ABSTRACT

Background: Distal symmetrical polyneuropathy is the most common neurological complication affecting diabetics. The frequency and risk factors for this complication are however unknown at the University of Port Harcourt Teaching Hospital.

Objective: The objectives of this study were to: to determine the frequency of distal symmetrical polyneuropathy among adult diabetics in UPTH using clinical scoring systems; to compare different simple clinical scoring systems for its diagnosis; to validate scoring systems against a biothesiometer (as gold standard) and to determine the risk factors for diabetic sensory peripheral neuropathy among adult diabetics in UPTH.

Method: 121 adult diabetics patients and 100 age and sex matched controls who met the inclusion criteria were enrolled into the study. Using a standardized protocol, participants received assessment with questionnaires assessing demographic parameters and neurological symptoms. Neurological examination with emphasis on the distal sensory system was also carried out. The clinical scoring systems were applied and biothesiometry performed on all participants. All subjects had fasting blood sugar and haemoglobin estimationed. All diabetics had glycosylated haemoglgin measurements. However, all controls and only 100 of the diabetics had lipid profile assays and microalbuminuria testing.

Results: There were 121 diabetics comprising 61 males and 60 females, giving a male: female ratio of 1:1. One hundred controls matched for age and sex were used in the study comprising 54 males and 46 females with a male: female ratio of 1:1.17. The HBA1c of the patients ranged from 4.0-14.0%. The mean was 8.2±2.4%. Eighty five (70.2%) patients had poor glycaemic control (HBA1c ≥7%).
The VPT average of the subjects ranged from 4.0-50.0mV with a mean of 20.7±13.8. The VPT average of the controls ranged from 4.0-48.0mV with a mean of 18.1±10.7. This was not statistically significant (p=0.11). The DNSS of the subjects ranged from 0-4 with a mean of 1.4±1.3. The DNSS of the controls ranged from 0-3 with a mean of 0.5±0.9. This difference was statistically significant (p<0.0001). The MNDS of the subjects ranged from 0-8 with a mean of 2.4±2.3. The MNDS of the controls ranged from 0-8 with a mean of 0.8±1.6. This difference was statistically significant (p<0.0001).

The frequencies of complications identified among the diabetics were: 75 (61.7%) peripheral vascular disease, 58(47.9%) erectile dysfunction, 59 (48.8%) retinopathy, 33 (27.2%) microalbuminuria, 27 (22.45%) foot ulceration and presence of ≥1 complication 95 (78.5%).

The frequencies of distal symmetrical polyneuropathy were 32.2%, 36.4% and 60.3% using biothesiometry, MNDS and the DNSS respectively. The sensitivity and specificity of the DNSS was 84.6% and 51.2% respectively while those of the MNDS were 64.1% and 76.8% respectively. On univariate analysis, age (p<0.0001), duration of DM (p=0.03), anaemia (p=0.001), peripheral vascular disease (p<0.0001), microalbuminuria (p<0.02), presence of ≥1 complication and foot ulceration (p<0.0001) were associated with DSPN using biothesiometry. However, on logistic regression analysis, foot ulceration (p<0.0001) was identified as a risk factor for DSPN.

**Conclusion:** The DNSS diagnosed more diabetics as having DSPN by its criteria than the MNDS and biothesiometry. The sensitivity and specificity of the DNSS relative to biothesiometry were 84.6% and 87.5% respectively while those of the MNDS were 64.1% and 81.8% respectively. The only risk factors identified for DSPN in this was foot ulceration.