A17 (P151)

Stratification using gender and body mass index (BMI) results in better glycaemic control for longer: a MASTERMIND study

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Aims: We have shown that the initial glycaemic response for non-obese (BMI<30) males is greater when treated with sulphonylureas (SUs), whereas obese females respond better to thiazolidinediones (TZDs). We aimed to determine whether these subgroups that have the best initial response also maintain improved control for longer.

Methods: Initial response (HbA1c 6 months after therapy starting) and time to therapy failure were extracted on 31,540patients in the CPRD (21,943 SUs, 9,597 TZDs) and 2,724patients in the ADOPT trial (1,334 SUs, 1,390 TZDs). Therapy failure was defined as having 29 HbA1cs>7.5% (CPRD), or 29fasting plasma glucose 180g/dl (ADOPT).

Results: Non-obese males, compared with obese females, on SUs, responded better initially (6 months HbA1c 7.2 vs 7.8%, p<0.0001) and maintained good response for longer (median time to failure 364 vs 685 days, p<0.0001), but, on TZDs, had a worse initial response (8.0% vs 7.7%, p<0.0001) and failed quicker (292 vs 335 days, p<0.0001). Those who achieved HbA1c ≤7.5% had a longer time to failure (1,037 vs 163 days, p<0.0001), but the subgroup differences were similar (non-obese males vs obese females: SUs 978 vs 774 days; TZDs 1,300 vs 1,717 days, p<0.0001). When therapy was randomised (in ADOPT), the relative failure rates in the subgroups were the same (p<0.0001).

Conclusions: Choice of SUs for non-obese males and TZDs for obese females will result in a better glycaemic response and a greater time before additional therapy is required. These findings provide strong support for a stratified approach, based upon BMI and sex, to the use of TZDs and SUs.

Acknowledgement: On behalf of the MASTERMIND Consortium.