J Diabetes Metab 2015, 6:11
http://dx.doi.org/10.4172/2155-6156.C1.040

OMICS International
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7th Indo Global Diabetes Summit and Medicare Expo

November 23-25, 2015 Bengaluru, India

Investigation of intronic SNPs in *VEGF* gene for predisposing type 2 diabetes patients to retinopathy: A cross-sectional study

Dhara Jajal
Sardar Patel University, India

Diabetic retinopathy (DR) is a prominent micro-vascular complication of diabetes mellitus that affects as wide as 12 to 30% of the diabetic population in India. Vascular Endothelial Growth Factor-A (VEGF) plays a chief role in the pathogenesis of the DR. Many polymorphisms in the promoter and UTR regions of VEGF gene have been evidently shown to be correlated with development and progression of DR in different ethnicity. The present study investigated three intronic SNPs in VEGF gene that possibly predispose well-defined type 2 diabetes patients to DR or proliferative DR (PDR) in India; that were not previously studied in India. We performed PCR-RFLP to genotype the three SNPs rs833069, rs2146323 and rs3025021 in control healthy individuals, type 2 diabetic patients without DR (DWR) and type 2 diabetic patients with DR. The homozygous minor genotype (AA) of rs2146323 showed a potential risk to develop PDR ($P<0.05$, OR=5.44), whereas, it was not significantly associated with DR (OR=3.49). We found rs833069 polymorphism significantly associated with the susceptibility of DR and PDR, but its deviation from Hardy-Weinberg equilibrium made the results non-conclusive. Though, genotypic as well as the allelic distribution of rs3025021were not significantly different among DWR and DR patients, the odds ratio suggested TT genotype imparting possible risk to PDR (OR=4.27). In conclusion, our study indicated rs2146323 SNP as a potential genetic factor to influence the occurrence of PDR in the targeted Indian ethnicity.

dhara.jajal@gmail.com

Bridge to gap: The need for more research on DIP in India

Arun Gowda
Focus Scientific Research Center, India

Recent International Diabetes Federation (IDF) update depicts that globally there are 387 million people with diabetes and 77% of this population belongs to low and middle-income countries. This number is predicted to increase in the next 20 years to 592 million which also include diabetes in pregnancy (DIP). Especially, women with Gestational Diabetes Mellitus (GDM) and their children are at increased risk of future diabetes. In India, GDM prevalence has steadily increased from 2% (1982) to 7.62% (1991) and doubled to 16.55% in 2002. However, based on the geographical locations and diagnostic methods used the prevalence ranged from 3.8 to 21%. There was a research gap identified to understand this burden in the country. Hence, an analysis was performed on existing country-specific DIP research in India and compared to the research done in the United States of America (USA). The IDF's 2000-2035 estimates show that the diabetes prevalence in India has and will increase steadily: in comparison, the USA has shown a decrease in 2011. Through an elaborate search on PubMed it was found that a total of 129 articles had been published on DIP from 1947 to 2014 in India, less than a tenth of the 2412 articles published from 1972 to 2014 in USA. Therefore, this analysis indicates a clear need for greater study on Indian specifics. Although, worldwide there are many ongoing studies to address the growing burden of diabetes in terms of health, economy and social well-being, there is a need for further research in India. It was concluded that despite the increasing diabetes prevalence in India there are insufficient research to know the actual facts and figures to gauge the disease impact. Focus in this area towards further research would contribute valuable information for better management of DIP in India and to facilitate rational allocation of limited resources, thereby improving healthcare access.

arun.gowda@fs-researcher.com

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