Case Report: Persistent Pulmonary Hypertension of the Newborn

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Case History

- 34 year old, G3, P2 (2 previous vaginal deliveries)
- BMI 41
- Past History:
  - Anxiety and Depression – on Fluoxetine 20mg OD (increased to 40mg OD in first trimester)
  - Recurrent Genital Herpes – on prophylactic Aciclovir from 36 weeks onwards
- Non-smoker
- Antenatal care: Consultant care. Normal USS. Presented at 36/40 with anxiety over risk of stillbirth – reassured as normal investigations (CTG/USS)
- IOL at 39/40 for maternal anxiety and altered foetal movements
- Delivered vaginally on 02/03/18 at 39+2 weeks of gestation, had manual removal of placenta with a measured blood loss of1808mls
- Baby:
  - Good Condition
  - APGARs 8 (1min), 8 (5mins) and 9 (10mins)
  - Weight: 3450grams

Postnatal Management of Baby

- 30 minutes post delivery clinical signs of respiratory distress – dusky appearance.
- Post-ductal oxygen saturations were significantly lower than pre-ductal oxygen saturations (15% and 50% respectively).
- Baby was intubated and ventilated on the special care baby unit (SCBU)
- Echocardiogram – raised pulmonary artery pressure, tricuspid regurgitation, with normal cardiac anatomy in keeping with a diagnosis of persistent pulmonary hypertension of the new born (PPHN).
- Baby was transferred to a tertiary neonatal unit for ongoing care

Tertiary Centre Care

- Initial assessment:
  - Intubated and paralysed. RR 40 100% O2 and preductal sats 100%.
  - iNO 20ppm (started by retrieval team).
  - ABG 7.29 PCO2 4.8 BE -9.3 HCO3 17.3. Lactate 1.8
  - MBP 43 (48/39) HR 190-200.
  - Medication:
    - Dopamine 20
    - Dobutamine 10
    - Glucose 4.7 60mls/kg/d (12.5%)
  - Catheterised (19mls urine)
  - CRT 2-3 seconds cool peripheries, sweating
  - Femoral pulses present but weak
  - HS normal, equal air entry
  - Soft PA. Liver palpable (increased BP with liver pressure)
  - Normal genitalia, not dysmorphic
- Diagnosis: Persistent Pulmonary Hypertension (PPHN) with shock ?secondary to sepsis/ ?cardiogenic
- Initially discussed with GOSH ?for ECMO due to rapid deterioration, but then improved on Milrinone, Adrenaline, Noradrenaline, Hydrocortisone, Hepsal, Morphine and Vecurium.
- Commenced on Sildenafil D4 IV
- Cultures negative and inflammatory markers stable → Benzylpenicillin, Cefotaxime (started for lung consolidation) gentamycin and aciclovir stopped
- Over 12 days in NICU medication was reduced/stopped
- Sildenafil changed to oral D10

Transfer Back

- Returned to PCH SCBU 15/03/18
- Subsequent echocardiogram showing resolution of PPHN.
- Sildenafil was discontinued → discharged home.
- Normal development to date.
- Regular follow up with the paediatric cardiology team

Discussion and Learning Points

Severe PPHN occurs in 2/1000 live births [1] over 34weeks gestation, and is characterised by vascular injury and remodelling before and after birth. It is thought that the increase in the pulmonary vascular resistance and the normal or low systemic vascular resistance causes extrapulmonary shunting from right to left in the fetal circulatory persisting vessels leading to hypoxaemia [2]. Signs and symptoms include; grunting, slow breathing, blue discolouration to the skin, cool extremities, low blood pressure and low O2 levels [3]. The use of SSRI's in late gestation is associated with a 6-fold increase in the prevalence of PPHN, however, the overall risk remains low [4]. Other risk factors include hypoxia during delivery, meconium aspiration and infection. The main treatment is inhaled nitrous oxide, and other treatments including epoprostenol, sildenafil, magnesium sulphate, milrinone and bosentan are unlicensed [5].

This case highlights that although a rare complication of SSRI use in pregnancy, PPHN is a serious condition and is associated with long term morbidity including neurodevelopmental abnormalities [2].

This case has raised the question that, as clinicians, should we be counselling further on this in antenatal clinic? And if yes how?

References

1. https://www.gosh.nhs.uk/conditions-and-treatments/conditions-we-treat/persistent-pulmonary-hypertension-newborn-pphn
2. Nair, J. (2014). *Update on PPHN: Mechanisms and Treatment*. Semin Perinatol. 2014 Mar; 38(2): 78–91. Accessed via: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3942674/
3. https://my.clevelandclinic.org/health/diseases/16020-persistent-pulmonary-hypertension-in-the-neonate-pphn
4. Woolerton, E. (2006). *Persistent Pulmonary Hypertension of the Newborn and Maternal use of SSRI's*. CMAJ May 23, 2006 174 (11) 1555-1556. Accessed via: http://www.cmaj.ca/content/174/11/1555
5. https://www.nice.org.uk/advice/esuom51/chapter/Key-points-from-the-evidence