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Transcutaneous oxymetry (TcPO₂) in the detecting of patients with high risk of foot problems.

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Purpose: To test the hypothesis that lower extremity transcutaneous oxygen (TcPO₂) measurements can be used to screening in diabetic patients with foot at risk.

Methods: There were three groups of patients: 23 type 2 diabetic patients with neuropathy but without ulcerations, 19 type 2 diabetic patients without foot lesions or neuropathy and 18 normal subjects as a control group. The skin blood flow was determined by measuring the transcutaneous oxygen pressure (TcPO₂) at the dorsum of the foot in supine and sitting position. The clinical assessment included standard measures, but peripheral vascular disease was excluded by Doppler ultrasound.

Results: In supine position, TcPO₂ was significantly reduced in diabetic patients with foot at risk comparing to the diabetic patients without neuropathy (28 +/-12 mmHg and 41 +/- 10 mmHg respectively, p<0,05) and control group (55 +/- 11, p<0,05). The mean sitting/supine ratio was 1,9 +/- 0,12 in diabetic patients with foot at risk, 1,4 +/- 0,06 in diabetic patients without neuropathy, and 1,27 +/- 0,05 in nondiabetic control group (p<0,05).

Conclusions: These data provide support for a close association of neuropathy and microcirculation in the pathogenesis of diabetic foot alterations in type 2 diabetic patients and may explain the poor wound healing observed in diabetes. The determination of TcPO₂ appears to be a useful tool in screening type 2 diabetic patients for foot at risk.