Ventricular tachycardia with regular capture beats

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DESCRIPTION

A 30-year-old man presented with a 1-day history of sudden onset palpitations. He was haemodynamically stable. Twelve-lead electrocardiography showed wide complex tachycardia with right bundle branch block and left superior axis (figures 1 and 2). Every two wide complex beats were followed by a narrow complex beat and this cycle was repeating. Careful inspection revealed that narrow complex beats were having fixed relationship to wide complexes and among themselves, but there was atrioventricular (AV) dissociation. The patient's echocardiographic examination was normal. He was reverted to normal sinus rhythm with DC cardio V150 Joules. Before direct current (DC) cardioversion, verapamil and β -blockers tried but not successful.

These narrow complexes were capture beats^{1 2} as they were same as sinus beats (in having a qR in V1) when the patient was in sinus rhythm after treatment (figure 3). Ventricular tachycardia (VT) localisation was idiopathic left ventricular VT from posterior fascicle,³ but regularity of capture beats was the one point that made us doubt our diagnosis. The only explanation we can offer is that patient might be having dual AV node physiology

or re-entry occurring at junction. The narrow complex beat may be conducting via the one pathway (interval between preceding wide QRS beat and narrow QRS beat is shorter than the interval between narrow QRS and following wide QRS beat best seen in V1) but at the same time the other site of the circuit is refractory, so re-entry abolishes and V happens with wide QRS. Again after two V's this cycle reappears. Response to DC shock

Learning points

- ▶ Ventricular tachycardia (VT) can rarely demonstrate regular capture beats.
- ▶ Fascicular VT is amenable to radiofrequency ablation.
- ▶ The diagnostic tetrad of idiopathic LV VT is a) Induction with atrial pacing, b) RBBB with LAD on ECG c) Structurally normal heart and d) verapamil sensitivity.
- ▶ Focal re-entry is principal mechanism of idiopathic LV VT.

Figure 1 Six-lead ECG showing ventricular tachycardia with regular capture beats and left axis deviation.

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Figure 2 Six precordial leads ECG showing right bundle branch block ventricular tachycardia with regular capture beats having qR in V1.

Figure 3 Twelve-lead ECG after conversion to sinus rhythm with inferior axis and qR in V1.

confirms re-entry as a mechanism. Cardiac MRI of the patient was normal proving VT with structurally normal heart. This patient underwent electrophysiological studies which showed fascicular VT and successfully ablated. Although unexplainable, AV node did not demonstrate re-entry.

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