

Different gestational diabetes phenotypes: which relationship with maternal hemodynamic? A prospective, observational cohort study

Paola Palazzo¹, Serena Ottanelli¹, Laura Angeli¹, Sara Zullino¹, Marianna Rambaldi¹, Caterina Serena¹, Giacomo Bruscoli¹, Serena Simeone¹, Felice Petraglia², Federico Mecacci¹

¹High Risk Pregnancy Unit, Azienda Ospedaliero Universitaria Careggi, Florence, Italy.

²Department of Biomedical, Experimental and Clinical Sciences, University of Florence, Careggi University Hospital, Florence, Italy.

DOI: 10.36129/jog.2024.S159

Objective. The aim of our study is to longitudinally analyse and compare maternal hemodynamic parameters across different GDM metabolic phenotypes.

Materials and Methods. We have recruited 180 GDM singleton pregnancies, diagnosed at 16-18 weeks (n = 44) or at 24-28 weeks (n = 136). Early-GDM were categorized into two phenotypes based on the presence of insulin resistance (IR). IR was established if BMI > 30, HOMA-IR (Homeostatic Model Assessment of Insulin Resistance) > 2.5, fasting glucose at OGTT > 100 mg/dl. We obtained three different GDM phenotypes: standard GDM, early GDM noIR and early GDM-IR. Haemodynamic assessment was performed using USCOM at 18-20, 24-28 and 36-39 weeks for the patients with early-GDM and at 24-28 and 36-39 weeks for the patients with standard-GDM.

Results. Cardiac output remains stable or increases in the standard GDM and insulin-sensitive GDM groups, it decreases significantly in the insulin-resistant GDM group (p = 0.05). Moreover, patients in the early GDM-IR group show a statistically significant increase in peripheral vascular resistance (p = 0.047) and a decrease in inotropy index (p = 0.05) compared to the other two groups. Regarding perinatal outcome women with insulin resistance had significantly higher rates of large-for-gestational-age newborns (p = 0.004).

Conclusions. This was a preliminary analysis exploring the potential connection between the metabolic phenotype of GDM and the risk of cardiovascular dysfunction during pregnancy. The possible association of these variables with the risk of cardiovascular diseases following pregnancy could open a window for the early identification of at-risk populations and the prevention of cardiovascular diseases.