

Unmasking false epilepsy: Catecholaminergic polymorphic ventricular tachycardia

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Clinical and electrocardiographic description

These are the electrocardiographic (ECG) findings of a 15 year-old male with a long term history of seizure episodes associated with exposure to physical or emotional stress treated unsuccessfully with carbamazepine for two years. The patient was referred to our cardiac electrophysiology department for further evaluation after negative work-up for epilepsy.

Physical examination was unremarkable. Resting 12-lead ECG and echocardiogram were found to be normal. The patient was referred for a treadmill test as part of the evaluation of his syncopal episodes. On the resting phase of the ergometric

test, we found sinus bradycardia and normal PR, QRS, and QTc intervals (Fig. 1). During the phase II of the original Bruce protocol, the patient presented a polymorphic ventricular arrhythmia (Fig. 2). The test was interrupted because of pre-syncope. A possible diagnosis of catecholaminergic polymorphic ventricular tachycardia (CPVT) was made based on the results of the stress test.

Points to ponder

CPVT is an unusual cause of syncope and sudden death in children and adolescents with normal QTc interval and no structural cardiac abnormalities [1]. In Figure 1, sinus bradycardia can be seen. It has been associated with this disease by several

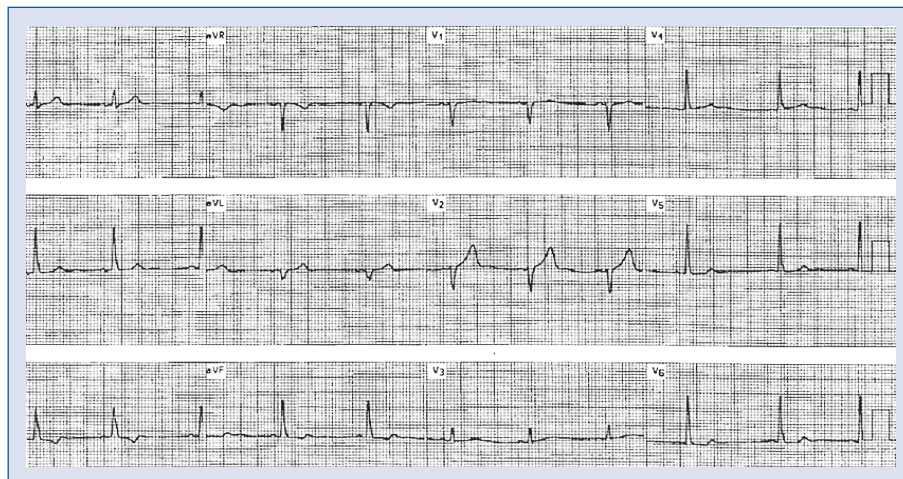


Figure 1. Rest phase of the treadmill: electrocardiogram recording.

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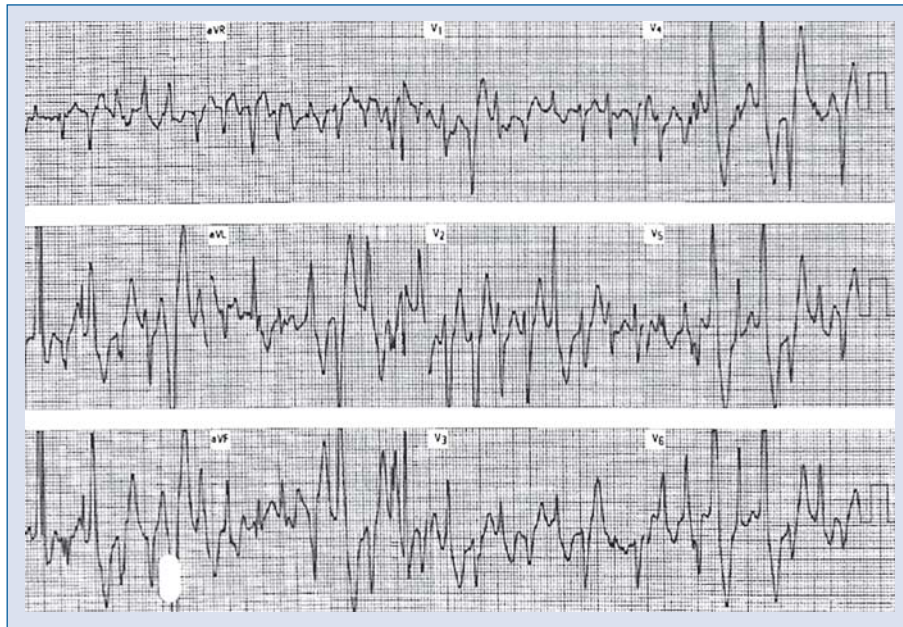


Figure 2. Phase II Bruce original: electrocardiogram recording.

authors [2]. The traces in Figure 2 show polymorphic ventricular tachycardia with alternation of the axis (greater than 180°) on a beat-to-beat basis and short coupling of intervals during the second phase of the stress test with no widening of the QT interval. All these features suggest a diagnosis of CPVT, misinterpreted as epilepsy crisis [3].

The stress test has been reported to be useful for the diagnosis of CPVT. However, other diagnostic resources such as cardiac Holter monitoring and isoproterenol challenge can also be used. In this particular case, the stress test was able to elucidate the diagnosis in a patient chronically treated for ‘seizure crises’ triggered by physical or emotional stress.

All this data underlines the value of the anamnesis in the work-up of patients with syncope, and its differentiation from epileptic crisis.

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