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Association of angiotensin-converting enzyme gene insertion/deletion polymorphisms with risk of hypertension among the Ethiopian population

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Although the pathophysiological mechanism of hypertension is not fully elucidated yet, a large number of pieces of evidence have shown that genetic alterations in the renin-angiotensin-aldosterone system play a central role. However, the association of insertion/deletion polymorphism of the angiotensin-converting enzyme (ACE) gene with essential hypertension is controversial yet, and there is a limited number of publications among the Ethiopian population. Therefore, this study aimed to determine the association of ACE gene I/D polymorphism with the risk of hypertension among essential hypertension Ethiopian patients. A case-control study was conducted from October 07, 2020, to June 02, 2021, among hypertensive patients and normotensive controls. Blood samples were drawn from each of the randomly selected 64 hypertensive and 64 normotensive participants for molecular test analysis. Genetic polymorphism of the ACE gene was identified using polymerase chain reaction (PCR) and electrophoresis. The strength of the association between the genotype and hypertension was estimated through the calculation of adjusted odds ratio and 95% confidence intervals using logistic regression. P-value < 0.05 was considered statistically significant. The distribution of DD genotypes and the D allele of the ACE gene was 48.4% and 63% in essential hypertensive patients, respectively, while it was 29.7% and 42.2% in control subjects respectively. The ACE DD genotype and D allele were more frequent among hypertensive patients as compared to controls. The present study found that the DD genotype and D allele of the ACE gene has had a strong association with a high risk of hypertension in the study population.

Biography

Tsegaye Adane Birhan has completed his MSc in Environmental Health from the University of Gondar Institute of public health and an MSc in Biochemistry from the University Of Gondar School Of Medicine. He is an assistant professor and researcher at the University of Gondar. He has expertise in environmental and molecular studies to identify the causes and therapeutic targets of diseases. He has published more than 18 papers in reputed journals.