

C-43 Labor and Delivery Management in a Parturient with Severe Tricuspid Stenosis

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Objective

After completion of this session, the participant will be able to:

- Recognize the three cardiovascular changes that occur during labor.

Case Stem Question

A 36 year old female G1P0 presents to the labor and delivery unit with preterm premature rupture of membranes (PPROM). Her medical history includes Ebstein anomaly with severe tricuspid stenosis, anxiety, and depression. Her vital signs are as follows: blood pressure 122/78, heart rate 80, and oxygen saturation 99% on room air. Her BMI is 28.2 kg/m² and fetal heart rate (FHR) is 135.

Guiding Questions for Discussion

1. What is Ebstein anomaly?
2. What other information would you like to obtain from this patient?

Case continued: She was diagnosed with Ebstein anomaly at birth and has had two tricuspid valve repairs, one in 1993 and one in 1998. An implantable cardioverter defibrillator (ICD) was placed in 2010 for recurrent episodes of ventricular tachycardia. She is currently not pacemaker dependent. She has a history of palpitations and ambulatory cardiac rhythm evaluation in 2020 showed a run of nonsustained ventricular tachycardia (NSVT). Before pregnancy, she could walk a couple of blocks without stopping and would get mild shortness of breath when climbing stairs. Since pregnancy, her functional status is more limited and she needs to take multiple breaks when walking long distances.

Her most recent transthoracic echo (TTE) shows severe tricuspid stenosis with a mean gradient of 12-15 mm Hg, mild-moderate depressed right ventricular systolic function, and an ejection fraction (EF) of 56%.

3. What steps should be taken when formulating an anesthetic plan for a complicated parturient?
4. What are the normal cardiovascular physiological changes that occur during pregnancy?

Case continued: The patient desires a vaginal delivery. After discussing this patient in a multidisciplinary team with high risk OB, OB anesthesiology, and cardiology, it is decided she can have a trial of labor.

5. What are the pros and cons for a vaginal delivery in this specific patient?

6. Will this patient need any special monitoring during her labor? Can she deliver on the labor and delivery floor or does she require an ICU admission?

7. The patient does not want an epidural for labor analgesia. What are the risks and benefits of neuraxial and general anesthesia in this parturient? What will you recommend as her anesthesiologist?

8. Would anything in your plan change if this patient had severe mitral stenosis instead of tricuspid stenosis? Severe aortic stenosis?

Case continued: The patient is admitted to the cardiac ICU for her induction of labor. An arterial line is inserted. She consents for an epidural for labor analgesia. She is monitored with continuous pulse oximetry, telemetry, and zoll pads. A dural-puncture epidural is placed. An oxytocin infusion is then started. 3 hours later, the FHR tracing is category II with recurrent variable decelerations and occasional late decelerations.

9. What does a category II tracing mean?

10. What is the clinical significance of early, variable, and late decelerations. How are they treated?

11. What if the obstetricians decide they need to proceed with a cesarean delivery. How will you prepare this patient for the operating room? How will you manage her ICD?

Case continued: The patient's FHR tracing improves and her induction of labor is continued. She is fully dilated 3 hours later and the obstetrician requests the anesthesiologist to be present during the second stage of labor.

12. What is the second stage of labor and what cardiovascular physiologic changes occur during this time? What are your hemodynamic goals for this specific patient?

13. The patient pushes for about 20 minutes and delivers a viable male neonate. What are your concerns for this patient postpartum? How long should she remain in the ICU?

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