Anesthetic Management of a Patient with Known Sickle Cell Disease Presenting with Acute Chest Syndrome and Preeclampsia with Severe Features Requiring Cesarean Delivery: A Case Report

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Background

Sickle Cell Disease in Pregnancy

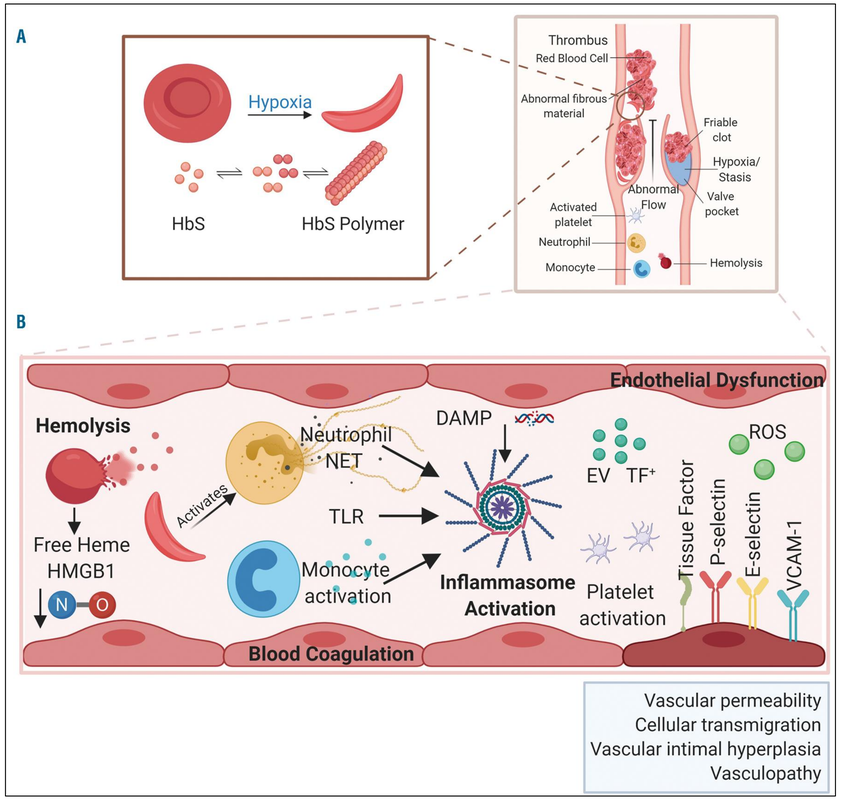
- Pro-inflammatory, hypercoagulable state with dilutional anemia
- Heightened risk of red blood cell sickling and vasoocclusive episodes (VOEs)
- Care focuses on trigger prevention and supportive measures

Key Management Strategies

- Adequate hydration and supplemental oxygen to prevent VOEs
- Exchange transfusions to correct severe anemia and reduce sickling complications
- High-dose folic acid to support erythropoiesis
- Low-dose aspirin from 2nd trimester to mitigate preeclampsia risk

Drug Considerations

- Hydroxyurea discontinued during pregnancy (teratogenic)
- Carboprost: relatively contraindicated with pulmonary compromise
- Methergine: avoid in setting of preeclampsia/hypertension



Shet et al., *Haematologica*, 2020

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The Case

Patient Overview

33-year-old female, G2P0010 with known sickle cell disease (SCD). Admitted to the ICU with acute chest syndrome (ACS), preeclampsia with severe features, and LFTs concerning for HELLP syndrome. Managed on HFNC (40 L/min, FiO_2 50%) with IV antihypertensives (nifedipine, labetalol). Hgb 11.2 g/dL; platelets 64k/µL. MFM recommended cesarean section due to worsening maternal status.

Anesthetic Decision-Making

- General anesthesia: high risk of post-op ventilator dependence/inability to extubate given ongoing respiratory compromise on HFNC
- Neuraxial anesthesia: risk of hematoma given thrombocytopenia (Plt 64k) and concern for HELLP syndrome
- Uterotonic limitations: carboprost contraindicated (pulmonary compromise); methergine unfavorable (evolving preeclampsia)
- Decision: spinal anesthesia performed; HFNC maintained intraoperatively

Outcome

- Cesarean delivery completed without complication; EBL 700 mL — no blood products or additional uterotonics required
- Mother remained stable post-operatively; BP and VOE symptoms improved following delivery
- Neonate admitted to NICU and discharged 2 months later

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Teaching Points

1. **Weigh Both Anesthetic Options Carefully**

   General anesthesia posed significant extubation risk in a patient already requiring HFNC. Neuraxial anesthesia carried hematoma risk with thrombocytopenia and HELLP. Spinal anesthesia may remain preferable when airway risk dominates, but the decision requires individualized, multidisciplinary assessment.

2. **Cardiopulmonary Status Limits Uterotonic Options**

   Carboprost is relatively contraindicated in the setting of pulmonary compromise; methergine is unfavorable with hypertension or preeclampsia. Anticipate limited hemorrhage rescue options preoperatively and plan accordingly.

3. **Interdisciplinary Communication is Critical**

   Complex obstetric cases demand real-time coordination between anesthesia, OB, and MFM. In this case, a planned exchange transfusion was delayed throughout the day — highlighting the importance of defined roles, clear timelines, and early, proactive team communication.

4. **Delivery Itself Can Be Therapeutic**

   In SCD complicated by preeclampsia and ACS, delivery may improve maternal hemodynamics and reduce the vasoocclusive burden. This should factor explicitly into discussions of operative timing and risk-benefit analysis.