Assessment of sudomotor function to predict future abnormalities of glucose tolerance in at risk population


Abstract

Aims: This study done in subjects with an initial normal glucose tolerance (NGT) was to assess the ability of EZSCAN, a new device developed to evaluate sudomotor function, to predict future abnormalities in glucose tolerance.

Methods: South Asian (Indian) subjects (n= 69, 48% male, mean age 42 ± 9 years, mean BMI 28 ± 5 kg/m^2) diagnosed as NGT with a previous oral glucose tolerance test (OGTT, T0) underwent a frequently sampled OGTT (FSOGTT), 8 months later (T8). At both times EZSCAN tests were done. Using the AUC glucose and AUC insulin measured by the FSOGTT, subjects were categorised as normal, high AUC_{insulin} or isolated high AUC_{glucose}. Odds ratio (OR) for having high AUC_{insulin} or isolated high AUC_{glucose} vs normal was computed by logistic regression analysis using EZSCAN risk classification at T0 as independent variable (<50%=no risk, 50-65%=intermediate risk and >65%=high risk)

Results: At T8, 11 and 5 subjects developed impaired glucose tolerance and diabetes respectively. OR of having high AUC_{insulin} or isolated high AUC_{glucose} in the different risk groups was 6.19 (CI 95% 1.50 – 25.48, p = 0.0116) for high risk vs no risk and 3.0 (CI 95% 0.98 – 9.19, p = 0.0545) for intermediate risk vs no risk. Sensitivity of EZSCAN for early detection of these abnormalities in glucose tolerance was 77% while it was 14% for fasting plasma glucose and 66% for HbA1C.

Conclusions: Assessment of sudomotor function by EZSCAN, a sensitive method when compared with the conventional methods may be very useful to identify and manage subjects at risk for developing glucose intolerance.