

Episode 39 recap

Problem Representation

A 50-year-old woman with hypertension presented with recurrent episodes of acute shortness of breath and palpitations, found to have abrupt onset of a regular narrow-complex tachycardia corresponding with her symptoms.

Schemas

The CPSers' schema for supraventricular tachycardia (SVT) asks three important questions - (1) is it sinus rhythm? (2) Is the QRS complex narrow or wide?, and (3) is the rhythm regular or irregular? Thanks to Ryoko Hamaguchi for her amazing illustrations!

Diagnosis

The patient's ECG demonstrated a regular narrow-complex tachycardia with a rate of 168 beats per minute. She was given adenosine, which produced a seconds-long pause followed by resumption of sinus rhythm. She was referred to cardiology and given a diagnosis of AVNRT after electrophysiologic testing.

Teaching points

- It is important to determine whether a tachyarrhythmia could be sinus tachycardia, as this most often represents a *physiologic* response to some other condition (e.g., sepsis, hypovolemia). Rarely, sinus tachycardia can be apparently “inappropriate”, as in the postural orthostatic tachycardia syndrome (POTS)¹ or inappropriate sinus tachycardia² (IST) syndrome.
- Atrioventricular nodal reentrant tachycardia (AVNRT) and atrioventricular reciprocating tachycardia (AVRT) are the two most common narrow-complex regular tachyarrhythmias³. AVNRT occurs due to an abnormal circuit involving the AV node and atrial tissue, whereas AVRT results when a reentrant loop utilizes an abnormal bypass track connecting the atria and the ventricles. While it can be difficult to distinguish between these entities on the surface ECG, AVNRT is far more common in adults.
- The initial management of undifferentiated SVTs can provide clinicians with important diagnostic information. In hemodynamically stable patients, vagal maneuvers (see the “modified valsalva”⁴ from the REVERT⁵ trial) or adenosine can be used to transiently decrease conduction through the AV node. In AVNRT and AVRT, this may cause termination of the abnormal rhythm. In other tachycardias, the transient nodal blockade can help reveal the underlying atrial rhythm and inform the diagnosis (i.e., revealing flutter waves in atrial flutter).

Clinical Reasoning Pearl

In disease processes that present with discrete episodes of symptoms (e.g., seizures, syncope, paroxysms of tachycardia), it is important to recognize that our objective diagnostic tests can perform poorly when symptoms are not present.

For example:

The patient in this episode had completely unremarkable evaluations between episodes.

References

1. Benarroch EE. Postural tachycardia syndrome: a heterogeneous and multifactorial disorder. *Mayo Clin Proc.* 2012 Dec;87(12):1214-25.
2. Olshansky B, Sullivan RM. Inappropriate sinus tachycardia. *J Am Coll Cardiol.* 2013 Feb 26;61(8):793-801.
3. Link MS. Clinical practice. Evaluation and initial treatment of supraventricular tachycardia. *N Engl J Med.* 2012 Oct 11;367(15):1438-48.
4. https://www.youtube.com/watch?v=8DIRiOA_OsA
5. Appelboam A, Reuben A, Mann C, Gagg J, Ewings P, Barton A, Lobban T, Dayer M, Vickery J, Bengier J; REVERT trial collaborators. Postural modification to the standard Valsalva manoeuvre for emergency treatment of supraventricular tachycardias (REVERT): a randomised controlled trial. *Lancet.* 2015 Oct 31;386(10005):1747-53.