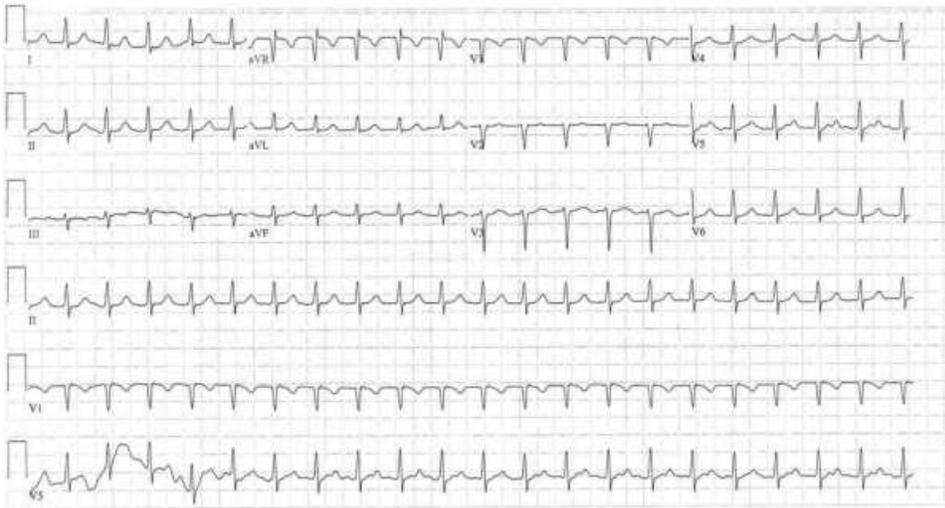


Guess the Diagnosis

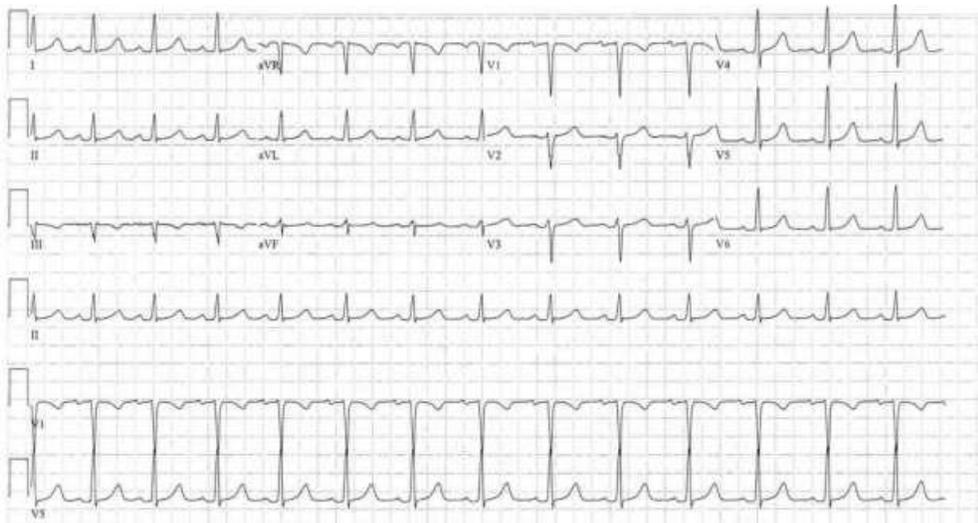
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A 41-year-old lady with a medical history significant for obesity, Alcohol use disorder, Cocaine use (last use was four days ago), and cardiomyopathy, with previous episodes of SVTs, presented to the ER after she suffered an eye trauma; she was found to be tachycardiac and complained shortness of breath.

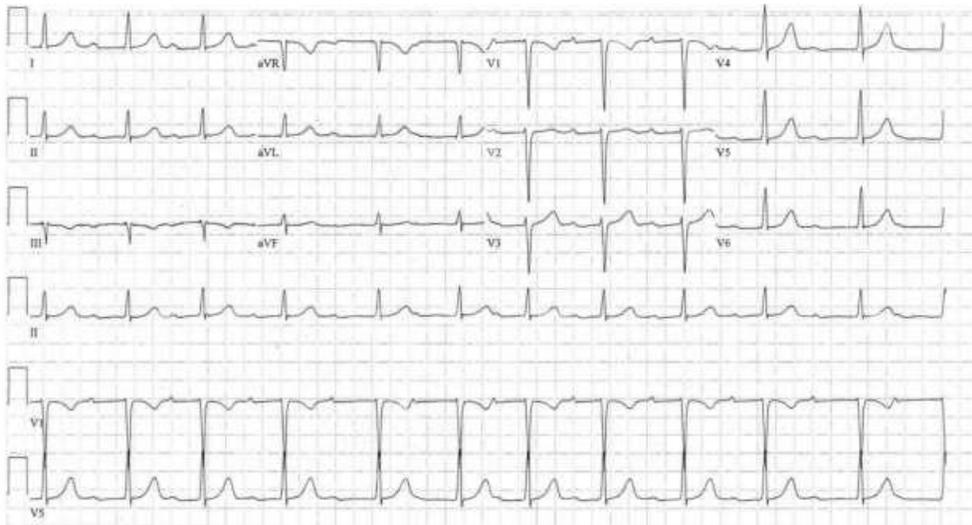
Presenting EKG:



Repeat EKGs:
EKG 1:



EKG 2:



What is the diagnosis?

- 1-Typical AVNRT
- 2-Atypical AVNRT
- 3-AVRT
- 4-Atrial flutter

Answer:

Typical AVNRT!

In this interesting case, we have a middle-aged lady complaining of intermittent palpitations associated with shortness of breath.

EKG at the time she presented to the ER can be read as follow:

Regular, narrow complex tachycardia at a ventricular rate of 127bpm; that would exclude atrial fibrillation from our differential.

Now, do we see P waves? In the presenting EKG, we see an RSR' complex in V1 that is not seen on repeat EKG (EKG1) where the patient was in sinus rhythm; suggestive of a P wave embedded in QRS complex.

Is the atrial rate more than the ventricular rate? No, that would exclude Atrial flutter (in cases of 1:1 atrial flutter, ventricular rate would be >250bpm).

A pathognomonic feature that can be seen on the patient's presenting EKG is a short RP interval of ~40ms (short RP is usually <70-90ms) that is diagnostic for AVNRT.

AVNRT physiology depends on the presence of 2 pathways around the AV node (a slow paced and a fastpaced pathway) which is called the dual AV physiology.

Looking to our patient we can see the 2 pathways in action at different points in time; EKG 1 shows a normal PR interval of 180ms indicating a conduction via the fast pathway; while EKG 2 shows a prolonged PR interval of 338ms indicating conduction via the slow pathway. Based on the way the impulse travels from the atrium to ventricle and back, AVNRT is classified into 2 types*:

Typical AVNRT or the "slow-fast" type is the commonest (>80%) form of AVNRT. It is usually initiated by an atrial premature depolarization which, by virtue of prematurity, finds the fast pathway refractory (remember, the fast pathway has a longer refractory period) and conducts to the ventricles via the slow pathway.

Atypical AVNRT or the "fast-slow" type, where the impulse travels via the fast pathway towards the ventricles and returns via the slow pathway to the atria.

Our patient case is consistent with typical AVNRT as the p wave can be seen at the end of the QRS (RSR' in V1), on the other hand patients with atypical ANVRT usually have the p wave following the QRS.

*= Less than 5% are classified as slow/slow AVNRT where the impulse follows a complex route through the AV node and the surrounding area.