T-wave inversions with a difference

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DESCRIPTION

A middle-aged patient presented to the acute chest pain unit (ACPU), due to retrosternal chest discomfort with bradycardia at 59 beats per minute. The electrocardiograph (ECG) showed sinus bradycardia with diffuse deep T-wave inversions. Troponin T was 38.76 pg/mL (normal ≤ 14 pg/mL). Suspecting an acute coronary syndrome, the patient underwent coronary angiography, which was, surprisingly, normal. Serum thyroid stimulating hormone level, sent as part of routine biochemistry, was 304 μ IU/mL (normal ≤ 4.5 μ IU/mL) with low free thyroxine confirming severe hypothyroidism.

On retrospective examination of the ECG (figure 1), we noticed low voltage QRS complexes and QTc prolongation (640 ms by Bazett's formula). Another strip (figure 2) revealed polymorphic ventricular premature contractions with varying axes, couplets and triplets with varying QRS voltages.

Interestingly, all these electrocardiographic findings have been reported in patients with hypothyroidism, including Torsades de Pointes.^{1 2} The patient was started on replacement thyroxine, reminding us lucidly of this uncommon cause of T-wave inversions on the ECG and the need for routine thyroid evaluation.

Figure 1 Low voltage QRS complexes in limb leads and prolonged QTc.

Figure 2 Polymorphic ventricular contractions—one couplet and one triplet.

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Learning points

- ▶ Hypothyroidism, apart from being associated with sinus bradycardia and low voltage QRS complexes, can also manifest as prolongation of action potential duration, prolongation of QTc interval and even malignant arrhythmias such as Torsades de Pointes.
- ▶ In view of the myriad presentations of hypothyroidism and its associated manifestations pertaining to the cardiovascular system, it may be prudent to screen for it routinely by biochemical evaluation, irrespective of the presence or absence of classical clinical features.

Contributors AL worked up the case and wrote the case report. AGA conducted the literature search and formatted the images. OKG reviewed the entire report and critically appraised it with his comments, which were incorporated by AL.

Competing interests None declared.

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