Management of Anesthesia and Anticoagulation in a Parturient with COVID Pneumonia, Thrombophilia and Heparin-Induced Thrombocytopenia

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BACKGROUND

- Covid-19 infection is associated with a coagulopathic state and elevated risk of venous thromboembolism (VTE)
- Prothrombin G20210A mutation is the second most common thrombophilic disorder in the general population
- Low molecular-weight heparin (LMWH) and unfractionated heparin (UFH) are the preferred anticoagulants with prothrombin G20210A mutation; fondaparinux is preferred with heparin-induced thrombocytopenia (HIT)
- American College of Obstetrics and Gynecology recommends parturients with history of thrombophilia on anticoagulation therapy receive LMWH/UFH during the antepartum period, but do not offer guidelines for anticoagulation in patients with HIT
- Guidelines for timing of neuraxial anesthesia in patients on newer anticoagulants are unclear

		Timing for neuraxial blockade or catheter removal	Timing to resume anticoagulation after catheter removal	Laboratory tests
Fondaparinux	*European society of anesthesiology guidelines*	Wait 32-42h before puncture or catheter removal	Wait 6-12h after puncture or catheter removal	Anti-factor Xa, standardized for specific agent
	ASRA guidelines	Wait until further clinical studies are available as clinical trials did not simulate real-life conditions	Wait 6h after puncture or catheter removal	
Argatroban	*European society of anesthesiology guidelines*	Wait 4h before puncture or catheter removal	Wait 2h after puncture or catheter removal	aPTT, ECT, ACT
	ASRA guidelines	Avoid neuraxial blockade	Avoid neuraxial blockade	

Table 1: Guidelines for neuraxial anesthesia in patients on Fondaparinux and Argatroban

CASE DESCRIPTION

This is a 35-year-old G6P3023 at 33 weeks gestation with a history of Chiari 1 malformation, asthma, seizures, migraines, BMI 50, and 3 uncomplicated cesarean sections (CS) under spinal anesthesia. Prior to this pregnancy, she was diagnosed with prothrombin G20210A mutation in the setting of multiple VTEs and was anticoagulated on fondaparinux given history of HIT while on heparin. Prenatal course was complicated by respiratory failure 2/2 pneumonia due to COVID-19 infection. She presented at 33 weeks with shortness of breath.

Anesthetic plan for delivery:

- Initially planned at 37 weeks following transition of anticoagulation from fondaparinux to argatroban due to shorter half life of argatroban
- On admission, fondaparinux was held for 48 hours and patient was started on argatroban with plan to stop argatroban 3-4 hours prior to C-section
- Arterial line was placed
- Initial plan for neuraxial anesthesia after holding argatroban for 3-4 hours if coagulation parameters within normal limits

Labs prior to delivery:

PT 25.4s
PTT 34.4s
D-dimer 1.49µg/mL
Hct 34.4%
Plt 142k/uL

Due to worsening respiratory distress and increasing O2 requirements, CS was planned earlier than planned. Argatroban was held 5 hours prior to CS, but neuraxial anesthesia was avoided given elevated PT. Patient underwent uncomplicated repeat CS under general anesthesia and was extubated in the OR. Argatroban was started 10 hours postop for VTE prophylaxis and she was discharged on warfarin for outpatient anticoagulation.

DISCUSSION

- Fondaparinux and argatroban are newer anticoagulants with few studies demonstrating safety with neuraxial anesthesia and no reports with neuraxial anesthesia in the setting of COVID-19 infection
- In healthy subjects, withholding argatroban 250 minutes (5 elimination half-lives) prior to neuraxial anesthesia should be safe
- Although argatroban elevates PT levels, PT was likely elevated due to COVID-19 infection since argatroban has a half life of ~50 minutes and was discontinued 5 hours prior to the procedure
- This case poses a challenge in which the patient's coagulation status was uncertain given presence of confounding variables

LEARNING POINTS

- LMWH is the preferred anticoagulant agent in parturients with coagulopathies, although alternatives may be needed in HIT
- Guidelines for timing of neuraxial anesthesia with newer anticoagulants is unclear due to a paucity of evidence
- The decision to hold anticoagulation to proceed with neuraxial anesthesia vs proceeding with general anesthesia for cesarean section in patients with coagulopathies requires a case-by-case risk-benefit analysis

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