-angiotensin system (RAS) on essential hypertension

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ABSTRACT

The pathogenesis of essential hypertension (EH) is affected by genetic and environmental factors. Mutations in hypertension-related genes can affect blood pressure (BP) via alteration of salt and water reabsorption by the nephron. The genes of the renin-angiotensin system (RAS) have been extensively studied because of the well documented role of this system in the control of BP. It has been previously shown that angiotensin converting enzyme (ACE), angiotensin II type 1 receptor (ATR1) and angiotensinogen (AGT) gene polymorphisms could be associated with increased risk of EH. So, in the current study, we evaluated the frequency of ACE insertion/deletion (I/D), ATR1 (A1166C) and AGT (M235T) polymorphisms in relation to EH in a group of Egyptian population. The study population included 83 hypertensive patients and 60 age and sex matched healthy control subjects. Polymerase chain reaction (PCR) was used to analyze I/D polymorphism of ACE gene, while restriction fragment length polymorphism – PCR (RFLP – PCR) was used for the analysis of A1166C and M235T polymorphisms of ATR1 and AGT genes in peripheral blood samples of all patients and controls. The results revealed that there was a positive risk of developing EH when having the DD genotype. Moreover, there was a positive risk of developing EH when having C allele and / or T allele whether in homozygous or heterozygous state. From this work, it was concluded that there was an association between ACE (I/D), ATR1 (A1166C) and / or AGT (M235T) genes polymorphism and the risk of developing EH.