OBSERVATIONS

Measurement of the Walking Duration With Therapeutic Shoes in Neuropathic Diabetic Patients by a Novel Device (Show-me)

Therapeutic shoes and other prophylactic interventions are used to prevent diabetic foot ulceration (1,2), but patient's compliance to use prescribed footwear has never been investigated in primary care. Therapeutic footwear might be effective in secondary ulcer prevention, as demonstrated in two noncontrolled trials, but was only effective when worn >60% of the daytime (3) or >8 h a day (4). In a controlled clinical trial, no benefit was observed between control patients wearing their own footwear and intervention patients wearing specialized footwear (5).

The aim was to measure the duration of walking with therapeutic shoes by a novel device, "Show-me" (shoe-wearing measuring equipment), in neuropathic patients without a history of ulcers.

Twenty-eight diabetic patients with an active lifestyle without major restrictions in bodily fitness were enrolled into the study. Patients gave their written informed consent and were aware of Show-me, which was built into the heel of the shoe. They were instructed to regularly wear their protective in-depth shoes outdoors (two different models of Medi shoe for women and men were offered, made by Bata, Cz). Neuropathy was defined by an abnormal vibration perception threshold at the tip of the great toes (6).

Show-me is a force-sensor–based measuring device comparing a reference voltage with the signal from the sensor. By adjustment, an external load ≥400 N indicates walking, and discretization time for successive walking periods was set to 1 min. To elongate battery capacity, the electronic components, except the quartz-controlled timer, returned to sleep mode during periods between single walks. The measurement error was calculated with less than ±3.5% for a duration of walking of 30 min.

Twenty-five (89.3%) subjects suffered from type 2 diabetes, and 21 (75.0%) were male. Their mean age was 63.1 ± 6.2 years (95% CI 60.7–65.5), the mean duration of diabetes was 19.8 ± 10.4 years (15.8–23.9), and the mean vibration perception threshold was 39.7 ± 9.6 volts (36.0–43.5).

Fifteen patients started wearing the shoes during the warm season and 13 during the cold season. The mean study duration was 84.1 ± 34.3 days (70.8–97.4). Medi shoes were used for walking a total period of 3,156 h by all subjects, which corresponded to a median duration of walking of 81.8 h (lower quartile 41.5, upper quartile 107.0) per patient. The median daily duration of walking was 0.95 h (0.56, 1.19), but a great variation of the daily duration of walking was observed; the lowest daily median duration of walking was 0.28 h and the highest 6.84 h. Men used their Medi shoe significantly ($P = 0.009$, Mann-Whitney test) longer for daily walking than women (1.0 [0.8, 1.6] vs. 0.6 [0.3, 0.7]). Five of 28 (18%) subjects, all male, walked with their Medi shoes for longer than 1.5 h a day. The duration of walking was not significantly correlated to age, diabetes duration, or nerve function.

We have demonstrated a short daily duration of walking with therapeutic shoes in patients at risk for foot ulceration and would suggest to measure duration of walking as one key parameter in future trials on benefits of therapeutic footwear in diabetic patients.

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Prevalence of Metabolic Syndrome in Rural Bangladeshi Women

The National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) (1) defined metabolic syndrome as a presence of any three of the following (in women): *1*) waist circumference >88 cm, *2*) high triglycerides (≥150 mg/dl), *3*) low HDL cholesterol (<50 mg/dl), *4*) high blood pressure (≥130/85 mmHg or use of antihypertensive therapy), and *5*) high fasting blood glucose (≥110 mg/dl). This clustering of risk factors in metabolic syndrome ultimately leads to diabetes and premature cardiovascular disease (2). It is imperative to identify individuals with metabolic syndrome early so that lifestyle interventions and treatment may prevent the