Study of Correlation Between Duration of Diabetes and Sural Nerve Conduction Parameters in Subjects with Type-II Diabetes: A Cross-sectional Study

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ABSTRACT

Introduction: Diabetic peripheral neuropathy (DPN) is the commonest complication of type-II Diabetes mellitus. Amongst all the neuropathies, Distal Symmetrical Sensorimotor Neuropathy is common. Sensory nerves are involved more and at an earlier phase than motor nerves. Length dependent "Dying back" axonopathy primarily involves distal myelinated and unmyelinated sensory fibers with relative sparing of motor nerves.

Aim: Thus, the aim of the present study is to evaluate Sural (Sensory) nerve conduction parameters (Nerve Conduction study NCV and Sensory nerve action potential SNAP) among the subjects with type-II Diabetes mellitus with varying duration of Diabetes.

Method: Thirty-six subjects with Type-II Diabetes mellitus with mean age of 59.34+/- 6.79 years, (Males: 29, Females:7) participated in the study. The duration of diabetes varied from 1-20 years. Sural NCS was done using RMS EMG SALUS machine under strict aseptic precautions. Side lying position was assumed by the subjects. Nerve conduction velocity (NCV in m/s) and Sensory nerve action potential (SNAP in microVolts) were measured for Right Sural nerve.

Result: Mean values for Right Sural SNAP=32.25 microVolt, Mean values for Right Sural NCV= 28.22 m/s and mean duration of diabetes = 8.86 years. Spearman correlation coefficient was r = -0.121 for SNAP and Duration of diabetes; and r = -0.039 for NCV and Duration of Diabetes. Hence, negative correlation was found between Duration of diabetes and NCV; and Duration of Diabetes and SNAP.

Conclusion: As the duration of diabetes increases, demyelination and axonal lesion to Sural (Sensory) nerve increases. This correlation is supposed to be due to Neuronal dysfunction secondary to prolonged exposure to Hyperglycaemia.

Keywords: Diabetes, Diabetic neuropathy, NCV

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