Quick and Simple Evaluation of Sudomotor Function for Screening of Diabetic Neuropathy

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Abstract

Objective. The aim of this study was to compare SUDOSCAN, a new device to evaluate sweat function (reflecting peripheral small C-fiber status), with conventional measures of peripheral and cardiac neuropathy in patients with type 2 diabetes.

Methods. 265 diabetic patients were tested for symptoms and clinical signs of neuropathy using Michigan Neuropathy Screening Instrument (MNSI), vibration perception threshold (VPT) using biothesiometer, and cardiac autonomic neuropathy (CAN) using Ewing’s protocol. Sudomotor function was investigated with SUDOSCAN through measurement of electrochemical skin conductance (ESC) of hands and feet. Lower ESC is suggestive of sudomotor dysfunction.

Results. Lower ESC at feet was significantly associated both with increasing symptoms (MNSIA) and increasing score on physical abnormalities (MNSIB). Lower ESC at feet was also significantly associated with increasing VPT by biothesiometry (P< 0.01), and with higher number of abnormal CAN results (P< 0.05). ESC was associated with postural fallin blood pressure (sympathetic abnormality) (P< 0.05), but not with heart rate variability (HRV) tests (parasympathetic abnormalities).

Conclusions. Sudomotor dysfunction testing may be a simple test to alert physicians to peripheral nerve and cardiac sympathetic dysfunction. Ease of performance could make it useful in a busy diabetic clinic. Further studies with hard clinical outcomes are indicated.