Hypoxic respiratory distress in an ESRD patient refusing HD, on magnesium for post delivery pre-eclampsia after IUFD

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Pregnancy and ESRD

- Rare
- Most women are anovulatory
  - Uremia
  - Dysregulation of the HPG axis (1)
  - <10% have regular menses
- The Australian and New Zealand Dialysis and Transplantation (ANZDATA) registry:
  - No reported pregnancies prior to 1976
  - 0.54 from 1976-1985
  - 0.67 from 1986-1995
  - 3.3 pregnancies per 1000 person/year from 1996-2008 (2)

Morbidity and Mortality

- Increase in M&M in this patient population
  - American Registry for Pregnancy in Dialysis Patients
    - Live birth rate 61.4%
  - Canadian and US Cohort Comparison suggests a dose response between dialysis intensity and pregnancy outcomes
    - 48% if dialyzed ≤20 hours/week
    - 85% if dialyzed >36 hours/week (3)

Pre-Eclampsia

- New onset hypertension
- New significant end-organ dysfunction
- >20 weeks gestation
- Preeclampsia with severe features if SBP>160 or DBP >110

Pre-Eclampsia and ESRD

- Often difficult to diagnose
  - Must distinguish between poorly controlled hypertension, inadequate dialysis, and/or pre-eclampsia
    - Volume status difficult to assess
    - Maternal weight measurements unreliable
    - Proteinuria may be impossible to measure if patient anuric (4)

Case

36-year-old female G7P4024 at 28w6d with IUFD.

MHx: HTN, SLE, systolic heart failure (EF 50-55%), MR, ESRD on HD (6x/week)

Hospital Course

Day 1:

- IOL for IUFD
- Dialyzed, 3.5 L removed

Day 2:

- SVD with 200 cc QBL
- Post delivery diagnosed with preeclampsia with severe features superimposed on chronic hypertension
- HEELP labs WNL except for elevated Cr to 9.4
- Magnesium was started (4 mg bolus, rate of 1 g/hr)
- Magnesium levels checked q4 hours
  - Mag levels: 4.0 (1600), 5.3 (2000), 6.8 (0200 am)
- Refused dialysis

Day 3:

- Intermittent dyspnea overnight
- Acutely decompensated in the morning: O2 saturation in the 60s, tripod position, pink frothy sputum
- Code blue called at 0820
- Prior to induction of anesthesia, K+ was verified at 3.9 per nursing
- Propofol and Succinylcholine administered, patient intubated
- Bradycardia ---> PEA
- ACLS initiated: epi x3, calcium chloride, and bicarbonate
- ROSC after 7 min
- CT head demonstrated no acute intracranial process
- CXR: pulmonary edema
- ECHO: EF of 45-50%, mild diffuse hypokinesis, diastolic dysfunction, moderate MR and TR
- Magnesium level of 7.8 and potassium level of 7.8
- HD for urgent electrolyte and fluid removal

Discussion

- By definition, this patient had pre-E with severe features
  - SBP >160
    - However, we must consider normal physiologic cardiovascular changes post-partum
      - Increased CO (up to 60%)
      - Increased SV (up to 70%) (6)
        - Relief of caval compression
        - Autotransfusion post delivery
      - Resultant rise in BP
  - Creatinine is unreliable diagnostic criteria in this population
  - Pulmonary edema
    - Was this due to pre-E or patient refusal of dialysis post partum
  - ACOG recommends seizure prophylaxis with magnesium (5)
    - Renal insufficiency: standard loading dose of 4-6 mg, but no maintenance dose if Cr ≥2.5
      - Patient's magnesium level 7.8
- Intubated with succinylcholine assuming K+ was 3.9
  - Actual pre intubation level 6.2, post arrest 7.8
  - While rocuronium clearance is reduced in patients with decreased renal function, the sugammadex-rocuronium complex is effectively removed through dialysis (7)

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