Possible prevention of type 2 diabetes with acarbose or metformin over three years

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Background: Earlier identification and intervention for type 2 diabetes may well be beneficial as 50% patients have complications at diagnosis.
Aims: To determine whether type 2 diabetes can be prevented or delayed in people thought to be at increased risk.
Methods: The Early Diabetes Intervention Trial (EDIT) is a prospective, double-blind, randomised, 6 year study of self-referred subjects with two successive elevated fasting plasma glucose (FPG) levels (5.5 to 7.7 mmol/L) in 9 UK centres. Following randomisation, in a 2 × 2 factorial design to treatment with acarbose (50 mg × 3/day) or placebo and metformin (500 mg × 3/day) or placebo, subjects are seen every 4 months to monitor therapy adherence and assess glycaemia, side effects, weight, clinical and biochemical outcomes.
Results: The 631 subjects randomised were 49% male, 94% White Caucasian, mean (SD) age 52.1 (10.0) years with body mass index 28.6 (4.5) kg/m^2, FPG 6.0 (0.5) mmol/L, HbA_{1c} 5.9 (0.5)% (normal $\leq$ 6.2%). Of 522 subjects available at 3 years the proportion discontinuing active compared to placebo therapy was: acarbose 36% vs 21% (p = 0.0001), metformin 32% vs 25% (p = 0.12). Fewer subjects allocated to active therapy tended to progress to twin FPG values $\geq$ 7.8 mmol/L: acarbose 8% (95% CI -80% to 53%, p = 0.80), metformin 37% (-24% to 68%, p = 0.17). At 3 years, compared to placebo the acarbose group had lower 2 hour OGTT plasma glucose (0.4 mmol/L, p = 0.0075), lower triglyceride (0.14 mmol/L, p = 0.036), improved insulin sensitivity (4.3%, p = 0.017) and lower beta cell function (3.9%, p = 0.047) whilst the metformin group had lower FPG (0.1 mmol/L, p = 0.0043), improved insulin sensitivity (4.3%, p = 0.018) and lower beta cell function (3.9%, p = 0.047). No significant changes were seen in body weight, HbA_{1c}, or lipid profiles.
Conclusions: Follow up to six years will determine whether improved fasting and 2 hour glycaemia seen with metformin and acarbose treatment respectively can prevent or delay progression to diabetes.