Diabetes in families study: the insulin resistance syndrome segregates into 5 underlying factors in non-diabetic siblings of type 2 diabetic patients

R.J Morris, J.C. Levy, B.A. Barrow, l.J. Ross and R.C. Turner

Diabetologia (1998); **41:** Suppl 1: A70

The Diabetes in Families Study is a population-based collection of sibships of 347 type 2 diabetic patients sampled from GP practices in Oxfordshire and Northamptonshire. 585 non-diabetic siblings with FPG < 10 $mmol.1^{-1}$ and not on lipid lowering therapy, 44% male, mean (SD) age 61 (11) y, median (interquartile range) BMI 27.5 (24.7, 30.8) $kg.m^{-2}$ and FPG 5.5 (5.2, 6.0) $mmol.l^{-1}$, were studied to identify factors relating to the insulin resistance syndrome. Principal factor analysis with promax rotation was used considering the variables age, BMI, waist circumference, systolic and diastolic blood pressure, haemoglobin A_{1c} (HbA_{1c}), HOMA derived beta cell function (%β) and insulin sensitivity (%S), HDL, LDL and VLDL cholesterol and triglycerides. 5 factors were identified: 1) Dyslipidaemia with large (>0.5) positive loadings for VLDL cholesterol (0.78) and triglycerides (0.81) and a moderate (>0.3) negative loading for HDL cholesterol (-0.50), 2) Obesity with large positive loadings for BMI (0.79) and waist (0.79) and moderate loadings for %S (-0.36) and HbA_{1c} (0.34), 3) Hypertension with large positive loadings for systolic and diastolic blood pressure (0.71 and 0.74, respectively), 4) Ageing with large positive loadings for age (0.61) and HbA_{1c} (0.51) and a moderate positive loading for LDL cholesterol (0.39), 5) Insulin resistance with compensatory insulin secretion with large loadings for %S (-0.54) and %β (0.75). The 5 factors explained 54% of the variance. Factors for dyslipidaemia, obesity and insulin resistance were moderately intercorrelated (r=0.35 to 0.46), as were those for hypertension and ageing (r=0.31), but intercorrelations between the 2 groups were weak (r<0.25).
In conclusion, 5 underlying factors relating to the insulin resistance syndrome were identified in non-diabetic siblings of type 2 diabetic patients, suggesting that the syndrome may comprise several distinct components.