Possible Prevention of Type 2 Diabetes with Acarbose or Metformin

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The Early Diabetes Intervention Trial (EDIT) is a nine centre six year study which aims to determine whether progression to diabetes can be prevented or delayed in subjects thought to be at risk of type 2 diabetes. 631 self referred subjects (49% male, 94% White Caucasian) with elevated fasting plasma glucose (FPG) levels (5.5 to 7.7 mmol/L) on two successive occasions were randomized, in a factorial design, to double blind treatment with acarbose or placebo and simultaneously to metformin or placebo. Subjects were mean (SD) age 52.1 (10.0) years with body mass index 28.6 (4.5) kg/m^2, FPG 6.0 (0.5) mM/L and glycosylated haemoglobin (HbA1c) 5.9 (0.5)% (normal *6.2%).
At three years, the proportion of the 522 subjects remaining in the study who had discontinued study medication compared to placebo, was 36% versus 21% (p = 0.0001) for acarbose and 32% versus 25% (p = 0.12) for metformin. Kaplan Meier analysis revealed a non-significant trend for fewer subjects allocated to active medication to progress to two successive FPG values *7.8 mmol/L. The risk reduction compared to placebo was 8% (95% CI -80% to 53%, p = 0.80) for subjects allocated to acarbose and 37% (-24% to 68%, p = 0.17) for subjects allocated to metformin. At three years, in patients allocated to acarbose compared to placebo, there was a significantly lower 2 hour OGTT plasma glucose (0.4 mmol/L, p =0.0075), a significantly lower beta cell function (3.9%, p = 0.047), improved insulin sensitivity (4.3%, p = 0.017) and lower triglyceride (0.14 mmol/L, p = 0.036). In the metformin group there was a lower FPG (0.1mmol/L, p = 0.0043), beta cell function (3.9%, p = 0.047) and increased insulin sensitivity (4.3%, p = 0.018). No significant changes were seen otherwise in body weight, HbA_{1c}, or lipid profiles. Continued follow up to six years will determine whether the reduced fasting and two hour glycaemia seen with early metformin and acarbose treatment can prevent or delay progression to type 2 diabetes.