What is the influence of Pre-pregnancy BMI, Gestational Weight Gain and Antenatal Glucose Parameters on the risk of LGA in Women with Gestational Diabetes?

T. Wong, R.A Barnes, N.W.Cheung, G.P. Ross, and J.R Flack

1Diabetes Centre, Bankstown-Lidcombe Hospital, Bankstown NSW
2Department of Diabetes & Endocrinology, Westmead Hospital, Westmead NSW.
3Faculty of Medicine, University of NSW. Sydney, NSW.
4Faculty of Medicine, University of Sydney, Sydney, NSW.

Background: The Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) study established association between antenatal glucose parameters and large for gestational age (LGA) infants. Our institution previously published that elevated pre-pregnancy BMI and excessive gestational weight gain (eGWG), are independent predictors of large for gestational age infants. Additionally, women with an elevated BMI in the context of gestational diabetes (GDM) are at even higher risk of LGA.

Aims: To examine the relationship of pre-pregnancy BMI (≥25kg/m²), eGWG and antenatal 75g oral glucose tolerance test results on LGA risk.

Methods: A retrospective cohort study of 3248 pregnancies in 2759 GDM women (1993-2013), at Bankstown-Lidcombe Hospital. GDM was defined according to ADIPS (1998) Australian criteria. eGWG was classified according to Institute of Medicine maternal weight gain targets for the entire pregnancy, stratified according to pre-pregnancy BMI. Chi-square analyses and odds ratios (ORs) were calculated and logistic regression used to determine adjusted ORs for LGA (ethnic specific birth weight > 90th percentile).

Results: LGA rate was 14.6% overall. Fasting blood glucose level (FBGL ≥ 5.5mmol/L), eGWG and BMI ≥ 25kg/m² were positive predictors of LGA. There was a lack of relationship between LGA and 2-hour glucose level (2hrBGL ≥ 8.0mmol/L). On binary logistic regression, only FBGL ≥ 5.5mmol/L and eGWG were independent predictors. ORs of LGA are shown in Table 1. BMI ≥ 25kg/m² did not confer any additional risk to that conferred by FBGL ≥ 5.5mmol/L, or eGWG. However, those with both eGWG and FBGL ≥ 5.5mmol/L had an OR of 2.8 (95% CI 2.2 – 3.5) for LGA.

Discussion: Only eGWG and FBGL ≥ 5.5mmol/L were positive predictors of LGA on logistic regression modelling. Pre-pregnancy BMI ≥ 25kg/m² did not confer additional risk. eGWG resulted in the highest risk of LGA. A combination of eGWG with FGL ≥ 5.5mmol/L conferred almost a 3-fold risk of LGA.

Conclusion: In this cohort, eGWG had the highest OR for LGA, independent of pre-pregnancy BMI. GDM management must also focus on GWG, hence a glucose-centric approach should be avoided.
Acknowledgements: We wish to thank all the Diabetes Educators who have collected data and maintained the database.

References
