Assessment of small fiber neuropathy to predict future risk of type 2 diabetes


Abstract

Objective: Sudomotor dysfunction due to small fiber neuropathy can be observed very early in pre-diabetes. The aim of this study was to assess the predictive power of EZSCAN, a non-invasive, quick and simple measurement of sudomotor function to identify glucose impairment.

Research design and method: The study was performed in 76 German subjects at risk of diabetes. Glucose metabolism was assessed by using, oral glucose tolerance test (OGTT) at baseline and after 2 year follow-up. Sudomotor function was evaluated by measuring hand and foot electrochemical sweat conductances to calculate a risk score.

Results: At baseline, 38 patients had normal glucose tolerance (NGT), 34 had pre-diabetes (impaired fasting glucose, IFG and/or impaired glucose tolerance, IGT) and 4 had newly diagnosed type 2 diabetes. The AUC values for FPG, 2 h-OGTT glucose, 1 h-OGTT glucose, HbA1c and EZSCAN score to predict pre-diabetes were 0.50, 0.65, 0.64, 0.72 and 0.76, respectively. Subjects having a moderate or high EZSCAN score (>50) at baseline had a substantially increased risk for having IFG and/or IGT at follow-up visit presented by an odds ratio of 12.0 [1.4–100.5], the OR for having 1 h-OGTT ≥ 8.6 mmol/L at follow-up was 9.8 [1.0–92.8] and for having HbA1c ≥ 5.7% was 15.7 [1.9–131.5] compared to subjects with low EZSCAN risk.

Conclusions: This preliminary study, which must be confirmed in a larger population, shows that EZSCAN risk score is associated with diabetes progression which have implications for prevention and disease management.