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## Detecting distal peripheral neuropathy (DPN) through simple screening tests in patients with diabetic ulcer disease

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The present study was carried out to evaluate the sensitivity of the SW monofilament test in detecting insensate feet against the vibration sense and position sense and to assess the use of footwear in diabetic patients with foot and leg ulcers. This cross sectional descriptive study was carried out in 88 consenting consecutive diabetic patients presenting to the Colombo South Teaching Hospital with foot and leg ulcers. The patients' clinical and demographic data, walking habits and type of footwear were documented. Pressure sense, vibration sense and joint position sense were assessed. Pressure sensation was assessed by 5.07/10 g SW monofilament test at ten anatomical sites. The vibration perception was assessed by a 128 Hz tuning fork placed over the halluces and the position sense by movement of the great toe. The results were analyzed by descriptive statistical methods including frequency percentages, means and standard deviations by using SPSS 19 version. The study consisted of 51.1% females. Mean ± age (years), diabetes duration (years), BMI ($kg/m^2$) and fasting blood glucose (mg/dl) were 56.5 ± 10.2, 8.5 ± 6.9, 23.8 ± 11.8 and 137.4 ± 41.9 respectively. Ulcers were more common in the foot (86.4%) than in the leg (13.6%). The most predominant ulcer site was fore foot (46.6%). Although 96.6% patients reported use of footwear, only a minority 9.4% (8/85) wore covered shoes. The pressure sense tested by the SW monofilament was abnormal in 67.8% whereas the vibration sense and joint position sense were abnormal in 36.4% and 14.6% subjects respectively. All subjects with an abnormal vibration and position sense also showed abnormal pressure sense as detected by the SW monofilament test. Abnormal monofilament test results were observed in 61.4% on the first toe, 52.3% on the third toe and in 43.2% subjects on the first metatarsal head.

In conclusion, 5.7/10 g SW monofilament test administered at the first toe, third toe and first metatarsal head is a simple test suitable to be used in outpatient settings to screen for DPN in patients with diabetes mellitus. Further studies are mandatory to validate the findings. In addition, the patients at risk for foot ulceration should be made aware of the use of appropriate footwear to prevent foot injuries.

Keywords: Diabetic foot ulcer, distal peripheral neuropathy, neuropathy assessment

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