Int J Low Extrem Wounds. 2019 Sep;18(3):287-293.

RANKL Gene Polymorphism as a Potential Biomarker to Identify Acute Charcot Foot Among Indian Population With Type 2 Diabetes: A Preliminary Report.

SaiPrathiba A[1], Senthil G[1], Juttada U[1], Selvaraj B[1], Kumpatla S[1], Viswanathan V[1].

Abstract

Studies addressing the link between gene polymorphism and Charcot neuropathic osteoarthopathy (CN) have been limited to analyse osteoprotegerin gene. Aim is to understand the association of RANKL gene variants on the susceptibility of diabetic neuropathy and CN and to measure the serum levels of sRANKL among Indian population with type 2 diabetes. 77 subjects (48 males: 29 females) were recruited and divided into 3 groups. Group 1 Control: normal glucose tolerance (NGT). Group 2: Type 2 diabetes mellitus and neuropathy (DPN). Group 3: Established type 2 diabetes mellitus, DPN, and CN. Subjects were genotyped for RANKL SNP 693 C/G and 643 C/T using polymerase chain reaction-restriction fragment length polymorphism. sRANKL levels were measured using ELISA (enzyme-linked immunosorbent assay). The serum levels of sRANKL were significantly different between the 3 groups. In RANKL -643 C/T the frequency of "CT" genotype and the minor allele "T" was greater among the DPN and CN group compared with the NGT. Further statistical analysis found a significant difference in genotypic frequencies between DPN and NGT subjects with CT genotype. In RANK L -693 C/G the frequency of homozygote mutant "GG" and the minor allele "G" was greater among the DPN and CN group compared with the NGT. Significant differences in genomic frequencies were observed among "GG" genotype. RANKL -643 C/T was significantly associated with DPN alone while -693 C/G was significantly associated with both DPN and CN. Thus, the study suggests RANKL polymorphism might be considered as an independent risk factor for the development of CN.

KEYWORDS:

RANKL; gene polymorphism; neuropathy; osteoarthopathy

PMID: 31304802