

# Clinical Quiz

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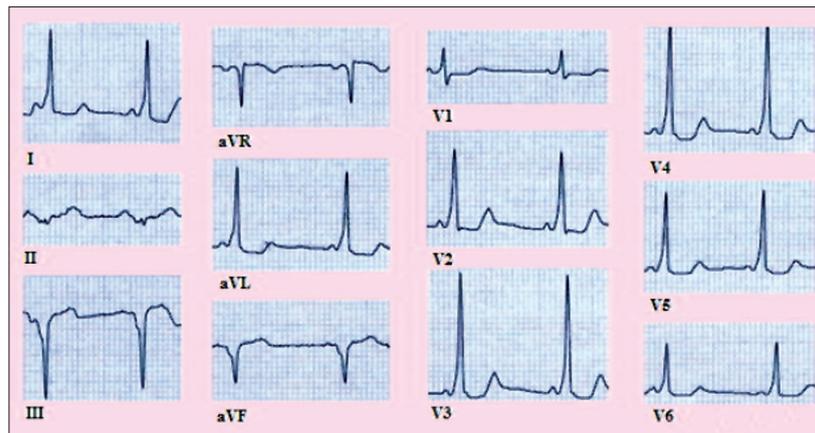
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## A 29-year-old man with bouts of tachycardia

### Clinical Presentation

A 29-year-old man presented to the emergency department due to recurrent palpitation episodes over the last 2 months.



**Figure 1** - Electrocardiography of the patient.

## Questions

1. Interpret the electrocardiography trace.
2. Mention a differential diagnosis?
3. What is the likely diagnosis?

# Clinical Quiz

## Answers

1. Sinus rhythm with a rate of 75 beats per minute. The PR interval is short at approximately 100 ms. QRS is broad even running into the P wave in all leads. Initial slurring of the QRS is evident.
2. The differential diagnosis of prominent R wave in V1 includes: right ventricular hypertrophy, previous true posterior myocardial infarction (MI), right bundle branch block, dextrocardia and Wolf-Parkinson-White (WPW) syndrome type A.
3. This is a case of WPW syndrome. This is a type A classification of this syndrome with positive delta waves and QRS complexes in the right precordial leads. This points to a left-sided location of the accessory pathway.

## Discussion

In preexcitation, an impulse originating in the atria activates the ventricles earlier than anticipated if it traversed the normal route through the atrio-ventricular (AV) node to the bundle of His. Of the various preexcitation syndromes, the most common is Wolff-Parkinson-White (WPW) syndrome. Emergency physicians should be familiar with this syndrome and the proper treatment of it's association with arrhythmias to avoid unnecessary morbidity and mortality. The underlying defect in WPW syndrome is the presence of an accessory pathways (AP) consisting of a myocardial connection at the AV junction. These are believed to be residual connections from the formation of the AV junction. The primary feature differentiating WPW syndrome from other AP-mediated supraventricular tachycardias (SVTs) is the ability of the AP to conduct antegradely (namely, from atrium to ventricles) and retrogradely. The presence of this AP allows a reentrant tachycardia circuit to be established. In orthodromic SVT, the conduction is through the AV node to the ventricles, then back to the atria via the AP. As the AP can conduct in both directions, experiencing antidromic tachycardia is also possible, in which the conduction from the atrium to ventricle occurs via the AP resulting in a broad complex tachycardia.<sup>1</sup> The most common symptoms of WPW syndrome are palpitations, dizziness, and chest discomfort. Some people with WPW do not have arrhythmias.

Wolff-Parkinson-White syndrome predisposes to the following arrhythmias: Reentrant paroxysmal supraventricular tachycardia and paroxysmal atrial fibrillation. The standard 12 lead ECG demonstrates:<sup>1,2</sup> 1. Wide QRS (to extent that PR interval is narrowed). 2. Narrow PR interval due to pre-excitation of ventricle. 3. Delta wave; slurred upstroke of QRS (hockey stick appearance).

Two types of QRS patterns were originally identified in patients with WPW syndrome: 1. Type A, due to a left sided bypass tract, in which there is a tall R wave in leads V1-V3 (namely, a positive or upward delta wave). 2. Type B, due to a right sided bypass tract in which there are QS complexes in leads V1-V3 (namely a negative or downward delta wave). The WPW pattern on the ECG may be intermittent and may even disappear permanently over time.<sup>3-5</sup>

## References

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