Prediction of Site of Insensate Peripheral Neuropathy in the Feet of Diabetics Using Semmes: Weinstein Monofilament Examination

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Background

Among Diabetic patients, peripheral neuropathy is an important factor that predisposes to plantar ulcers and amputation. It is imperative to diagnose the onset of neuropathy early. The Semmes- Weinstein Monofilament examination is appropriate for the same, as a simple diabetic neuropathy screening instrument generalizable to the clinical setting. The 5.07/10g Monofilament, as recommended by the American Diabetes Association has been used in this study.

Aims & Objectives

To determine the incidence of peripheral neuropathy among diabetics using Monofilament testing, and determine the most sensitive site on the foot for testing its onset.

Material & Methods

The study was conducted over 2 months on a random sample of 120 diabetic patients. Monofilament was applied to the plantar surface of 4 sites of both feet. The Monofilament was applied perpendicular to the skin surface and sufficient force was applied to bend it to a c-shape. The pressure was applied until the filament just buckled with a contact time of 2 sec. Inability to perceive the sensation at any one site before the Monofilament bends, was considered abnormal. Data was analyzed using SPSS 17 Statistical Program. Two-Sample T-Test was done to study the prevalence.

Results

Majority of the subjects studied (42.5%) were recently (less than or equal to one year) diagnosed with diabetes. Out of these subjects, 27% already had some form of neuropathy present in their feet. This was significant as it highlighted the importance of early diagnosis of neuropathic symptoms in these patients to propose interventions. It was observed that the duration of morbidity significantly affects the setting in of neuropathy among diabetics ($p=0.005$), especially patients with diabetes for over 10 years tend to develop neuropathic symptoms over time. The most commonly affected site was found to be the plantar aspect of the great toe of the left foot (83%), in accordance with the gait cycle, implying that this site was highly suitable for the Monofilament examination due to its high sensitivity. Diabetic Peripheral Neuropathy, especially painful diabetic peripheral neuropathy, was associated with poor quality of life.

Conclusions

The management of DPN relies on its early recognition and needs to be individually based on co-morbidities and tolerability to medications. Determination of appropriate site for testing the Monofilament reduces the possibility of false negatives, and makes this bed side tool more suitable for the determination of neuropathy.