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Just Another Labor Epidural

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Introduction

There are many different types of anesthesia appropriate for the laboring individual; each with their own risks and benefits. No clear guidelines exist as to when to avoid placement of epidural catheters. The goal of this case is to provide information regarding the decision-making process in a complex obstetric patient.

Methods

A 32 year-old pregnant female presented to Labor and Delivery requesting an epidural be placed for mild abdominal pain. Patient was hemodynamically stable, and stated no fetal movement for at least 4 days, with her last obstetric visit greater than 4 weeks ago. The Obstetric team requested a labor epidural for vaginal delivery, with potential for possible c-section. CBC showed a platelet count of 110,000. Due to the fetal death, the anesthesiologist requested a coagulation profile which showed an INR of 1.5 and Fibrinogen level of 94mg/dL (373-619mg/dL 3rd trimester normal). A thromboelastograph showed reduced clot strength. The laboratory values were concerning for potential early DIC. The recommendation was now to continue delivery of fetus via emergent Caesarean with general anesthesia as the anesthetic plan. Upon entering the abdominal cavity, the obstetrician noted the uterus was grossly abnormal with ecchymosis on the external surface. It was friable and the obstetrician's finger went through the posterior wall during manipulation. The patient as having a Couvelaire uterus, found in severe abruptions where blood extravasates into the myometrium. Intraoperatively the patient required 2 units PRBC and 1 unit of platelets, and postoperatively received additional PRBC and FFP.

TEG Value	Normal*	Description	Measures
TEG-ACT (rapid)	80 - 140 sec	"Activated clotting time" to initial fibrin formation	clotting factors (extrinsic/intrinsic pathways)
R time (conventional)	5.0 - 10.0 min	"Reaction time" to initial fibrin formation	clotting factors (intrinsic pathway)
K time	1.0 - 3.0 min	"Kinetic time" for fibrin cross linkage to reach 20 mm clot strength	fibrinogen, platelet number
α angle	53.0 - 72.0 degrees	Angle from baseline to slope of tracing that represents clot formation	fibrinogen, platelet number
MA	50.0 - 70.0 mm	Maximum amplitude of tracing	platelet number and function
G value	5.3 - 12.4 dynes/cm ²	Calculated value of clot strength	entire coagulation cascade
LY 30	0 - 3%	Clot lysis at 30 minutes following MA	fibrinolysis

Figure 4. Interpretation of a TEG³ (Simon, E. 2016)

TEG Value	Transfuse
TEG-ACT > 140	FFP
R time > 10	FFP
K time > 3	cryoprecipitate
α angle < 53	cryoprecipitate +/- platelets
MA < 50	platelets
LY30 > 3%	tranexamic acid

Figure 5. Recommended Transfusion Strategies³ (Simon, E. 2016)

Results

This patient was a healthy 32 year old pregnant female who presented with at least 4 days intrauterine fetal death. Based on her lab findings, an epidural was not the recommended anesthetic plan. Her lab findings included mild thrombocytopenia, elevated INR, reduced fibrinogen and abnormal TEG. The patient was thought to be in the beginning stages of Disseminated Intravascular Coagulation (DIC) and was taken to the OR for immediate Caesarean delivery. Abruptions risk severe peripartum hemorrhage and can occur at any time during the pregnancy. If the placenta completely separates from the uterus, the result can be life-threatening. Placental abruption can present either with vaginal bleeding or concealed bleeding. There are risks associated with any procedure, but placement of an epidural in a patient with thrombocytopenia, elevated INR and reduced fibrinogen can present its own complications; most worrisome is an epidural hematoma.

Normal Fibrinogen levels

Fibrinogen (plasma)	Units	Nonpregnant Adult	First Trimester	Second Trimester	Third Trimester
mg/dL		233 - 496	244 - 510	291 - 538	373 - 619
g/L		2.3 - 5	2.4 - 5.1	2.9 - 5.4	3.7 - 6.2

References:
 Abbassi-Ghanavati M, Greer LG, Cunningham FG. Pregnancy and laboratory studies: a reference table for clinicians. *Obstet Gynecol.* 2009 Dec;114(6):1326-31. PMID:19935037

Patient Labs

Date Time	PRE-OP	POST-OP
TEG CK R	4.9	6.8
TEG CK MA	53	<40 L
TEG CRT MA	51 L	<40 L
TEG CKH R	4.8	6.2
TEG CFF MA	8 L	16
PLASMINOGEN		

Discussion & Conclusion

Image of Couvelaire Uterus



https://www.researchgate.net/figure/Couvelaire-uterus_fig1_297669840

The Couvelaire uterus occurs in instances of severe placental abruption in which blood extravasates into the myometrium. The uterus loses tone and increases the risk of postpartum hemorrhage and subsequent increased risk of developing DIC. The patients are also at increased risk of uterine rupture.

The presentation of this case reiterates how important it is to fully evaluate each patient. While the goal in patients who experience intra-uterine fetal death is usually to continue with a vaginal delivery with epidural placement for comfort, this is not a feasible option in a variety of cases. Obtaining a thorough history and appropriate labs, a unique anesthetic and surgical plan can be implemented with the ultimate goal of patient safety.

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