RANZCOG Annual Scientific Meeting 2022 GOLD COAST
Transformation: Making Waves

MANAGEMENT OF COMPLICATIONS ASSOCIATED WITH TYPE 1 DIABETES MELLITUS IN PREGNANCY, FOLLOWING PRETERM PREMATURE RUPTURE OF MEMBRANES. CASE STUDY

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Background: Type 1 Diabetes Mellitus (T1DM) complicates less than 1% of pregnancies in Australia.[1] Mothers with T1DM are more likely to have pre-term birth, pre-eclampsia, and caesarean section in comparison to mothers with T2DM.[1] Antenatal and intrapartum hyperglycaemia increases risks of hypoglycaemia in the newborn.

Case: GH, a primiparous 26-year-old patient with T1DM (managed with insulin pump), presented to the obstetric unit at a regional hospital with preterm pre-labour rupture of membranes (PPROM) at 33+3/40 gestation. She was hypertensive on arrival, BP 164/100, and was commenced on Labetalol 200mg TDS. As per the hospital PPROM protocol, GH was commenced on antibiotics (ampicillin and erythromycin), and given first dose of steroids (betamethasone IM) for fetal lung maturity. GH's T1DM was well controlled with close adjustment of her Insulin Pump through regular check ups.

GH's blood pressure spiked 20 hours after initial presentation at 180/100. Examination findings included, jitters, hyper-reflexia and 5 beats clonus bilaterally on lower limbs. Pre-eclampsia was diagnosed with the presence of hypertension and neuro-irritability, and she was commenced on $MgSO_4$ infusion. GH required intravenous 2x IV Hydralazine 5mg, oral Nifedipine 10mg and increase dose of labetalol 400mg TDS to manage her hypertension. She received an expedited second dose of steroids. Despite these agents, GH's blood pressure remained elevated and her labour was induced for refractory hypertension.

Intrapartum, GH's persistent hyperglycaemia was increasingly difficult to control, peak of 16.5 mmol/L, and required endocrinology tailoring of the standard insulin dextrose infusion protocol.

As labour progressed, there was suggestion of fetal distress as indicated by cardiotocography with reduced variability, and labour dystocia at 6cm dilation. GH underwent an emergency caesarean section, and baby boy was born with APGARs of 2, 7, 8 (1 min, 5 min, 10min).

The post-delivery course was complicated for the neonate by persistent hypoglycaemia, despite IV dextrose and glucagon infusion. This subsequently required transfer of the neonate to a Neonatal Intensive Care Unit (NICU) at a Tertiary centre.

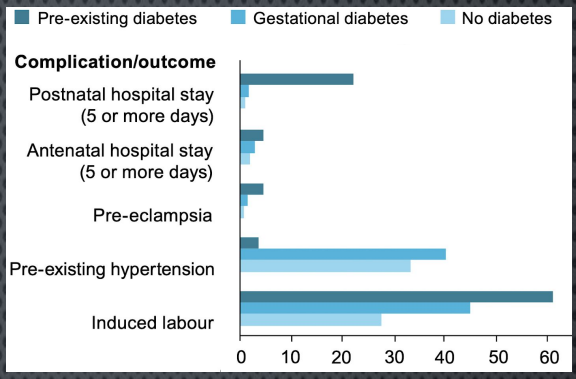

Figure 1. Modified from - Outcomes for mothers, by diabetes type and Indigenous Status, 2014-2015

Discussion: The care of obstetric patients with T1DM has associated challenges in the prenatal, antenatal, intrapartum and postpartum periods. Prenatally women with T1DM are less likely to fall pregnant;[2] and once pregnant, have higher rates of miscarriage (2-3 fold)[1], congenital malformations (2 fold)[3], macrosomia (4.9 fold)[1], respiratory distress, neonatal hypoglycaemia (56.8 fold)[1], and stillbirth (4 fold)[4].

The rates of pre-eclampsia are higher in T1DM pregnancies, at 15 - 20%, in comparison to nondiabetic pregnancies 2 - 7%.[5] Additional associations in T1DM and pre-eclampsia risk include; primiparity, pre-existing vasculopathy, pre-existing hypertension, increased weight gain, microalbuminuria, higher HbA1c and triglyceride levels.[5] In this case study, our patient had several identified risk factors; primiparous, and diagnosis of diabetic retinopathy during the pregnancy.

Pregnancies complicated by pre-existing diabetes have increased rates of preterm birth <37 weeks gestation, and higher rates of emergency and elective caesarean sections[6]; as supported by this case.

This case identifies the importance of a multidisciplinary approach to caring for obstetric patients with pre-existing diabetes. In the setting of obstetric complications involving PPROM and pre-eclampsia, and neonatal complications including fetal distress, prematurity and hypoglycaemia, multidisciplinary input allows for better management of these conditions which are complicated by diabetic status.

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