Short QT syndrome and idiopathic ventricular tachycardia in a 28-year-old young man: a potential disease-specific link?

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Short QT syndrome has been associated with both atrial and ventricular arrhythmias and life-threatening events. However, little is known about this syndrome. We introduce a healthy man with a short QT interval and left posterior fascicular ventricular tachycardia.

Clinical case

A 28-year-old man was admitted to the Emergency Department because of palpitations.[1] He suffered from paroxysmal palpitation episodes during exercise, especially while swimming. Physical examination upon admission was unremarkable, supine heart rate of 128 b.p.m. and the blood pressure at presentation 120/80, but the electrocardiogram (ECG) demonstrated wide QRS complex tachycardia with right bundle branch morphology and superior axis (*Figure 1B*). The patient had an ECG taken 1 week previously showing a short QT interval (<300 ms) with a normal QRS duration and an absent ST segment (*Figure 1A*). There was no family history of short QT intervals or syncope or sudden cardiac death.

Adenosine administration had no effect on the arrhythmia, which was subsequently terminated by amiodarone infusion.

Transthoracic echocardiography revealed no evidence of heart disease. No other aetiology, including hypercalcaemia, hyperkalaemia, tachycardia, hyperthermia, acidosis, and alterations of the autonomic tone, was present for the short QT interval. And nor did the patient take any drug that could shorten the QT interval. He was, therefore, subjected to invasive electrophysiological study, during which he showed short atrial and ventricular effective refractory periods (180 and 160 ms, respectively). Wide complex tachycardia was induced with programmed stimulation and was in favour of left septal ventricular tachycardia (VT) (common type; posterior fascicular). The ablation of the VT was thereafter performed successfully. After the ablation even with vigorous programmed ventricular stimulation (until S4) no arrhythmia was induced.

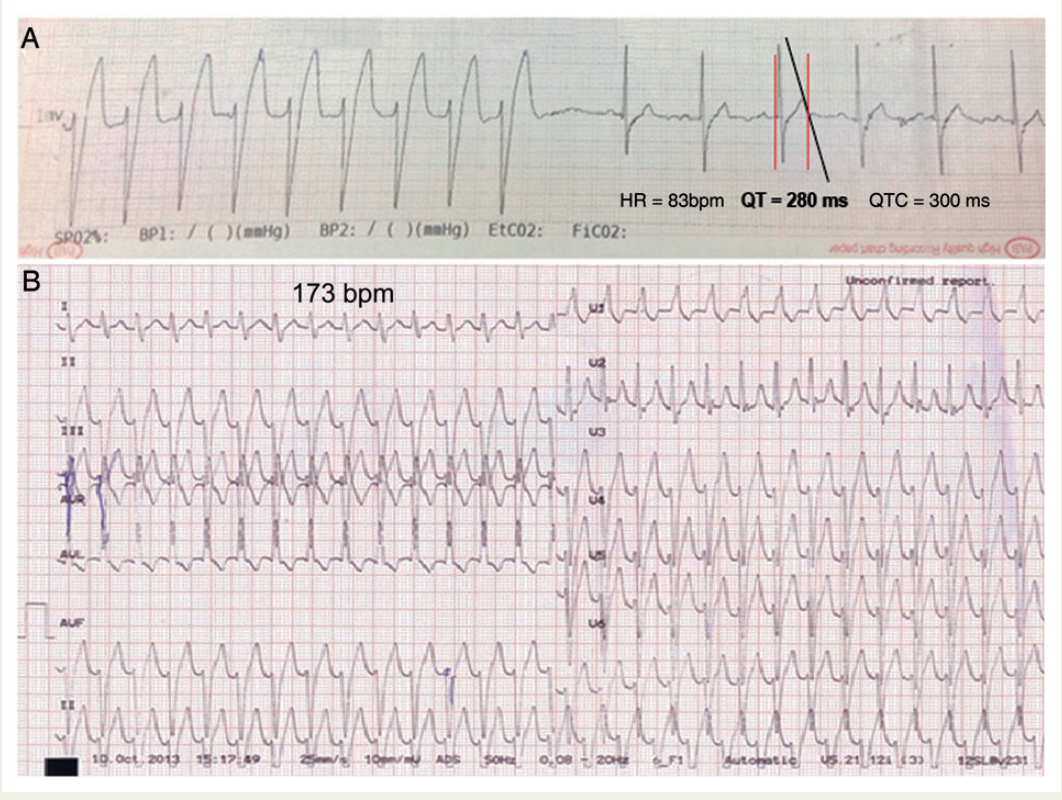

Figure 1 (*A*) Transition of Ventricular Tachycardia to Sinus Rhythm, (*B*) surface ECG of Ventricular Tachycardia.

The risk for an arrhythmic event is high in patients with short QT syndrome, triggering palpitation, syncope, pre-syncope, or sudden cardiac death due to ventricular arrhythmia.[2]

The case we introduced herein is noteworthy in that it demonstrates the association between a short QT interval and VT. To the best of our knowledge, this is the first report of this combination in the literature. In contrast to the epidemiological data available for many other ECG parameters, including long QT intervals, the precise prevalence of a short QT interval in the general population is unknown but according to a report the prevalence of QT interval <320 ms based on QTc, QTfc, and QTnc was 0.10, 0.08, and 0.06%, and the prevalence of QT interval <340 ms was 0.4, 0.3, and 0.3%, respectively.[3] In addition, left posterior fascicular VT accounts for $\sim$10% of all idiopathic VTs.

Research in short QT syndrome may confer a better understanding of the pathogenesis of more common, but still poorly understood, arrhythmias associated with this syndrome such as idiopathic VT.

Conflict of interest: none declared.

References

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