In Caucasian populations, maternal obesity and triglyceride (Tg) (in addition to glucose) have been found to modulate neonatal anthropometrics via fetal programming. Less is known of these associations during pregnancy in Asians, in whom strength of threshold for correlations may differ given that visceral adiposity/insulin resistance in Asians is higher at a lower BMI.

To determine the relationship between maternal Tg/BMI/other metabolic variables with neonatal anthropometrics in Malaysian mothers with Normal Glucose Tolerance (NGT).

RESULTS

We recruited 345 women with NGT, 255 Non Obese NGT (BMI<27.5kg/m²) (Group 1) and 90 Obese NGT (BMI≥27.5kg/m²) (Group 2).

70.1% were of Malay ethnicity, 18.3% of Chinese descent and 11.6% of Indian (South Asian) origin.

7(2.0%) offspring fulfilled criteria for macrosomia.

We recruited 345 women with NGT, 255 Non Obese NGT (BMI<27.5kg/m²) (Group 1) and 90 Obese NGT (BMI≥27.5kg/m²) (Group 2).

70.1% were of Malay ethnicity, 18.3% of Chinese descent and 11.6% of Indian (South Asian) origin.

DISCUSSION

The theory of Developmental Origin of Health And Disease (DOHAD) proposes that exposure to abnormal intrauterine milieu(high glucose/Tg/lipids) through fetal programming/epigenetics results in adverse materno-fetal outcomes and 1 risk of developing DM, obesity and CVD in offspring.

Our study findings confirm that maternal hypertriglyceridaemia in mid-to late pregnancy in Asian NGT mothers independently of pre-pregnancy BMI and fasting glucose is highly predictive of LGA status.

There have been only 2 other studies examining impact of Tg in Asian NGT mothers.

Nolan et al 2005 evaluated 146 high-risk NGT Japanese women, demonstrating that fasting Tg in this cohort was greater than that of glucose.OR 1.23 (95% CI 1.02-1.49). The impact of Tg in this cohort was greater than that of glucose/OR 1.13 (95% CI 1.01-1.25).

Kajitama et al., evaluated 146 high-risk NGT Japanese women, demonstrating that fasting Tg was independently predictive of LGA status, augmenting risk 1.16 fold. The impact of Tg in this cohort was greater than that of glucose/OR 1.13.

CONCLUSION

Maternal hypertriglyceridaemia, independently of pregravim BMI and glucose is highly predictive of LGA status(augmenting risk by > 6-fold) and 1 neonatal adiposity in Asian offspring of NGT mothers.

Maternal Tg is therefore a potentially modifiable metabolic target in NGT pregnancy. Interventional studies that lower prenatal Tg levels with diet + exercise in NGT mothers are required to assess potential impact on neonatal adiposity & childhood obesity/metabolic syndrome.

Acknowledgements

The study was supported by University Malaya Research Grant, MRC No 201401-0691.