Management of a Patient with Type 1 Diabetes Mellitus for Intrauterine Myelomeningocele Repair

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Background

• Myelomeningocele (MMC) is the most severe form of spina bifida. MMC occurs when the spinal cord and meninges protrude from the spinal column.
• There is increasing evidence to suggest that prenatal repair of MMC reduces complications as opposed to postnatal repair as evidenced in the MOMS trial.
• Current inclusion criteria for prenatal repair of MMC:
  o Singleton gestation with myelomeningocele between T1 and S1
  o No anomalies unrelated to myelomeningocele
• Current exclusion criteria for prenatal repair of MMC:
  o Systemic illnesses including insulin-dependent pregestational diabetes
  o Placenta previa, placental abruption
  o Short cervix (<20mm)
  o Cerclage
  o Previous spontaneous delivery prior to 37 weeks

Case Presentation

• 33 yo F G2P001 gestational age of 24 weeks presents for intrauterine myelomeningocele repair
• Past Medical History:
  o BMI of 25.2
  o Type 1 Diabetes Mellitus, Hypothyroidism
  o MTHFR mutation
  o Extensive family history of myelomeningocele
• This is the first case of a patient with Type 1 Diabetes Mellitus to undergo intrauterine repair of myelomeningocele

Intraoperative Management

• Pre-induction:
  o A thoracic epidural was placed preoperatively
• Induction:
  o ASA standard monitors. Arterial Line placed.
  o IV induction: lidocaine 50mg, propofol 100mg, rocuronium 50mg, and fentanyl 250mcg.
• Maintenance:
  o 1 MAC of sevoflurane + remifentanil infusion at 0.02-0.05 mcg/kg/min.
  o 15mg of 0.1% ropivacaine through her epidural throughout the case.
  o Phentylephrine drip run at a rate of 0.3-0.7 mcg/kg/min to maintain MAPs
• Type 1 diabetic management:
  o Insulin pump (Humalog) disconnected
  o Humulin drip run at 1U/hr
  o ABGs q1H
  o Glucose 111-140 mg/dL
  o Humulin drip discontinued and started Humalog pump on POD#1

Discussion

• Decision was made to remove the Humalog pump and run a Humulin drip
  o Pump requires training
• Humalog (pump) = rapid short acting insulin. Humulin (drip) = short acting insulin.
  o Since the patient sets her basal rate of Humalog at 1-2U/hr we assumed the Humulin would last longer
• Humulin infusion at 1U/hr to account for glucose surge associated to the stress response due to surgery.

References