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**SPOT THE DIAGNOSIS: IMAGE CHALLENGE**

## **A Febrile Patient with an Abnormal ECG**

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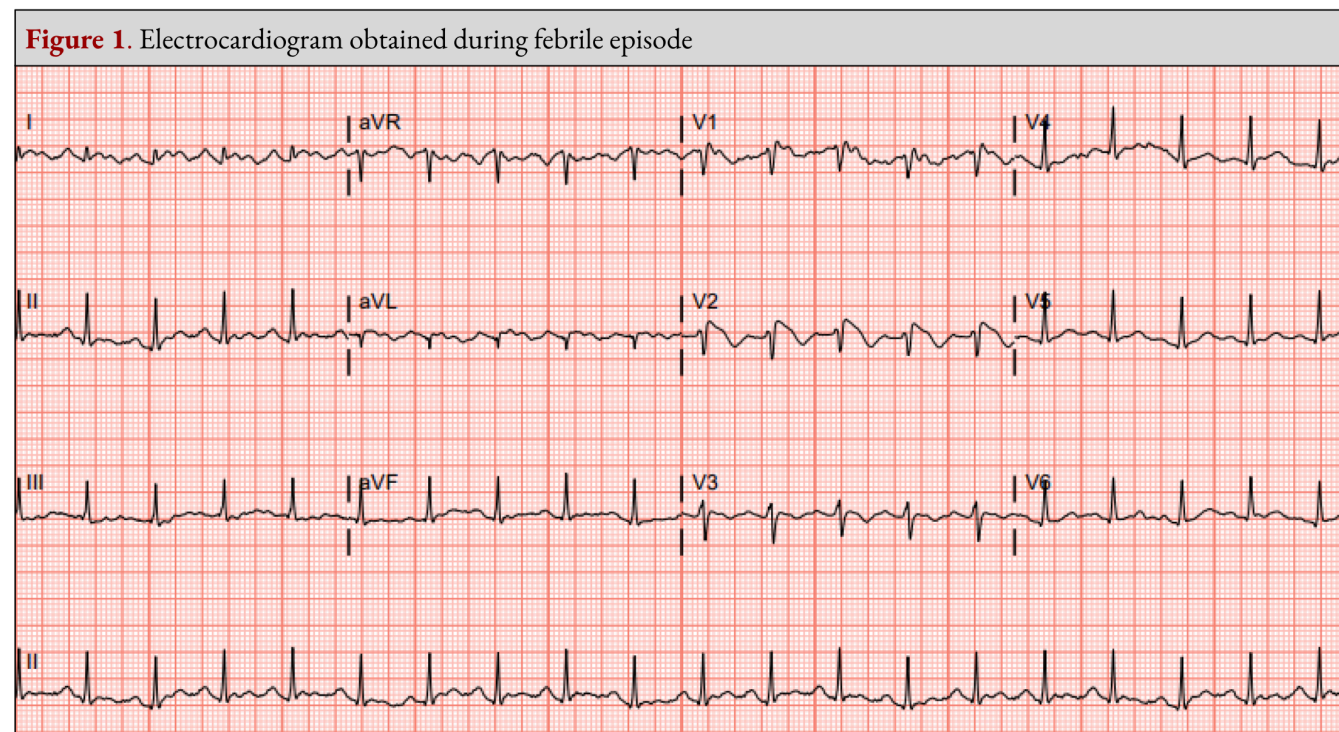
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### **CLINICAL VIGNETTE**

A 60-year-old woman presented to the emergency department with two weeks of progressive malaise, anorexia, and fever. Evaluation revealed leukocytosis, thrombocytopenia, and acute kidney injury. Murine typhus was suspected due to exposure to multiple animals and an absence of an alternative infectious syndrome. She received doxycycline empirically, and improved rapidly. Serologic results subsequently confirmed the diagnosis with a *Rickettsia typhi* IgM of >1:1024. During a febrile and tachycardic episode in the hospital, the patient's ECG showed the following (Figure 1):



**What abnormality is present in this ECG?**

- A. Wellens pattern
- B. Brugada pattern
- C. Pericarditis
- D. Early repolarization

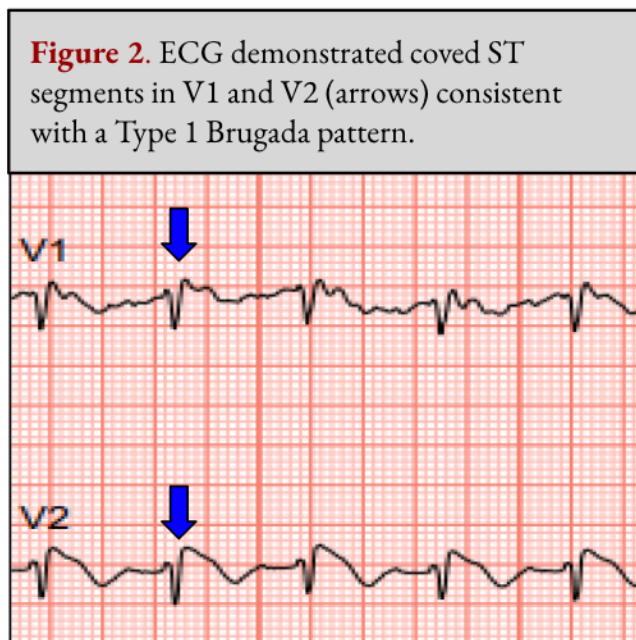
## ANSWER

B. Brugada pattern

## DISCUSSION

The ECG shows coved ST-segment elevation in leads V1 and V2, consistent with a *Brugada type 1 pattern* (Figure 1). Further history and cardiac assessment was pursued: she had no history of syncope or arrhythmia, family history of sudden death, or ventricular arrhythmias while on telemetry. Any of these features would have recategorized her as having *Brugada syndrome*, indicating a need for an implantable cardiac defibrillator or anti-arrhythmic therapy.

Brugada patterns result from congenital alterations in cardiac sodium channels. Brugada patterns may manifest spontaneously or be induced by extrinsic factors, such as fever, alterations in autonomic tone, cocaine, or prescription medications with sodium channel blocking properties (tricyclic antidepressants or class I anti-arrhythmics).<sup>1</sup> Our patient's fever was treated aggressively with antipyretics given its association with arrhythmic death in people with underlying sodium channelopathies. At discharge, the patient was counseled about her asymptomatic ECG changes, advised to treat any fevers in the future, and referred to electrophysiology.



### Why Not the Other Choices?

- **Wellens pattern:** Characterized by biphasic or deeply inverted T waves in V2–V3 without ST-segment elevation.
- **Pericarditis:** Produces diffuse ST-segment elevation with PR depression rather than localized anterior ST-segment elevation.
- **Early repolarization:** Shows concave ST-segment elevation without the coved morphology seen in V1–V2.

### CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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### ETHICS STATEMENT

The authors obtained verbal informed consent, witnessed and documented in accordance with institutional guidelines, for publication of medical information and images.

### REFERENCES

1. Brugada J, Campuzano O, Arbelo E, Sarquella-Brugada G, Brugada R. Present Status of Brugada Syndrome: JACC State-of-the-Art Review. *J Am Coll Cardiol.* 2018;72(9):1046-1059. doi:10.1016/j.jacc.2018.06.037