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Effects of Neurodynamic Mobilization on Large Fibre Dysfunction in Painful Diabetic Peripheral Neuropathy: A Pilot Study

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Abstract

Background: Degeneration of unmyelinated C-fibers and thinly myelinated A-delta fibres, followed by demyelination of large, myelinated A-β fibres with disease development, are the hallmarks of painful diabetic peripheral neuropathy (PDPN). The quality of life is significantly impacted by diabetic foot ulceration, frequent falls, and lower limb amputations as a result of altered sensory symptoms and decreased proprioception. Changes in peripheral nerve structure and function brought on by abnormalities to the microvascular and metabolic systems are possible causes. In order to effectively treat the debilitating pain and sensory symptoms as well as impaired proprioception, neurodynamic mobilization which directly targets the nerves and improves neural vascularity by reducing intrinsic pressure on neural tissue can prove to be a promising physical therapy in PDPN.

Purpose: This study aimed to assess how mobilizing the tibial, peroneal, and sural nerves affects vibration perception, mechanical threshold and ankle proprioception in PDPN.

Methods: The research was carried out at the Metro Heart Institute with Multispecialty, Faridabad. The study included five consecutive PDPN patients who met the required eligibility. Neurodynamic mobilization of tibial, peroneal and sural nerve for both lower limbs were given three times a week for 8 weeks. Vibration perception threshold was measured using neurotouch device, mechanical threshold was measured using 10 grams Von frey monofilaments and ankle proprioception was measured using digital inclinometer. Outcomes were assessed at baseline and end of 8 weeks.

Results: Though there were improvement in all the parameters, but the results were not statistically significant ($P > 0.05$).

Conclusion: This study demonstrated that neurodynamic mobilization of tibial, sural and peroneal nerve may be beneficial in improvement of large nerve fibre dysfunction in patients with PDPN. However, a larger sample size can better and accurately evaluate the statistical significance of the intervention.

Keywords: Painful diabetic peripheral neuropathy, vibration perception threshold, ankle proprioception, mechanical threshold, Neurodynamic mobilization