

Association of Endothelial nitric oxide synthase gene Glu298Asp polymorphism in Type2 diabetic foot ulcer among south Indian population

Tholcopiyani.L¹, Aswini², Santhosh³, Arvind Reddy⁴, Hemanth Kumar P⁵, Shila S⁶

⁶Department of Biochemistry, VRR Institute of Biomedical Science (Affiliated to University of Madras), Kattupakkam, Chennai-600 056, India, ⁴ Vellore Diabetes Clinic, Vellore, Tamilnadu, India, ⁵St John's Medical College Hospital, Bangalore, Karnataka, India

Background: Diabetic foot complications has become one of the most common causes of nontraumatic lower extremity amputations in the world. Diabetic foot ulcer is a pathological condition where a decreased nitric oxide may present. In recent years, eNOS gene polymorphism (Glu298Asp) has gained enormous attention due to their association with diabetes mellitus regulation.

Materials & Methods: The study group consisted of 133 type2 diabetic foot ulcer subjects and 147 healthy volunteers as controls. 500µl of blood sample was used to isolate genomic DNA by Phenol-chloroform method. PCR amplification was carried out with suitable forward 5' TCC CTG AGG GCA TGAGGCT 3' and reverse 5' TGA GGG TCACAC AGG TTC CT 3' primers, followed by *BanII* restriction digestion enzyme and the products

(137bp,320bp,457bp) were analysed using 2% agarose gel electrophoresis.

Results: Allele and genotype frequencies in both groups were analysed by student's t-test. 101 of 133 diabetic subjects had GG genotype, 29 had GT genotype and 3 had TT genotype. 133 of 147 controls showed GG genotype, 13 showed GT genotype and 1 showed TT genotype. The genotypic frequencies for Glu298Glu, Glu298Asp, Asp298Asp were 0.904(n=133), 0.088(n=13), and 0.06(n=1) in control group and 0.759(n=101), 0.218(n=29) and 0.022(n=3) in type2 diabetic foot ulcer group. The positivity for Asp allele was significantly increased in type2 diabetic foot ulcer than in controls (P=0.008).

Conclusion: The present study finds that there was a significant association of the Glu298Asp variant polymorphism of the eNOS gene with diabetic foot ulcer.