Journal of Diabetes Science and Technology
Volume 4, Issue 4, July 2010

SYMPOSIUM

Association between Foot Temperature and Sudomotor Dysfunction in Type 2 Diabetes

Nikolaos Papanas, M.D.,[1] Konstantinos Papatheodorou, M.D.,[2] Dimitrios Papazoglou, M.D.,[2] Stamatia Kotsiou, M.D.,[2] and Efstratios Maltezos, M.D.[1,2]

Abstract

Background and Aims:

Increased foot skin temperature has been described as a feature of diabetic neuropathy. The aim of this present study was to investigate the association between foot temperature and sudomotor dysfunction in type 2 diabetes mellitus.

Patients and Methods:

This study included 51 patients (group A: 25 men, mean age 61.14 ± 6.11 years) without sudomotor dysfunction and 52 patients (group B: 25 men, mean age 59.54 ± 6.18 years) with sudomotor dysfunction. Sudomotor dysfunction was defined as time until complete Neuropad® color change from blue to pink exceeding 600 s in at least one foot. Time until complete color change of the test was also recorded. Foot skin temperature was measured with a handheld infrared thermometer on the plantar aspect of the foot at the level of the first metatarsal head.

Results:

On both feet, temperature was significantly higher in group B than in group A (right foot, group A versus group B, 30.62 ± 1.13 °C versus 32.12 ± 1.06 °C, $p < .001$; left foot, group A versus group B, 30.65 ± 1.06 °C versus 32.19 ± 1.10 °C, $p < .001$). There was a significant positive correlation between time to complete Neuropad color change and foot skin temperature (right foot, $r = 0.742$, $p < .001$; left foot, $r = 0.758$, $p < .001$), which was confirmed in both groups.

Conclusions:

Patients with sudomotor dysfunction have significantly higher foot temperature than those without sudomotor dysfunction. Foot temperature is positively correlated with severity of sudomotor dysfunction, as evaluated by the time to complete Neuropad color change.

J Diabetes Sci Technol 2010;4(4):803-807

Author Affiliations: [1]Outpatient Clinic of the Diabetic Foot, Second Department of Internal Medicine, Democritus University of Thrace, Greece, Alexandroupolis, Greece; and [2]Second Department of Internal Medicine, Decmocritus University of Thrace, Alexandroupolis, Greece

Keywords: diabetes mellitus, diabetic foot, diabetic neuropathy, Neuropad, temperature measurement

Corresponding Author: Nikolaos Papanas, M.D., Outpatient Clinic of the Diabetic Foot, Second Department of Internal Medicine, Democritus University of Thrace, Greece, G. Kondyli 22, Alexandroupolis 68100, Greece; email address papanasnikos@yahoo.gr