Alternating Ventricular Preexcitation

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A 45-year-old woman diagnosed with Wolff-Parkinson-White syndrome preferred treatment with propafenone rather than catheter ablation.

A 12-lead electrocardiogram (Fig. 1) after the drug administration showed sinus arrhythmia; alternating ventricular preexcitation; and alternating T wave inversion in the inferior leads during normal AV conduction.

Ventricular preexcitation may disappear because of decreased conduction delay over the AV node, relative to the accessory pathway; this was similar to that observed on vagal tone withdrawal. However, loss of ventricular preexcitation associated with decreased sinus cycle length was observed, which excluded the first possibility as a mechanism for intermittent preexcitation. The other mechanisms include prolongation of the refractory period (RP) of the accessory pathway (AP) due to increased vagal tone¹⁾ and linking. Linking is defined as repetitive conduction over 1 of 2 potential pathways, with persistent conduction block in the other pathway maintained by concealed retrograde conduction.²⁾³⁾ However, the alternating preexcitation cannot be attributed to linking and was most probably caused by prolongation of the antegrade RP of the AP by propafenone greater than sinus cycle length (Fig. 2).

Intermittent ventricular preexcitation is associated with a long antegrade RP of the AP and a prolonged preexcited RR interval during atrial fibrillation.⁴⁾ T wave inversion in the inferior leads occurs because of the memory effect.⁵⁾ Alternating ventricular preexcitation is a rare electrocardiographic phenomenon associated with RP of the AP greater than the length of the sinus cycle.

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Fig. 1.

Fig. 2.