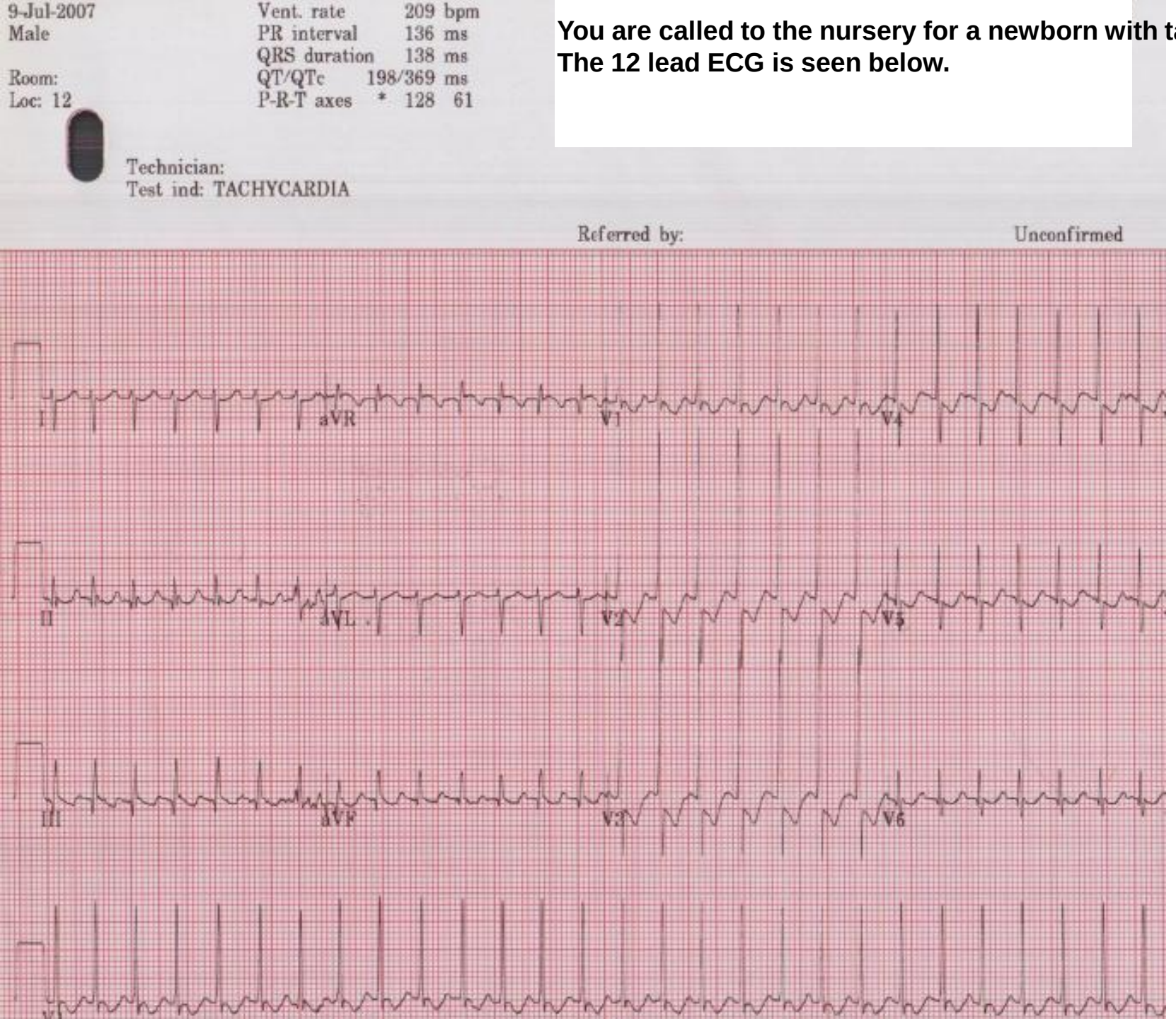
You are called to the nursery for a newborn with tachycardia. The 12 lead ECG is seen below.

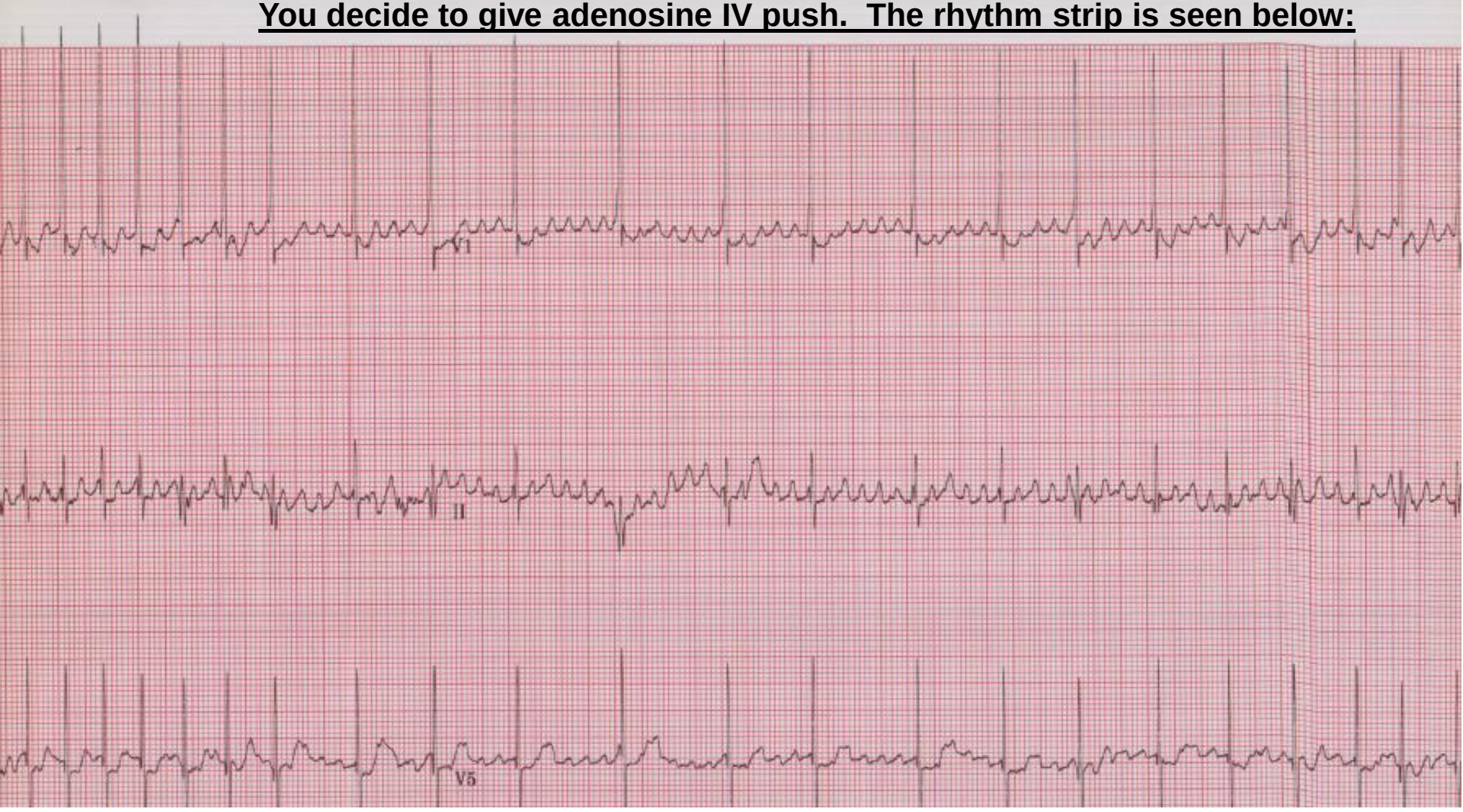


L/MEMORIAL CAMPUS ID: 9-Jul-2007 12:23:55 UMASS M

Adenosine 0.25 mg IVP via UVC

Wt = 2.45 kg

You decide to give adenosine IV push. The rhythm strip is seen below:



1) What is the diagnosis? (1 point)
2) The infant immediately goes back into tachycardia with a rate in the low 200's. Why didn't the adenosine convert this heart rhythm? Or did it? (1 point)
3) What is the next step in managing this infant? (1 point)

Solutions

- 1) Atrial flutter. Note the “saw tooth” pattern that really comes out after adenosine administration. Classic! Also note that the a-flutter rate is in the 400’s, which means that in the first ECG the patient was in a-flutter with 2:1 AV conduction (i.e. every other beat is conducted).

- 2) As a-flutter is caused by a reentrant circuit in the atria, adenosine will not convert this rhythm. Recall that adenosine works at the AV node. So, adenosine will keep the atrial signals from propagating to the ventricles, but as soon as the AV node “wakes up” those flutter waves begin conducting again. As the atrial reentry has not been interrupted, adenosine did not covert this abnormal rhythm.

- 3) The treatment of choice for atrial flutter is synchronized electric cardioversion with 0.5-1J/kg of electricity. Often we will give babies some morphine IV to make this uncomfortable procedure more tolerable. Very good success rate and low risk of recurrence in the absence of structural heart disease.