

Images in Cardiology

Abnormal ECG in a Structurally Normal Heart

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Case Presentation

A 63-year-old woman presented with an abnormal electrocardiogram (ECG) triggered by a murmur on physical examination. The ECG showed low atrial ectopic rhythm at rate 46 bpm with diffuse abnormal T wave and prolonged QTc at 546 milliseconds (Fig. 1). She was completely asymptomatic. She had a history of hypertension with no other cardiovascular risk factors along with normal laboratory values. Coronary angiography revealed normal coronary arteries and normal left ventricle (LV) contractility. An ECG demonstrated normal LV size and systolic function, and cardiac magnetic resonance imaging (MRI) revealed normal LV size and function with no evidence of myocardial edema, necrosis, fibrosis, or acute myocardial tissue injury of the LV. Right ventricular size and systolic function were also normal.

The main differential diagnosis of inverted T waves includes ischemia, hypertrophy, and intracranial abnormalities. As such, we did proceed with computed tomography head that showed evidence of 3.7 cm mass most consistent with planum sphenoidale meningioma. A subsequent MRI confirmed a broad-based dural mass measuring 34 × 35 × 27 mm centred in the anterior cranial fossa with a significant superolateral mass effect on the overlying bilateral frontal lobes with vasogenic edema (Fig. 2, A and B).

Dynamic ECG changes have been observed in patients with subarachnoid haemorrhage or stroke. Cerebrovascular

masses may also increase sympathetic activity and a-adrenergic stimulation with subsequent ECG changes such as ST-segment depression, profound T-wave inversion, and QTc interval prolongation.¹⁻³

Our patient presented with ECG changes secondary to the meningioma mass effect. The patient was referred to neurosurgery and is planned for surgical excision of the mass.

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Disclosures

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References

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Ethics Statement: This research has adhered to the relevant ethical guidelines.

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See page 308 for disclosure information.

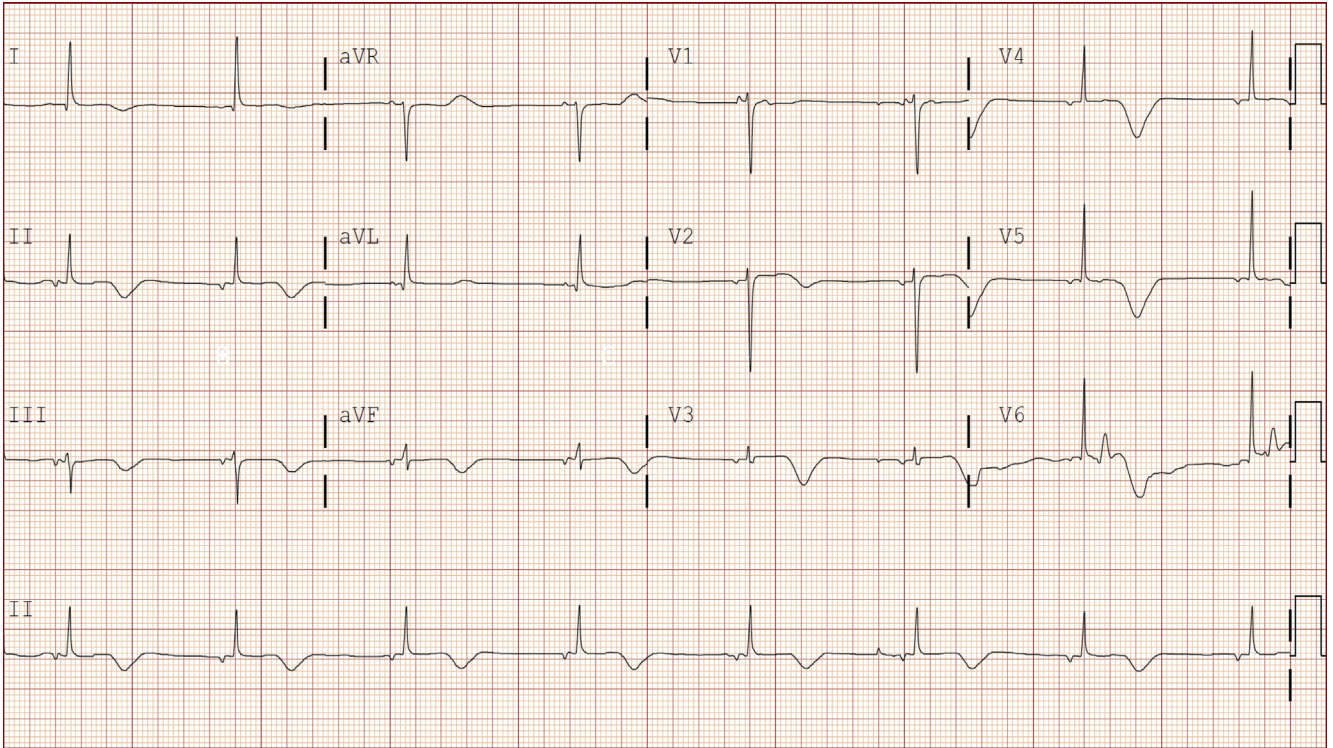


Figure 1. Electrocardiogram: low atrial ectopic rhythm at rate 46 bpm with diffuse abnormal inverted T wave and prolonged QTc at 546 milliseconds.

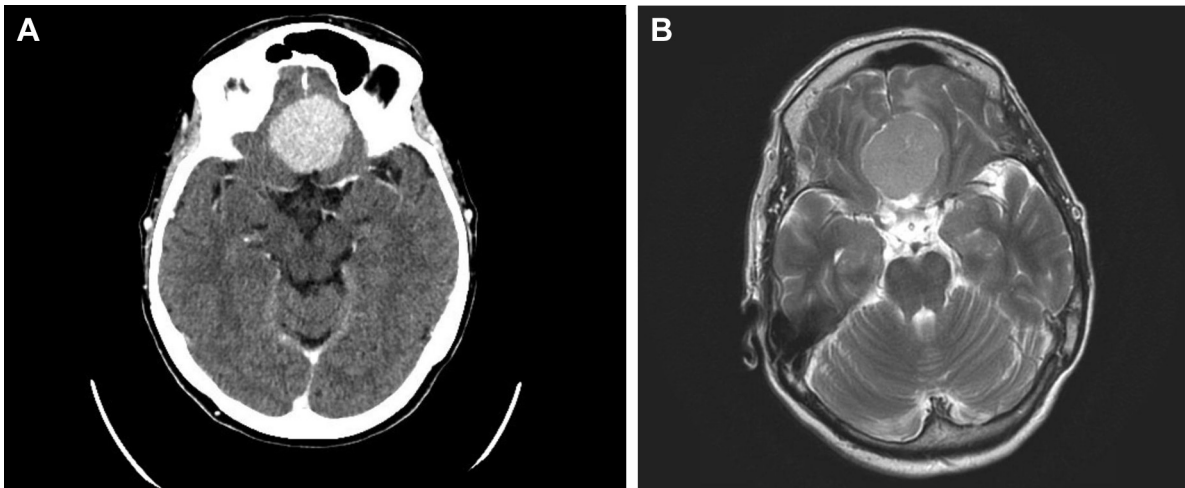


Figure 2. (A) Computed tomography and (B) magnetic resonance imaging head: broad-based dural mass measuring 34 × 35 × 27 mm centred in the anterior cranial fossa.