

# ECG CLINIC

## Going on a fast track

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### Vignette

A 47-year-old elderly woman presents herself at the emergency department with “palpitations and shortness of breath.” Her electrocardiogram (ECG) was taken (Figure 1). The tracing shown in Figure 2 was obtained on the same patient 25 minutes later after a therapeutic intervention.

### Questions

- 1) What are your electrocardiographic and clinical diagnoses?
- 2) What is the mechanism thought to be responsible for this syndrome?

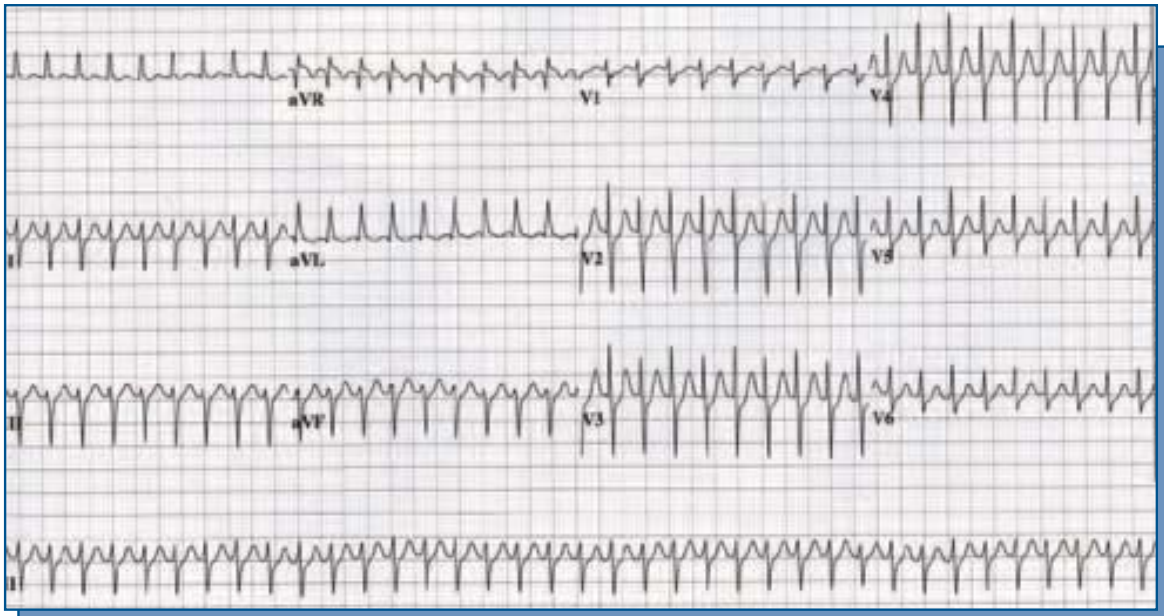


Figure 1

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## Answer

1) The first ECG (Figure 1) shows tachycardia at a rate of 223 beats per minute with narrow QRS complexes (80 ms). It is not possible to identify P waves: the rounded element before each QRS complex, including lead V<sub>1</sub>, is in all likelihood part of the T wave of the preceding cycle. The narrow width of the QRS complexes and the very fast heart rate are strongly suggestive of a paroxysmal supraventricular tachycardia. The second ECG shows sinus rhythm at a rate of 95 beats per minute and a short PR interval of 104 ms. The tenth cycle is originated by an AV junctional extrasystole.

2) The syndrome of short PR interval, normal QRS complex and paroxysmal rapid heart

action were first described by B. Lown, W.F. Ganong and S.A. Levine in 1952. The short PR interval has been attributed to accelerated conduction within or around the atrioventricular node. Ventricular activation would commence slightly earlier in each cardiac cycle, but this would cause no rhythm or rate abnormality, and the condition would be only an incidental and inconsequential electrocardiographic finding. However, a critically-timed atrial extrasystole may induce a local re-entry circuit responsible for the paroxysmal tachycardias. Maneuvers or medications

that effect AV nodal conduction (carotid sinus stimulation, verapamil, adenosine) usually bring about the termination of a paroxysmal tachycardia episode. **Dx**

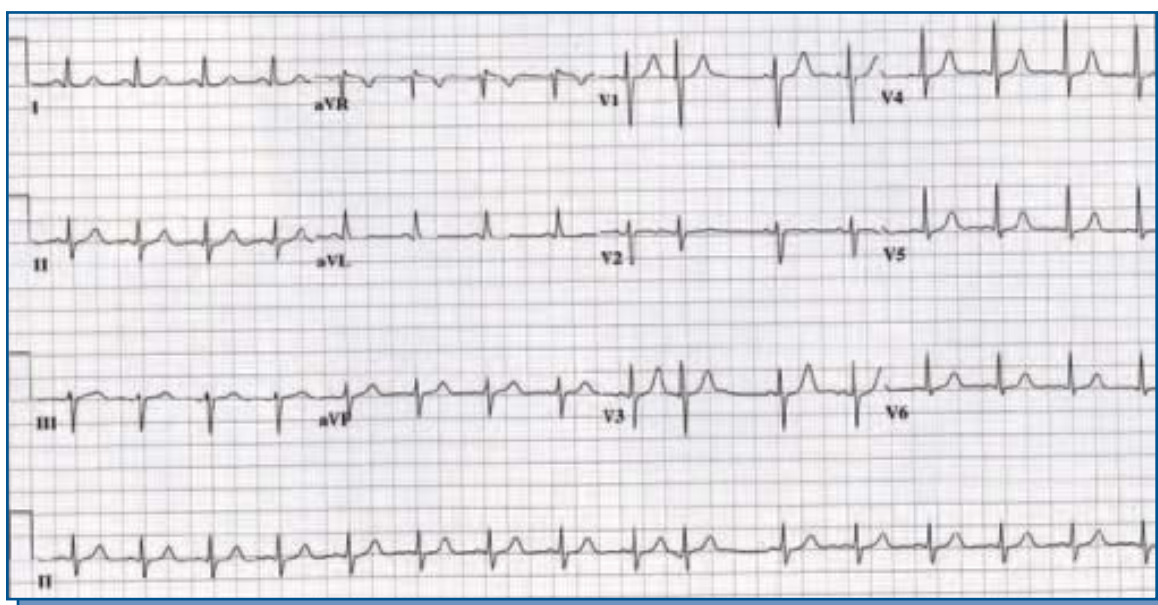


Figure 2