Association of genetic variants in KCNJ11, TCF7L2, SLC30A8 and IGF2BP2 genes for type 2 diabetes and response to Sulfonylurea and Metformin in South Indians

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Type 2 diabetes (T2D) represents a chronic, multifactorial, heterogeneous group of disorder which has become a major health confront worldwide with over 300 million people. With genetic and environmental factors contributing to the pathogenesis, the treatment to T2D exerts a huge impact on healthcare system. With several classes of drugs currently available to treat T2D however, the clinical response to these drugs often exhibits variation among individual. In the present study, we attempt to address these issues by evaluating the association of KCNJ1, TCF7L2, SLC30A8 and IGF2BP2 gene polymorphisms with T2D and drug response to sulfonylurea and metformin using PCR-RFLP, TETRA-ARMS and DNA sequencing techniques. Study participants comprised of 185 T2D patients who are on sulfonylurea (90) and metformin (95) treatment and age and sex matched normal healthy controls of south Indian origin. Allele frequencies, genotype and haplotype distribution were calculated in both cases and controls and were analyzed by chi-squared test. Effect of investigated factors on sulfonylurea and metformin treatment failure was calculated by logistic regression analysis. Gene–gene interactions were analyzed by generalized multifactor dimensionality reduction method. Linkage disequilibrium between each pair of SNP loci, Lewontin's disequilibrium coefficient D' and squared correlation coefficient were estimated and plotted with JLIN. Single-locus analysis showed significant association with KCNJ11rs5219, KCNJ11rs5215, and IGF2BP2rs1470579. Multivariate regression analysis showed that TCF7L2rs12243326 TT genotype, KCNJ11 rs5219 TT genotype were associated with response rate to sulfonylurea treatment and IGF2BP2rs1470579 CC genotype were associated with response rate to metformin treatment.

Biography

Phani M.N is currently doing his PhD in Manipal Life sciences Centre, Manipal University under the guidance Prof. Padmalatha Rai S and co-guidance of Prof. K Satyamoorthy. He has completed his postgraduate in Medical Biochemistry from Kasturba Medical College, Manipal University. He has published 2 papers in peer reviewed journals.

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