Anesthetic Management of an Infant with Iatrogenic Phlegmasia Cerulea Dolens After IO Placement and Ongoing Sepsis Presenting for RLE Angiography

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University of Illinois Hospital & Health Sciences System — Changing medicine. For good.

Background

- Phlegmasia Cerulea Dolens
  - Proximal venous thrombus resulting in edema and slowing down of arterial flow → ischemia and near total or total occlusion of venous outflow
  - Occurs in less than 1% of patients with a DVT
    - Can result in:
      - Elevated compartment pressures → arterial insufficiency
      - Circulatory shock
      - Limb ischemia → precursor to frank gangrene
        - Up to 60% of the patients can develop gangrene [1]
        - Up to 50% can require a limb amputation [1]
      - Risk for pulmonary embolism
    - Risk factors
      - Central lines, cancer, sepsis [2]
  - Rarely seen in the pediatric population
  - Medical emergency

Past Medical History

- 16-month old F who presented in septic shock.
  - Presentation preceded by 3-week history of URI
  - Born full term via vaginal delivery
    - Prolonged NICU stay for FTT
    - Microcephaly
    - Absence of corpus collosum
    - Developmental delay
    - Infantile spasms

Case Report

PICU: Management of Septic Shock

- Multiple failed attempts to obtain peripheral and femoral lines bilaterally
- IO was placed in the R tibia → fluid boluses and vanc/zosyn
  - Few hours later, the RLE noted to be cold and mottled
- IO was discontinued and replaced by L Subclavian line
- Arterial and Venous Duplex RLE:
  - DVT: External iliac, Common femoral → popliteal vein
  - Minimal flow in Anterior and Posterior tibial artery
- Heparin infusion initiated with no improvement in perfusion
- Vascular surgery consult: emergent tPA therapy in place of fasciotomy

Pre-Op:

- Hypotensive, tachycardic and febrile
- Copious clear oronasal secretions and wet cough
- Collaborative discussion with family regarding patient's high risk status, anticipated morbidity and possible mortality pre/intra/post-operatively

Intra-Op:

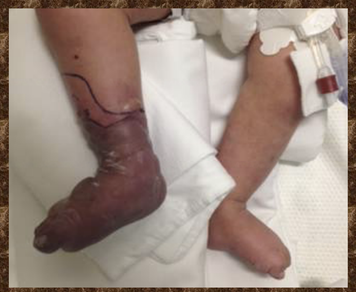
- Induction (Versed and Rocuronium) complicated by sudden cardiac output depression immediately after intubation
  - Acute desaturation, ↓ ET_{CO2}
  - Drop in cerebral and somatic NIRS
  - Epinephrine and chest compressions for 30 sec with full ROSC
- tPA initiated uneventfully
- Acute thrombocytopenia and hypoglycemia addressed

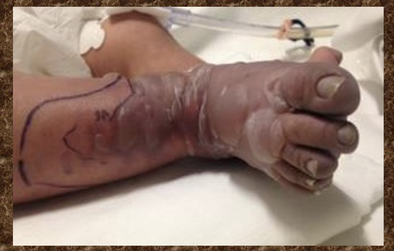
Post-Op:

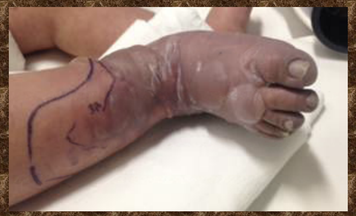
- Transferred to PICU intubated w/ no additional ionotropic support
- To IR after 8 hrs for evaluation of therapy → no significant change
- To OR after 24 hrs for RLE medial and lateral fasciotomies
- To OR after 2 months for R foot skin grafting, uneventful

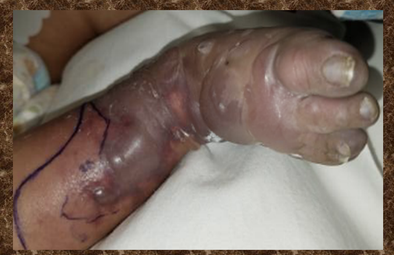
Discussion

- Importance of assessing vascular access at all times
- Life/Limb threatening condition → Emergency
- True informed consent from the family
  - Discussion of morbidity and mortality
  - Addressing code status
- Effect of septic shock on induction and maintenance of anesthetic
- Ethical implications of treating a critically sick infant in non-pediatric facility
  - No pediatric surgical subspecialties available









References

1. Tran, J. Phlegmasia Cerulea Dolens in the Pediatric Population: A Life-threatening Condition, The Journal of Emergency Medicine, Oct 2015, Pgs 111-114.
2. Ikegami, T. Phlegmasia Cerulea Dolens, QJM: An International Journal of Medicine, Apr 2016, Pgs 281-282.