The diagnostic utility of Sudoscan for distal symmetric peripheral neuropathy

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Abstract

AIMS:

Diagnosis of early distal symmetric polyneuropathy (DSP) is challenging. Nerve conduction studies (NCS) are often normal. Skin biopsy for intraepidermal nerve fiber density (IENFD) has better sensitivity, but is invasive. Sudoscan is a novel technology that measures electrochemical skin conductance (ESC; microSiemens, μS), which is thought to be proportionate to the number of functional sweat glands. This study evaluated Sudoscan’s diagnostic utility for DSP.

METHODS:

55 patients with suspected DSP (22 with diabetes, 2 prediabetes, 31 idiopathic) and 42 controls underwent the Utah Early Neuropathy Scale (UENS) and Sudoscan. Each was offered skin biopsy. DSP participants underwent quantitative sudomotor axon reflex testing (QSART) and NCS.

RESULTS:

Feet and hands ESCs were reduced among DSP participants compared to controls (64±22 vs. 76±14 μS p<0.005, and 58±19 vs. 66±18 μS p<0.04). There was no difference between diabetic and idiopathic DSP. Receiver operating characteristic curve analysis revealed feet ESC and IENFD had similar areas under the curve (0.761 and 0.752). ESC correlated with Sural amplitude (0.337, p<0.02), UENS (-0.388, p<0.004), and MNSI (-0.398, p<0.005).

CONCLUSIONS:

Sudoscan is a promising diagnostic test for diabetic and idiopathic DSP, with diagnostic performance similar to IENFD.