Association of insertion deletion polymorphism of angiotensin converting enzyme gene with essential hypertension and type 2 diabetes mellitus in Malaysian subjects

Abstract

Introduction: The deletion (D) allele of the angiotensin-converting enzyme (ACE) gene has been studied in various populations in relation to hypertension (HTN) and type 2 diabetes mellitus (T2DM) with contradictory results.This study sought to determine the association of insertion (I)/D polymorphism of the ACE gene in hypertensive andT2DM subjects in a Malaysian population. Materials and methods: A total of 260 subjects consisting of 65 HTN, 60 T2DM, 65 T2DM with HTN and 70 controls were recruited. Genotyping was performed by polymerase chain reaction initially and mistyping of DD genotypes was performed with an insertion-specific primer. Results: The frequency for II, ID and DD genotypes of the ACE gene was 36.92%, 52.31% and 10.77% in HTN, 40.00%, 41.67% and 18.33% inT2DM, 30.77%, 53.85% and 15.38% inT2DM with HTN and 57.14%, 40.00% and 2.86% in controls, respectively. The frequency for the D allele was 36.92% in HTN, 39.17% in T2DM and 42.31% in T2DM with HTN compared to 22.86% in controls.The genotype and allele frequency of the ACE gene polymorphism differed significantly in patients when compared to controls ($p < 0.05$). Conclusion: The D allele of the ACE gene is associated with essential HTN and T2DM in Malaysian subjects.

Keyword: Angiotensin-converting enzyme; Essential hypertension; Insertion/deletion polymorphism; Malaysia; Type 2 diabetes mellitus