COMPARATIVE INVESTIGATION OF BASAL INSULIN GLARGINE VERSUS METFORMIN AS FIRST LINE DRUG IN PATIENTS WITH TYPE 2 DIABETES: THE GLORY STUDY

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Aims: Current strategy with metformin (MET) as first line drug fails to prevent disease progression. Early use of insulin might be able to preserve beta cell function. We investigated whether basal insulin treatment in newly diagnosed T2D can preserve insulin secretion in comparison to MET.

Methods: Open-label, randomized, prospective 36-wk study 75 eligible patients (45m,30f,age 60.7±9.2 yr), HbA1c between 6.5 & 8.5% were allocated to MET 1000 mg b.i.d.(n=36) or insulin glargine (GLA) at bedtime (n=39). GLA dose was adjusted according to a standardized titration algorithm to target fasting plasma glucose (FPG) 5.6 mmol/l. At baseline and study end HbA1c, proinsulin and C-peptide levels were measured and continuous glucose monitoring (CGM) was performed over 72 hrs for assessment of interstitial glucose (IG). Patients received a standardized test meal at day 2.

Results: GLA treatment resulted in a more pronounced reduction of FPG (Δ: 3.1±2.5 vs.1.4±1.5 mmol/L; p<0.001), decrease of mean IG level during CGM (Δ: 2.4±1.8 vs. 1.4±1.8 mmol/L; p=0.02) and HbA1c (Δ: 0.84±0.7 vs. 0.63±0.4 %; p=0.11). Overall IG-area under the curve (AUC) decreased by 671.2±507.9 with GLA vs. 416.1±537.6 mmol/L min with MET (p=0.04). 2-h pp PG after test meal as well as IG-AUC differences after test meal did not reach significance. A significant reduction of proinsulin to C-peptide ratio compared to baseline was found for both interventions however insulin treatment resulted in a significantly better improvement in proinsulin/C-peptide ratio than with MET. Patients receiving GLA gained 1.5±3.8kg body weight vs. -3.0±4.3 kg with MET (p=0.001). Mean GLA dose at LOCF 0.3±0.1U/kg. At a level of HbA1c of 6.3 % no serious hypoglycemic events occurred in both groups.

Conclusions: Early insulin treatment with GLA in T2D patients provided a better control of fasting glucose and overall glycemic load compared to MET. This was associated with improved β-cell function.