

Sural Nerve Automated Nerve Conduction Study: Contribution to the diagnosis of Peripheral Neuropathy in Patients with Type 2 Diabetes Mellitus

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Background and aims: Automated nerve conduction study (NCS) may help towards improved diagnosis of peripheral neuropathy in diabetes. The aim of this study was to evaluate the contribution of automated sural nerve NCS with a new portable device to the diagnosis of peripheral neuropathy in patients with type 2 diabetes mellitus (T2DM).

Patients and methods: We included 102 T2DM patients (54 men) with mean age 67.5 ± 7.2 years. Exclusion criteria were B₁₂ depletion, alcohol abuse and other causes of peripheral neuropathy. The reference method was the Neuropathy Disability Score (NDS) with a threshold $NDS \geq 3$. Sural nerve automated NCS was carried out with the portable NC-stat[®] DPNCheck[™] device (Neurometrix, Inc., Waltham, MA, USA). Nerve conduction velocity and sensory nerve action potential amplitude were measured bilaterally. Automated NCS was considered abnormal when ≥ 1 of the two aforementioned neurophysiological parameters was abnormal in at least one leg. **Results:** Examination with NC-stat[®] DPNCheck[™] exhibited 88.57% sensitivity, 89.55% specificity, 81.58% positive predictive value (PPV) and 93.75% negative predictive value (NPV). Positive Likelihood Ratio (+LR) was 8.47 and negative Likelihood Ratio (-LR) was 0.13. **Conclusions:** Sural nerve automated NCS with the NC-stat[®] DPNCheck[™] device exhibits high sensitivity and specificity for the diagnosis of peripheral neuropathy in T2DM.