Fetal tachycardia at 220 bpm is detected incidentally at 39 2/7 wks (no hydrops present), and the child is delivered by urgent c-section. Pedi cardiology is consulted, SVT is confirmed, and bolus adensine 0.1 mg/kg is given urgently via UVC (see arrow for time point). The strip is below. (FYI this case just occurred on 5/24/11.)

1) Did this child convert to sinus rhythm with adenosine?
2) What is the specific type of SVT in this case?
3) What, if any, other treatment is needed urgently?

Solution

1) Did this child convert to sinus rhythm with adenosine?
   - While the ventricular rate decreased suddenly—the adenosine blocks the AV nodes, so it ALMOST ALWAYS drops the heart rate unless you are dealing with ventricular tachycardia--you can see that the baseline still has a sawtooth pattern, suggesting the atrial rhythm is not normal.
   - In fact, a few seconds after this rhythm strip was printed, the rhythm looks exactly like it did before the adenosine was given.

2) What is the specific type of SVT in this case?
   - When adenosine fails to convert SVT to sinus rhythm (and when you clearly gave the drug correctly, demonstrated by a brief drop in the ventricular rate), you must consider an "automatic" atrial focus. This can involve atrial flutter, ectopic atrial tachycardia, atrial fibrillation (almost unheard of in fetuses), and sinus tachycardia (from sepsis or other cause).
   - The sawtooth pattern here clearly indicates atrial flutter, with a rate of 440 bpm, with 2:1 block, so the ventricular rate was 220 bpm. When the AV node is blocked, you can clearly just see the atrial waves at 440 bpm.

3) What, if any, other treatment is needed urgently?
   - You can restore sinus rhythm by direct synchronized cardioversion (in this case, we successfully used 0.5 J/kg, or 2J) or another strategy called "overdrive pacing" (which requires special EP equipment.)
   - Here is a link to more info about pediatric atrial flutter: http://emedicine.medscape.com/article/894226-overview#showall
   - In brief, fetal atrial flutter is unlikely to recur after conversion, so this child is expected to have an excellent prognosis. Echo showed no structural defects.