Tachycardia in Pregnancy

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Case: The OB hospitalist comes to the ED and asks for your help with a patient who is 39 weeks pregnant and tachycardic. The ECG you are handed shows a narrow complex tachycardia.

- **Differential diagnosis of narrow complex, regular, tachycardia includes**
  - Sinus tachycardia
  - Supraventricular tachycardia (SVT)
  - Atrial flutter with 2:1 conduction

- In this case, the treating physician believed it to be SVT.
- Preparation for treatment of SVT includes:
  - Putting the patient on a cardiac monitor
  - Putting baby on a tocodynamometer
  - Securing an IV
  - Putting cardioversion pads on the mother, avoiding the abdomen.
- Treatment of SVT includes the following:
  - Try vagal maneuvers first
  - Adenosine (6mg then 12 mg)

PEARLS

- Calcium channel blockers or beta blockers.
  - In pregnancy, calcium channel blockers are preferred as they are thought to be safe. There are reports of teratogenicity in animals, but not in humans. They do cross the placenta so could cause fetal bradycardia.
  - Beta blockers should be avoided in the 1st trimester as they are associated with intrauterine growth retardation (IUGR).
- Other agents such as procainamide, amiodarone.
  - Procainamide is safe and well-tolerated in pregnancy.

PITFALLS

- **Amiodarone should be avoided.** It has a high iodine content and high affinity for fetal thyroid tissue. It crosses the placenta and is associated with IUGR and premature delivery.

- Cardioversion
  - Cardioversion in pregnancy is safe for mother and baby in pregnancy. Very little electrical current penetrates the uterus.
  - Place the pads in the typical location making sure to avoid the abdomen.
  - Aspiration risk is a concern with sedation and you want to avoid hypotension.
    - A short acting agent like ketamine or propofol is best.

PITFALLS

- If worried about pre-excitation syndromes, **avoid AV nodal blockers and go with procainamide or cardioversion.**

- In this case, the ECG subsequently changed to an irregular, wide complex tachycardia.
- **Differential diagnosis of wide complex, irregular, tachycardia** includes:
  - Torsades
  - Atrial fibrillation with bundle branch block
  - Atrial fibrillation with WPW
- To differentiate these, look at the morphology.
  - Torsades has a characteristic "party streamer" morphology.
  - To tell the other 2 entities apart, look at the QRS complexes themselves. If there are alternating morphologies, think about pre-excitation.
  - If worried about pre-excitation syndromes, **avoid AV nodal blockers including adenosine, calcium channel blockers, beta blocker. Go with procainamide or cardioversion. No amiodarone.**
- There is an increased frequency of SVT and VT in pregnancy.
  - Proposed mechanisms include the hemodynamic, hormonal and sympathetic changes seen in normal pregnancy.
    - These include increased heart rate, decreased peripheral resistance, and increased stroke volume.
    - Usually there is no underlying structural heart disease.
  - Pregnancy may uncover underlying WPW so patients may be diagnosed with WPW for the first time in pregnancy.

PERSPECTIVES

- Pregnant patients who present with a chief complaint of palpitations but have a normal ECG may be sensing their increased stroke volume, higher resting heart rate, or may be having premature atrial contractions (PAC's) which are more frequent in pregnancy (50% of pregnant women affected).
  - Treatment: provide reassurance, no intervention needed.
- In this case, the ED physician went to labor and delivery to treat the patient.
- When leaving the ED to see a sick patient in another part of the hospital, think carefully about what you will need to optimize care and consider taking the following with you:
  - Physical items such as US machine, medications, and equipment.
  - ED personnel such as ED pharmacist, tech, or ED nurse.

CorePendium chapter - Tachydysrhythmias