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Association of TCF7L2 *rs*12255372 (G/T) and PPARγ rs1801282 (C/G) gene polymorphisms in type 2 diabetes mellitus: A case-control study in Indian population of Eastern Uttar Pradesh

Gopeshwar Narayan
Banaras Hindu University, India

Type 2 Diabetes (T2D) has become a major health problem throughout the world; when compared to European populations, Asians develop diabetes at younger age, with lower degrees of obesity, and at much higher incidence rates. Recently in the Genome Wide Association Studies (GWAS) with the population of European descent have identified several Single Nucleotide Polymorphisms (SNPs) being associated with T2D. The variants have been identified to be differentially associated with T2D in different ethnic groups. The reasons for these ethnic variations towards the risk of T2D have to be understood in order to delineate the role of ethnicity in the background of same genetic elements. We have investigated the association of TCF7L2 rs12255372 (G/T) and PPARγ rs1801282 (C/G) gene polymorphism (SNPs) with T2D with the Indian population of Eastern Uttar Pradesh. Genomic DNA was extracted from peripheral blood of 434 cases and 292 controls for TCF7L2 (rs12255372) and PPARγ (rs1801282) genes, and gene polymorphisms were analyzed by PCR-RFLP. Then we compared the genotype distributions and allelic frequencies of each variant in the studied population between the cases and the controls. From this the Odds Ratio (OR) at 95% Confidence Interval (CI) was determined to describe the strength of association by 2x2 and 2x3 in the contingency table. It is reported that the allele frequency distribution for TCF7L2 polymorphism is statistically significant (OR = 1.33, 95% CI 1.029- 1.738, P=0.03), and it is not significantly different for PPARγ (OR-0.98, 95% CI 0.7O59-1.366, P=0.98) between T2D patient and the control groups. Our findings also suggest that TCF7L2 gene polymorphism increases susceptibility to T2D, where as the PPARγ polymorphism does not show any significant association with T2D in the Indian population of Eastern Uttar Pradesh. To our knowledge, this is the first report in this population and provides valuable information for comparison with other ethnic groups as well as in determining disease susceptibility in this population.

Biography

Gopeshwar Narayan has completed his PhD from the Banaras Hindu University in 1994 and Post-doctoral studies from Institute of Human Genetics, Frei University, Berlin, Germany and Columbia University, New York, USA. Currently, he is working as a Professor in the Department of Molecular and Human Genetics, Banaras Hindu University, Varanasi, India. He has published more than 50 papers in the reputed journals in the fields of animal genetics, cancer genetics and type 2 diabetes.

gnarayan@bhu.ac.in

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