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neuropad® in the screening of the diabetic foot syndrome

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Background

Among the chronic complications of diabetes mellitus (DM), foot problems are the most frequent and the most costly. About 40-75% of non-traumatic lower limb amputations are performed in patients with diabetes, and foot ulcers precede 85% of these amputations. The main cause of diabetic foot syndrome is the peripheral diabetic neuropathy.

Aim

The aim of the present study was to assess the sensitivity and specificity of the indicator plaster neuropad® in the screening of diabetic foot syndrome, by assessing the function of the perspiratory glands of the foot, and thus the autonomous function, based on a shift in color.

Patients and methods

We performed a case-control study in 20 patients with diabetes mellitus, considering as “cases” the patients with a personal history of foot ulcers. The indicator plaster neuropad® was applied on the foot sole, in the area corresponding to the head of the first metatarsal bone (the main site of diabetic foot ulcers) and we assessed the shift in color after 10 minutes (pink-normal test, intermediate or blue-pathological test).

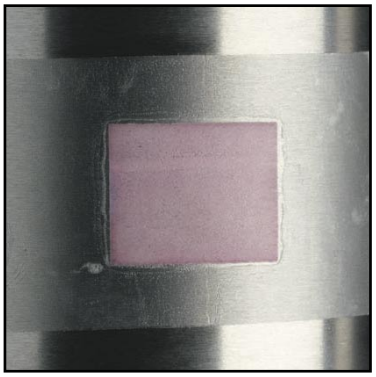
Results

The sensitivity of neuropad® in identifying the subjects with a history of foot ulcers was very good (80%), comparable with that of other screening methods (10-g monofilament-80%, biothesiometer-70%, calibrated tuning fork-90%). The specificity of neuropad® was 50% (compared with the 10-g monofilament-100%, the biothesiometer-77.8% and the calibrated tuning fork-40%). The positive and negative predictive values were also comparable with those of the above-mentioned tests.

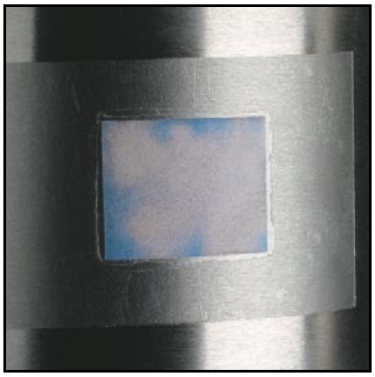
Conclusions and discussions

neuropad® is a sensitive, safe, objective, easy-to-use and reproducible screening method for the diabetic foot syndrome. A remarkable advantage is the fact that it allows patient self-screening, abnormal results being reported to the physician. The relatively low specificity for such a screening test cannot be regarded as a disadvantage, the only “risk” involved being that of examining and educating more often a patient without neuropathy.

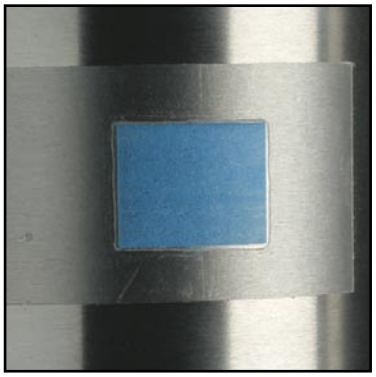
Prof. Dr. med. Reinhard Zick - inventor of neuropad®



Normal findings



Abnormality



Abnormality