Predicting neonatal outcomes in Diabetes in pregnancy using ultrasound markers

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AIM

The aim of this study was to retrospectively assess if there was any correlation between 36 week ultrasound findings and neonatal outcomes. The results of this study will help develop a research protocol for a prospective study in the prediction of neonatal complications in women with Diabetes in Pregnancy (DIP).

METHOD

A retrospective analysis was performed in a 12 month period at a tertiary regional hospital in Queensland with ethics approval sought (HREC/QTHS/73687).

The inclusion criteria were singleton, live gestation who was diagnosed with DIP.

The exclusion criteria were multiple pregnancy, congenital abnormalities and fetal growth restriction.

201 charts of women with diabetes in pregnancy were reviewed.

The data was collated and analysed to determine if there were any ultrasound biomarkers that could be used to predict adverse neonatal outcomes.

Composite adverse neonatal outcome was identified as the presence of at least 1 NICU admission, 5 min Apgar < 7, caesarean section for suspected fetal compromise and severe hypoglycemia requiring treatment.

Of the 201 women with DIP, 38% (77/201) of the neonates met the criteria outlining the composite adverse neonatal outcome.

RESULTS

Out of the total of 2537 births in a 12 month period (July 2017 – June 2018), 249 women met the inclusion criteria and had Diabetes in Pregnancy.

Of the 77 women who had a composite adverse outcome, all babies had an elevated umbilical artery pulsatility index (mean value 0.91) at the 36 week ultrasound scan (P = 0.02) and an adjusted Odds ratio of 16.2 with 1.38 - 228 , 95% confidence intervals, (P = 0.031).

There was no significant association of the composite adverse neonatal outcome with other fetal Doppler studies, cerebroplacental ratio, deepest vertical pocket of liquor and fetal biometry including abdominal circumference and estimated fetal weight.

CONCLUSION

This study has shown that the umbilical artery Doppler (pulsatility index) at the routine 36 week ultrasound, is a predictor of composite adverse outcomes in a tertiary regional setting.

The finding is in line with a recent systematic review assessing the prognostic accuracy of antenatal Dopplers to predict adverse perinatal outcomes in DIP 2.

The 36 week assessment and Umbilical artery Doppler may be a useful tool identifying those babies that may benefit from delivery in a larger centre, facilitating in utero rather than an ex-utero transfer.