Null association between ACE gene I/D polymorphism and diabetic nephropathy among multiethnic Malaysian subjects

Jainie J Jayapalan1, Sekaran Muniandy1, Siew P Chan2
1 Department of Molecular Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia
2 Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

Date of Web Publication: 16-Sep-2010

Correspondence Address:
Sekaran Muniandy
Department of Molecular Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur
Malaysia

DOI: 10.4103/0971-6866.69351
PMID: 21031658

Abstract

Background: Wide inter-ethnic allele variations of the Angiotensin Converting Enzyme (ACE) insertion-deletion (I/D) gene polymorphism were thought to be responsible for the conflicting gene-diabetic nephropathy disease association studies worldwide. We have investigated the genetic susceptibility of the ACE gene to diabetic nephropathy in the multiethnic Malaysian population.

Materials and Methods: A total of 137 healthy (control) and 256 diabetic subjects were recruited. The diabetic subjects were further subdivided according to their nephropathy status based on urinary albumin-creatinine ratio (ACR) and glomerular filtration rate (GFR). Triple primer polymerase chain reaction (PCR) was used for ACE I/D genotyping. Subsequently, population-wide genetic analysis and gene-disease association studies were performed.

Results: The genotype frequencies in all subgroups were in Hardy-Weinberg equilibrium. Similar allele and genotypic frequencies of ACE I/D gene polymorphism were observed between healthy controls and pooled type 2 diabetes mellitus (T2DM) subjects, and normoalbuminuria versus microalbuminuria, macroalbuminuria and End Stage Renal Failure (ESRF) (P > 0.05). Neither ethnicity nor gender exerted any influence on the ACE I/D gene polymorphism (P > 0.05), with the exception of the Chinese ethnic group which exhibited a higher frequency of ID genotype (P = 0.042). A multinomial logistic regression model showed that predictive factors including age, systolic blood pressure (SBP), high density lipoprotein (HDL) and glycosylated hemoglobin (HbA1C) were independently associated with diabetic nephropathy, in that order.

Conclusion: The I/D polymorphism of the ACE gene is not significantly associated with both T2DM and/or diabetic nephropathy in this Malaysian population regardless of ethnicity and gender.

Keywords: ACE I/D polymorphism, type 2 diabetes mellitus, diabetic nephropathy, Malaysian population

How to cite this article:

http://www.ijhge.com/article.asp?issn=0971-6866;year=2010;volume=16;issue=2;spage=78... 18/7/2011