

# Atrial Pacing in Wide-Complex Rhythm

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**A** 78-year-old man who had a history of nonischemic cardiomyopathy (left ventricular ejection fraction, 25%) and incessant ventricular tachycardia (VT) despite having undergone 2 ablation procedures arrived at the emergency room with recurrent syncope. Figure 1 shows his 12-lead electrocardiogram (ECG). We interrogated his dual-chamber implantable cardioverter-defibrillator (ICD) (Inogen; Boston Scientific), which was programmed in DDDR mode (dual-chamber, sensed, rate-adaptive) to the following settings: lower rate limit, 75 beats/min; upper tracking rate, 110 beats/min; upper sensor rate, 120 beats/min; rate-responsive atrioventricular-paced delay, 290 to 320 ms; ventricular refractory period, 230 to 250 ms; and VT detection zone, 150 beats/min.

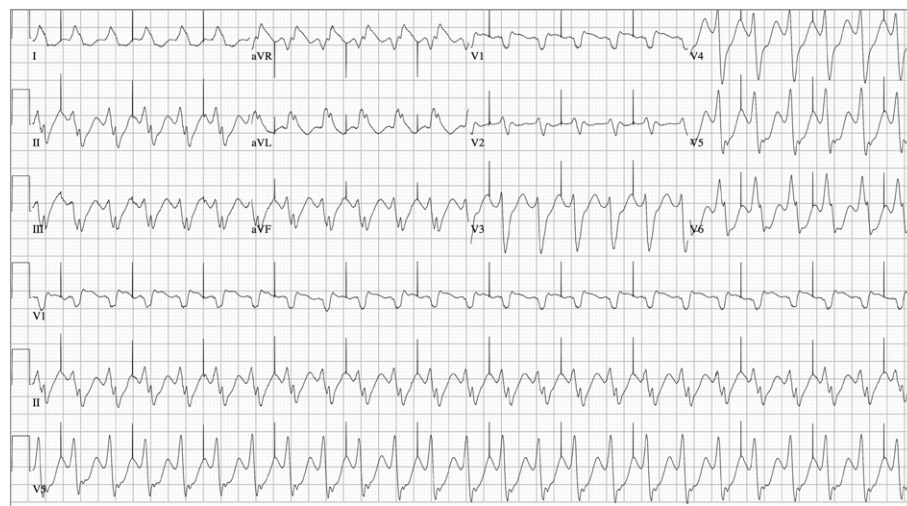


Fig. 1

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## The ECG shows which of the following?

- A) Appropriate ICD function
- B) Ventricular tachycardia
- C) Atrial tachycardia with aberrancy
- D) Atrial flutter with aberrancy

See next page for the answer.

# FOCUS ON ECGs: ANSWER #23

## Answer

### B) Ventricular tachycardia

The patient's ECG at presentation shows a notched downstroke in lead V<sub>1</sub> and an initial Q wave of >40 ms in lead aVR, which meets morphologic criteria for VT (Fig. 1).<sup>1</sup> However, the atypical behavior of the patient's ICD necessitated our ruling out other diagnoses, including supraventricular tachycardia with aberrant conduction, ICD malfunction, and inadequately programmed VT detection parameters.

Device interrogation revealed slow VT at 136 to 140 beats/min, below the threshold for VT detection (Fig. 2). Also revealed were sinus rhythm at 80 beats/min, atrial stimulus delivery at a variable rate, and occasional ventricular pacing. The underlying sinus rhythm was ignored because it fell within the postventricular atrial refractory period, triggering atrial pacing. The variable atrial pacing rate was due to a manufacturer-specific rate-smoothing algorithm designed to prevent sudden rate changes.<sup>2</sup> Because the sinus rate was slightly faster than half the VT rate, the dual rhythms slowly fell out of sync. The rate smoothing eventually enabled the ICD to sense sinus rhythm appropriately and inhibit atrial pacing. Ventricular pacing was triggered when the previous ventricular complex fell within the ventricular blanking window after atrial pacing.<sup>3</sup>

## References

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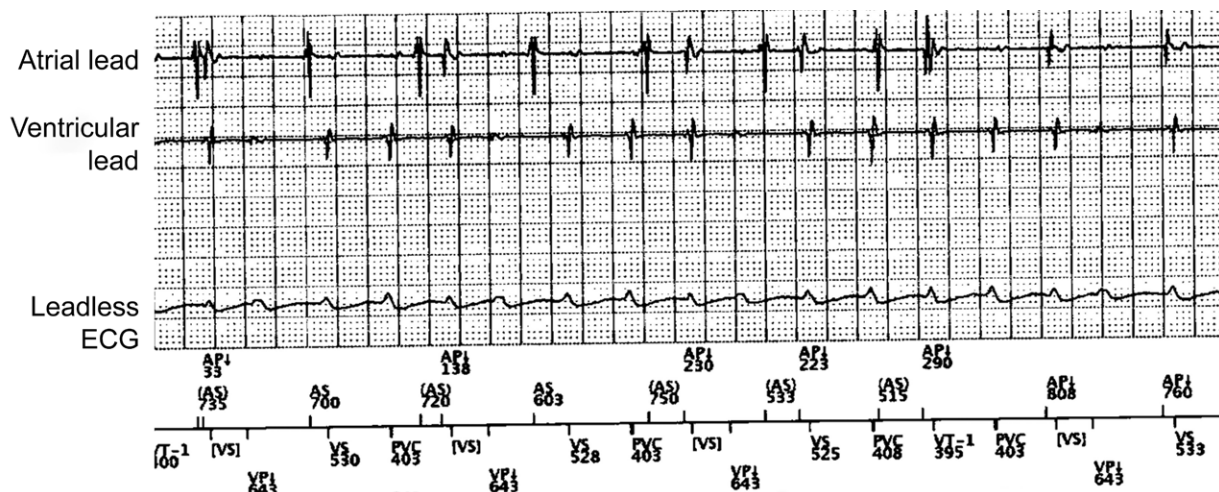


Fig. 2