A 54-year-old man who was admitted to the hospital with acute cholecystitis developed fever (40°C) and tachycardia. His medical history was significant for hypertension. An ECG revealed sinus tachycardia, incomplete right bundle-branch block, and downsloping (also known as coved-type) ST-segment elevation in leads V₁ and V₂ (Figure 1) with T-wave inversion, consistent with a type 1 Brugada pattern. His cardiac biomarkers were normal, and these ECG changes resolved completely after resolution of the fever with antipyretic agents. The ECGs performed before (Figure 2) and after (Figures 3 and 4) the onset of fever induced the Brugada pattern showed incomplete right bundle-branch block without any Brugada-type changes. Because there was no personal or family history of presyncope, syncope, or sudden cardiac arrest, he was managed conservatively. This patient has done well 2 years after discharge.

The Brugada ECG pattern is characterized by right bundle-branch block and an elevation at the J point that is >2 mm, with a slowly descending ST-segment in conjunction with flat or negative T waves in leads V₁, V₂, and sometimes V₃. These ECG changes are often dynamic and can be unmasked by fever, sodium channel blockers, tricyclic antidepressants, cocaine, and electrolyte abnormalities. Brugada syndrome is diagnosed when these ECG changes are associated with a personal history of syncope, inducible polymorphic ventricular tachycardia, or ventricular fibrillation or a family history of sudden cardiac death.

Approximately 25% of cases of Brugada syndrome are caused by mutations in the cardiac sodium channel gene SCN5A. The mutated sodium channels result in temperature-dependent ionic changes that cause characteristic Brugada ECG patterns during fever.
Figure 4. ECG performed at 2-year follow-up, showing incomplete right bundle-branch block without Brugada pattern. Patient was normothermic at this time.

Disclosures

None.

References


Brugada-Type Electrocardiographic Changes Induced by Fever
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