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FTO, PPAR-γ and ABCC8 gene variation and hypertension as determinants of cardiometabolic risk in CVD patients

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Abstract

Hypertension is one of the main causes of morbidity and mortality. Genetic and environmental factors are associated with the risk of nucleotide polymorphism of FTO T/A (rs9939609), PPAR-γ Pro/Ala (rs1801282) and ABCC8 G/T (rs757110) genes and increase the risk of insulin resistance and cardiac diseases. However, association of hypertension with genetic variation still needs to be elucidated. In this study, participants from DHQ-Teaching Sargodha and Faisalabad Institute of Cardiology Hospital, Pakistan, were allocated into three groups. According to inclusion/exclusion criteria, 144 CVD patients were grouped to investigate PPAR-γ Pro/Ala (rs1801282) variation and were further subdivided into 33 cardiomyopathy (CMP) and 111 coronary artery disease (CAD) patients. Moreover, 164 CVD patients were assigned for detection of FTO T/A (rs9939609) variation and were sub-divided into 128 CAD and 36 CMP patients whereas remaining 164 CVD patients were enrolled to analyze ABCC8 G/T (rs757110) gene variation, which were further divided into 61 CMP and 103 CAD patients. Assessment of allele specific mutation of all genes, A/A and T/A genotypes of FTO gene, T/T and G/T genotypes of ABCC8 gene and C/C and C/G genotypes of PPAR-γ gene was done through Tetra and/or Tri amplification refractory mutation system polymerase chain reaction (Tetra/Tri ARMS-PCR). Numerous biochemical parameters including glucose, lipid profile, renal and liver function enzymes were also measured to evaluate the relationship between hypertension and genetic variation in CVDs provoking risk factors of metabolic disorders. It was found that 75%, 68% and 75% CVD patients were comorbid with hypertension and were detected with T/A variation in FTO gene, C/G variation in PPAR-γ gene and G/T in ABCC8 gene respectively. In addition, they showed disturbed level of glucose and lipid profile, placing CVD-patients comorbid with hypertension and gene variation at risk for developing cardiometabolic syndrome.

Keywords: Hypertension, Coronary artery disease, cardiomyopathy, cardiovascular disease, polymorphism

Abbreviations:

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