Hyperglycaemic siblings of type 2 diabetic patients have greater central obesity than their normoglycaemic siblings but similar physical activity indices

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Familiality of obesity and insulin resistance have been demonstrated in siblings of type 2 diabetic patients. The factors that determine glycaemia between siblings within families have not been determined. Obesity and physical inactivity are potential candidates.
Ten age and gender matched sibling pairs, discordant for fasting plasma glucose (FPG); i.e. one sibling with impaired fasting glucose (IFG: FPG >6.0mmol/1) and one with normal fasting glucose (NFG: FPG <6.0 mmol/1): 4M:6F, age mean±SD 55.6±10 and 54.5±8.4 yrs (IFG and NFG, respectively), were studied to evaluate anthropometry, HOMA derived insulin resistance (%S) and beta—cell function (%β), and physical activity index (PAl): the ratio of total energy expenditure (EE) to basal metabolic rate, using 5 day continuous heart rate monitoring, with individual calibration of the relationship between EE and heart rate.
IFG vs. NFG sibs had similar BMI (27.7+4.0 vs 25.8+4.1 kgm^{-2} ,p=0.18), greater waist circumference (96±14 vs 87±7 cm, p=0.002), reduced %S (55 (38-81) vs 78 (53-115), p<0.005), similar %β (83±25 vs 96±22, p=0.17). PAl did not differ between the groups (geometric mean (1 SD range): 1.43 (1.24-1.65) vs 1.52 (1.20-1.94), respectively, p=0.56) in the IFG and NFG groups. No differences were detected in blood pressure or lipid profiles. We conclude that differences in glucose tolerance between siblings of type 2 diabetic subjects were associated with differences in central adiposity and insulin resistance, but not in physical activity.