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Screening for neuropathy – do additional testing methods make sense?

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Background and aims: Diabetic sensory neuropathy is a significant risk factor for diabetic foot ulceration and gangrene. The most widely used screening tools are the standardized 10-gram Semmes-Weinstein monofilament and 128-Hz tuning fork. Recently, Vibratip® became available as an alternative test for vibration sensation. Tip Term® is an instrument which reveals impaired temperature sensation. Also sudomotoric autonomic neuropathy, leading to dry skin, cracks and fissures which represent a portal of entry for pathogenic microorganisms, increases the risk for foot complications. Neuropad® is a simple and cheap diagnostic tool for the evaluation of sweat gland function. The aim of our study was to compare the results of these screening methods. **Patients and methods:** 42 patients with diabetes (13 women, 29 men, average age 61.2 years) were examined with 10-g Semmes-Weinstein monofilament, 128-Hz tuning fork, Vibratip®, Tip Therm® and Neuropad®. The results were evaluated as stated in the instructions in the product package. **Results:** There was no difference between the results of the right and the left foot (all $p>0.05$). The results of 128-Hz tuning fork, Vibratip®, Tip Therm® and Neuropad® were normal in 45.2 %, 47.6 %, 57.1 % and 45.2 %, respectively. There were no significant differences between these four methods (all $p>0.05$). On the other hand, loss of protective sensation was only found in 14.3 %. The results of 10-g Semmes-Weinstein monofilament testing were significantly different from the other four methods (all $p < 0.005$). **Conclusion:** The results indicate that tuning fork, Vibratip® and Tip Therm® may detect sensory neuropathy earlier than 10-g Semmes-Weinstein monofilament. Vibratip® which is smaller and easier to use than 128-Hz tuning fork gives similar results and might be a good substitute for the tuning fork. Sudomotoric neuropathy as revealed by Neuropad® develops simultaneously with sensory nerve damage. The combined use of different screening methods increases the likelihood of early neuropathy detection.