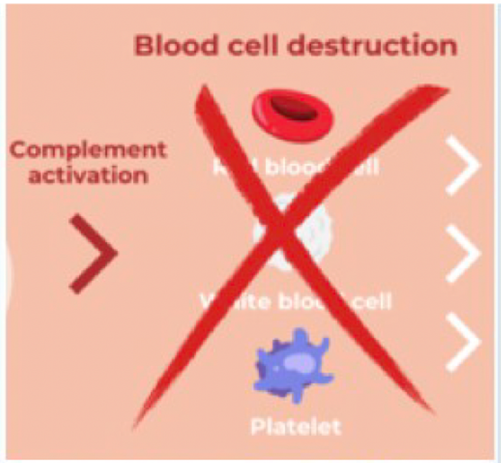
Thinking Outside the Epidural Space

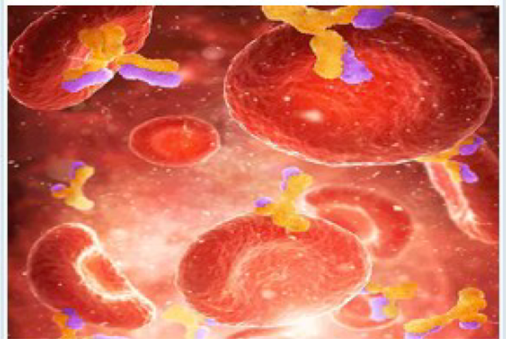
Labor Analgesia in a Patient With PNH and Prior TBI

Briel S. Lee, MD · Bridget Marroquin, MD, MS · Christine McKenzie, MD

PAROXYSMAL NOCTURNAL HEMOGLOBINURIA

- Rare acquired stem cell disorder
- GPI-anchored protein deficiency → uncontrolled complement activation → hemolysis
- Thromboembolism = leading cause of PNH-related mortality
- Hypercoagulability in pregnancy





ANESTHETIC CHALLENGES

- Severe cytopenias preclude neuraxial anesthesia
- Optimize cerebral perfusion pressure (CPP) for TBI + decompressive craniotomy
- Analgesia to reduce hemolysis
- Hemorrhagic AND thrombotic risks

CASE

Test	T1	T2	T3	T4	T5
HGB	12.1	11.0 ↓	11.3	11.3	11.9
Plt ×10³	68 ↓	45 ↓	43 ↓	38 ↓	45 ↓

↑ *MCV >100 and persistent thrombocytopenia (Plt 38–68 × 10³/µL) across all time points*

- PNH with thrombocytopenia
- History of TBI with decompressive craniotomy
- Seizure disorder on lamotrigine
- Active labor

- Analgesia to reduce hemolysis, but neuraxial anesthesia contraindicated
- Continuous hemodynamic monitoring
- Frequent labs (hemolysis)
- Maintain CPP
- Avoid hypoxia and hypercarbia

Spontaneous vaginal delivery
No hemorrhagic events, or thrombotic complications
No neurologic deterioration

TEACHING POINTS

01 Multidisciplinary Collaboration

Team planning before labor with anesthesiology, obstetrics, hematology, and neurology

02 Alternatives to neuraxial

Alternative analgesics can reduce the risk of hemolytic and neurologic events.

03 Prevent/Recognize Hemolysis

Labor-related stress can activate complement in PNH
Monitor LDH, hemoglobin, and urine

04 CPP = MAP – ICP

Avoid hypotension, hypoxia, hypercarbia
Minimize neurologic insult

References: Hill A et al. Nat Rev Dis Primers. 2017;3:17028. · Kjær K et al. Reg Anesth Pain Med. 2004;29(4):366–368.