Anesthetic Management: Emergent Craniotomy and Cesarean Delivery

Lindsey Lang, M.D., Jakayla Harrell-Mohamed, M.D., Sajay Churi, M.D.
Louisiana State University Health Sciences Center- New Orleans, LA

Background:

- The incidence of non-obstetric surgery during pregnancy is 1-2%; the most common indications include trauma, appendicitis, cholecystitis, and malignancy.
- The incidence of intracranial hemorrhage during pregnancy is 0.05%.
- Intracerebral hemorrhage (ICH) in the young is usually caused by AVMs or aneurysms. Metastatic brain tumors causality is rare.
- Increased blood volume during pregnancy and tumor related BBB disruption can lead to cerebral edema.
- Single session cesarean section and emergent craniotomy due to malignancy is limited to a few case reports. Our case describes an incidence of malignancy and ICH.
- Pathophysiology and maternal status is weighed to determine priority of neurosurgical intervention vs delivery.

Case Report:

- 44 year-old, G5P3013, at 33w1d presenting w/ severe bitemporal and frontal headache unrelieved by tylenol and normal BP with PMH RLE DVT (on Enoxaparin 60mg BID), ALL as an adolescent, and breast cancer (s/p chemotherapy & mastectomy)
  - PE: flattened affect and slowed responses, slight anisocoria.
  - CT Head: 5.5 x 3.9 x 2.1 cm complex, cystic mass in the right temporal lobe with ICH; surrounding vasogenic edema, 5 mm midline shift, associated subdural and subarachnoid hemorrhages with possible uncal herniation. Concern for metastasis. MRI with similar findings.
    - CTA w/o vascular pathology
- Pre-Op:
  - Decadron 4mg IV q6h per Neurosurgery with POCT glucose monitoring q2h and insulin correction. Protamine given.
  - Early multi-disciplinary collaboration: neurosurgery, OB/MFM, hematology, anesthesiology to proceed initially with emergent craniotomy due to worsening maternal status.
- Intra-Op:
  - After RSI induction with arterial line, cat III tracing with nadir FHR 60s
    - Decision for emergent c-section followed by a Craniotomy
  - 1u PRBC, 1u FFP, 45u Oxytocin, 1g Levetiracetam, 50g Mannitol, 3L NS
    - EBL of 250mL
  - Extubated and transported to ICU
- Post-Op:
  - Levetiracetam & Dexamethasone
  - IVC filter placed on POD #1, started on subQ heparin on POD#2, transitioned to Enoxaparin and discharged home neurologically intact on POD#7.

Teaching Points:

- Gathering a thorough medical history is vital in determining a patient's risk for ICH; the hypercoagulable state of pregnancy, DVT treatment, and cancer history contributed to this case's complexity
- Early multidisciplinary discussions amongst obstetrics, neurosurgery, and hematology are important in caring for these patients.
- A sound anesthetic plan to maintain maternal hemodynamics, while optimizing intracranial pressure, should be implemented

  - Oxytocin does not cross the blood-brain barrier due to it's large size & hydrophilic nature and should not affect intracranial pressure
- Awake craniotomies can be considered in patients who are pregnant; this patient was not a candidate due to herniation on imaging
- Maternal deterioration in this case affected the initial plan for craniotomy first; a strategy could be cesarean delivery without neurosurgical intervention and administration of diuretics and steroids under close monitoring.
- Alternatives risk exposing fetus to the adverse effect of mannitol, hyperventilation, and hypotension.

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*I have no disclosures