

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Electrocardiogram Quiz – Case 11

A 79-year-old woman presented to the emergency department of our hospital with sustained palpitations and tachycardia for the last hour. The patient's personal history included arterial hypertension under irbesartan. At the emergency department she was hemodynamically stable. The 12-lead surface ECG is depicted below.

Questions

- What is the basic rhythm depicted on the 12-lead ECG?
- What would be your therapeutic interventions?

ARCHIVES OF HELLENIC MEDICINE 2013, 30(3):380–381
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2013, 30(3):380–381

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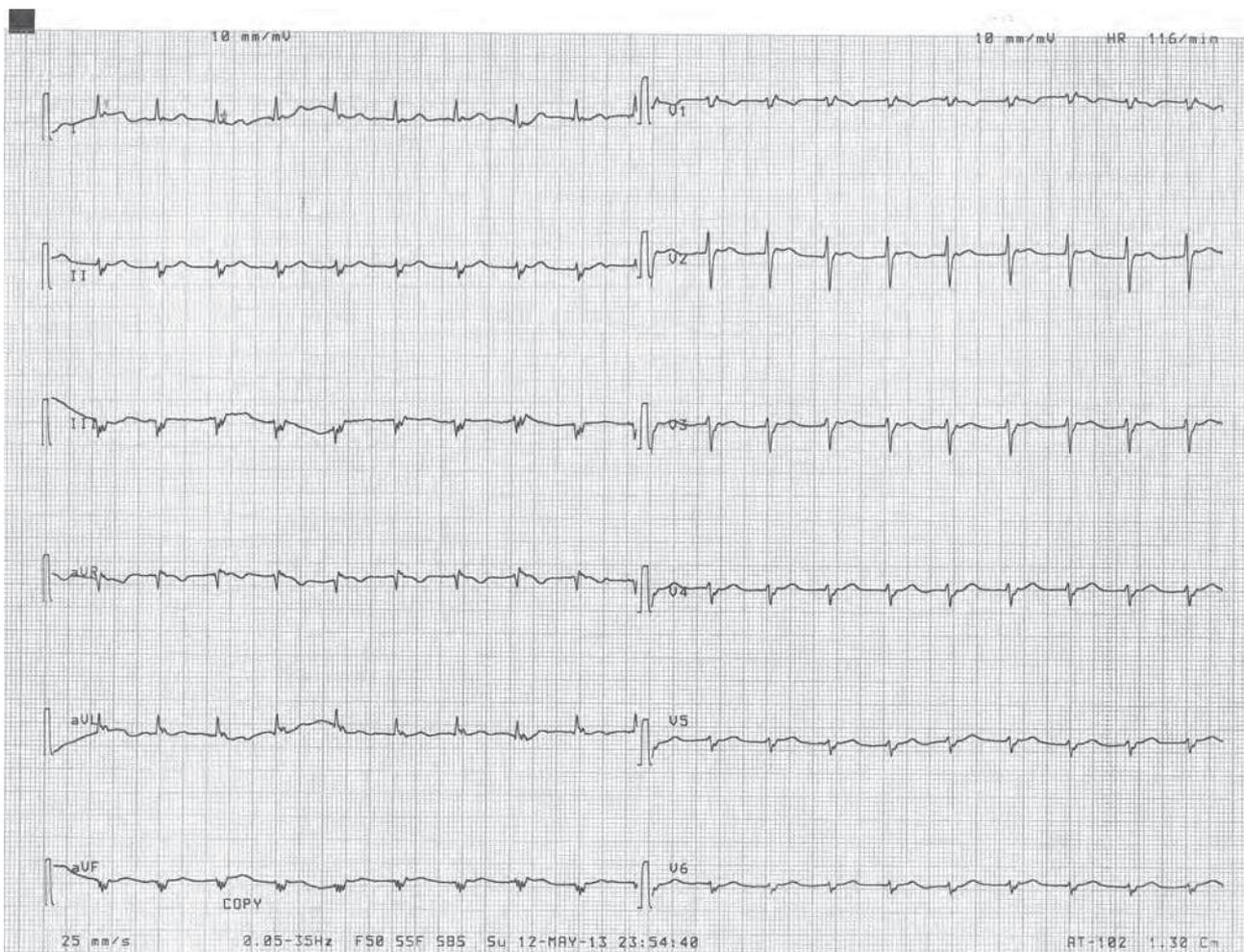


Figure 1

Comment

Atrioventricular nodal reentrant tachycardia (AVNRT) represents the most common regular supraventricular arrhythmia in humans. The main symptom is the sudden development of rapid regular palpitations. Often, no precipitant is present, although some report development of symptoms in stressful situations, consumption of alcohol or caffeine. In some cases, the onset of the tachycardia is associated with a brief drop in blood pressure, accompanied by dizziness or syncope. In patients with underlying coronary artery disease, chest pain mimicking angina may be experienced.

AVNRT occurs when a reentry circuit forms within or just next to the atrioventricular node (AV node). The circuit usually involves two anatomical pathways: The fast pathway and the slow pathway, which are both in the right atrium. The slow pathway (which is usually targeted for ablation) is located inferior and slightly posterior to the AV node, often following the anterior margin of the coronary sinus. The fast pathway is usually located just superior and posterior to the AV node. These pathways are formed from tissue that behaves very much like the AV node, and some authors regard them as part of the AV node. Typically, AVNRT is a narrow-complex tachycardia, i.e., QRS duration <120 ms, unless aberrant conduction, which is usually of the right bundle-branch type, or a previous conduction defect exists. Tachycardia-related ST depression and RR-interval variation may be seen.

Types of AVRT include slow-fast or typical AVNRT that utilizes the slow pathway for the retrograde limb, fast-slow or atypical AVNRT (5–10%) with ante-grade conduction over the fast pathway and retrograde conduction over the slow pathway, and slow-slow AVNRT (1–2%) with both ante-grade and retrograde conduction over the slow pathway.

In the presence of a narrow-QRS tachycardia, AVNRT should be differentiated from atrial tachycardia or orthodromic AV reentrant

tachycardia (AVRT) due to an accessory pathway. When a wide-QRS tachycardia is encountered and ventricular tachycardia is excluded, the possible diagnoses are AVNRT or atrial tachycardia with aberrant conduction due to bundle-branch block, AVNRT with a bystander accessory pathway, and antidromic AVRT due to an accessory pathway. A separate form of AVNRT is pacemaker-mediated tachycardia (PMT), a possible complication of dual-chamber artificial pacemakers. In PMT, the artificial pacemaker forms the anterograde (atrium to ventricle) limb of the circuit and the AV node forms the retrograde limb (ventricle to atrium) of the circuit. Treatment of PMT typically involves reprogramming of the pacemaker.

In acute episodes of AVNRT that do not respond to Valsalva maneuvers, intravenous adenosine is the treatment of choice. Continuous administration of antiarrhythmic drugs may be ineffective in up to 70% of cases. Thus, catheter ablation is the current treatment of choice.

In conclusion, recognition of the various types of AVNRT is important, in order to expedite diagnosis and allow implementation of proper therapy.

References

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Diagnosis: Atrioventricular nodal reentrant tachycardia (AVNRT)