J Diabetes Metab 2016, 7:5(Suppl)
http://dx.doi.org/10.4172/2155-6156.C1.043

9th Diabetologists Conference

Comparison of glyburide with metformin in treating gestational diabetes mellitus: A systematic review and meta-analysis of randomized controlled trials

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Objective: To compare the efficacy and safety of glyburide with metformin in treating gestational diabetes mellitus.

Methods: We conducted a systematic review and meta-analysis of randomized controlled trials (RCTs) that compared efficacy and safety of glyburide with metformin in gestational diabetes mellitus (GDM) patients. We used electronic databases to conduct the literature search for study identification along with a hand search of pertinent journals and conference proceedings.

Results: 3 studies involving 421 patients met inclusion criteria for our review. A significant increase in the risk for large for gestational age (LGA) babies (RR 2.32; 95%, CI 1.23-4.37, p-value=0.009) was observed in glyburide group compared to metformin, whereas a non-significant increase in the risk for macrosomia (RR 2.05; 95%, CI 0.67-6.27) and neonatal hypoglycemia (RR 1.09; 95%, CI 0.61-1.97) was noticed. Results remained non-significant for preterm births and caesarean section. On the other hand, a significant decrease in fasting glucose levels (MD, -2.67 mg/dl; 95%, CI -5.19, -0.16; p-value=0.04) was noticed with glyburide, while difference was non-significant for postprandial glucose levels.

Conclusion: Treating GDM with glyburide is likely to increase risk for LGA births.

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Effects of rosuvastatin on the progression of diabetic nephropathy in streptozotocin-induced diabetic rats

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Inflammatory process may be one of the critical factors that contribute to the development of diabetic nephropathy (DN). HMG-CoA reductase inhibitors have been shown anti-inflammatory effects independent of cholesterol-lowering action. The effects of two different doses of rosuvastatin (ROSV, 1 and 5 mg/kg/day, p.o) on the progression of diabetic nephropathy in streptozotocin (STZ)-induced diabetic rats for eight weeks were investigated. Non diabetic and diabetic adult male Wistar rats were used. Diabetes was induced by a single intraperitoneal injection (i.p.) of STZ (55 mg/ kg). Three days after diabetes induction to ensure hyperglycaemia, rosuvastatin was administered orally once daily, for eight weeks to non diabetic and diabetic rats. Body weight, kidney/body weight (K/BW) ratio, blood glucose level, lipid profile and kidney function indicators including urine volume, urinary total protein, urinary albumin excretion rate (UAER), serum creatinine, and glomerular filtration rate (GFR) were measured. Serum levels of nitrite / nitrate, inflammatory cytokine, intercellular adhesion molecule-1 (ICAM-1) and prosclerotic cytokine, transforming growth factor (TGF-β1) as well as the oxidative stress marker, 8-hydroxy-2'-deoxy guanosine (8-OHdG) in urine were assessed. Moreover, kidney histopathological examination and advanced glycosylation end products (AGE) immunostaining were performed. Induction of hyperglycaemia was associated with body weight loss, increased K/BW ratio, lipid profile abnormalities, increase in urine volume, total protein, UAER and serum creatinine level and a decline in GFR. Serum levels of nitrite/nitrate, ICAM-1, TGF-β1 and urinary 8-OHdG were elevated. The histological examination of renal tissues revealed mesangial expansion, excess collagen deposition and glomerular basement membrane thickening. Glomerulosclerosis was also evident by the increase in glomerulosclerosis index (GSI) and Masson's trichome staining. Treatment of diabetic rats with rosuvastatin corrected lipid profile abnormalities and significantly reduced diabetes-induced increase in serum creatinine level, UAER, serum levels of total nitrite/nitrate, ICAM-1, TGF-β1 and urinary 8-OHdG. Moreover, histopathological changes and AGE immunostatining-induced by diabetes were suppressed by rosuvastatin. On other hand, rosuvastatin did not affect the elevation of plasma glucose level and body weight loss. These results suggest that rosuvastatin exerts lipid lowering action and important pleiotropic effects through inhibition of oxidative stress and AGE accumulation. The pleiotropic actions of rosuvastatin may offer potential benefits in addition to those associated with lipid lowering in the treatment of diabetic nephropathy.

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