Brugada-Like ECG Pattern in a Patient with Isolated Right Ventricular Infarction

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A 55-year-old female patient collapsed at home with sudden cardiac death. Upon arrival of the emergency physician, the patient was defibrillated for ventricular fibrillation (VF). After successful mechanical resuscitation, the patient was transferred to our intensive care unit requiring high-dose vasopressor support. The electrocardiogram (ECG) at presentation showed atrial fibrillation with right bundle branch block and cove-type ST segment elevation in leads V_1 and V_2, ECG abnormalities suggestive of Brugada syndrome (Figure 1). Transthoracic echocardiography showed left ventricular hypertrophy and preserved systolic left ventricular function without significant wall motion abnormalities. Right ventricular function was, however, markedly reduced. Myoglobin at presentation was 1,287 mg/l with a creatine kinase of 134 U/l and a troponin I of 0.02 ng/ml.

Because of the conspicuous ECG changes, Brugada syndrome was initially suspected and coronary angiography was delayed in order to stabilize the patient hemodynamically. During the next hours, the patient developed recurrent episodes of VF, which were refractory to amiodarone and could finally be prevented by transjugular venous pacing at 90 beats per minute. Laboratory analysis exhibited a significant rise in cardiac markers and the patient underwent coronary angiography. Coronary angiography revealed proximal thrombotic occlusion of a small nondominant right coronary artery (Figure 2a), which could be successfully recanalized (Figure 2b).

Isolated right ventricular infarction is an extremely rare event. It has been associated with unusual ECG appearances which may be misinterpreted or even missed if not suspected. Ischemia of the right ventricular free wall to the outflow tract may cause ST segment elevations in leads V_1–V_3 similar to Brugada syndrome, as in the present case. Similar Brugada-like ECG pattern may also occur in hypothermic patients or patients that have undergone mechanical resuscitation. In the literature, there have been several case reports highlighting that Brugada syndrome can be mistaken for acute myocardial infarction. This case illustrates that the reverse may also occur.

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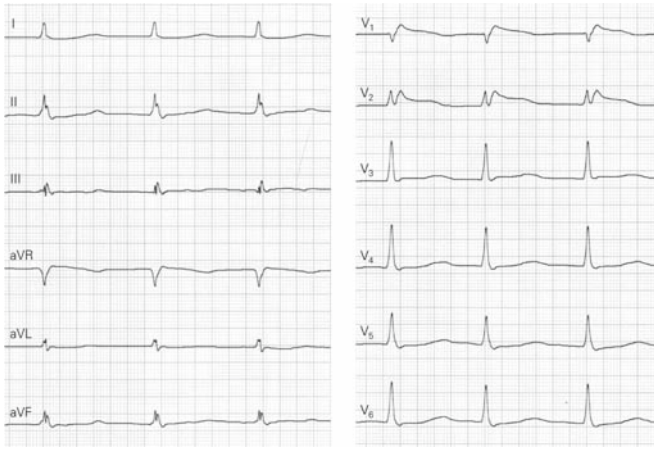
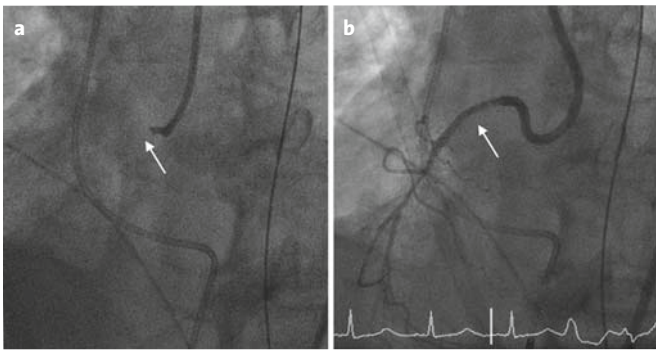


Figure 1. Twelve-lead ECG showing right bundle branch block and cove-type ST segment elevation in leads V_1 and V_2, ECG abnormalities suggestive of Brugada syndrome.



Figures 2a and 2b. a) Preinterventional coronary angiogram showing proximal thrombotic occlusion of a small nondominant right coronary artery (RCA, arrow). b) Angiographic result after recanalization and balloon angioplasty of the RCA (arrow).