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Foot Temperature in Type 2 Diabetic Patients with or without Peripheral Neuropathy

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Aim of the study: To evaluate foot temperature in type 2 diabetic patients with vs. without peripheral neuropathy. **Patients and methods:** This study included 30 patients (group A: 16 men, mean age 63.23 ± 7.02 years, mean diabetes duration 8.3 ± 4.13 years) with peripheral neuropathy and 30 patients (group B: 17 men, mean age 62.37 ± 6.73 years, mean diabetes duration 8.37 ± 4.07 years) without peripheral neuropathy. Neuropathy was diagnosed by the Diabetic Neuropathy Index (DNI), as proposed by the University of Michigan. Foot temperature was measured with a handheld infrared thermometer (KM 814, Kane-May, UK) on the mid-dorsal aspect of the foot (dorsal temperature) and on the plantar aspect of the foot at the level of the first metatarsal head (plantar temperature). Exclusion criteria were as follows: peripheral arterial disease, other cause of peripheral neuropathy, current foot ulceration or infection, chronic renal, liver or heart failure, thyroid disease, other systemic disease, as well as medication that might interfere with body temperature. Foot temperature was measured by a physician who was blinded to the presence or otherwise of neuropathy. **Results:** Dorsal temperature was significantly higher in group A than in group B (right foot: $32.89 \pm 1.02^\circ\text{C}$ vs. $31.2 \pm 1.07^\circ\text{C}$, $p < 0.001$ and left foot: $32.98 \pm 1.05^\circ\text{C}$ vs. $31.3 \pm 1^\circ\text{C}$, $p < 0.001$). The same significant difference was observed for the plantar temperature (right foot: $32.2 \pm 0.94^\circ\text{C}$ vs. $30.7 \pm 1.07^\circ\text{C}$, $p < 0.001$ and left foot: $32.3 \pm 0.99^\circ\text{C}$ vs. $30.82 \pm 0.98^\circ\text{C}$, $p < 0.001$). In both groups, a significant positive correlation was observed between dorsal and plantar temperature (group A: Spearman's $r_s = 0.913$, $p < 0.001$; group B: Spearman's $r_s = 0.956$, $p < 0.001$). Moreover, a significant ($p < 0.001$) correlation was demonstrated between right and left foot temperature in both groups. Finally, in group A, DNI score showed a significant positive correlation with dorsal temperature (Spearman's $r_s = 0.856$, $p < 0.001$), as well as plantar temperature (Spearman's $r_s = 0.859$, $p < 0.001$). **Conclusions:** Foot temperature is significantly higher in type 2 diabetic patients with neuropathy as compared to those without neuropathy. In patients with neuropathy, a significant positive correlation is observed between foot temperature and clinical severity of neuropathy.