

Images in...

The ECG in arrhythmogenic right ventricular cardiomyopathy: ϵ -waves and anterior T-wave inversionConstantinos O'Mahony,¹ Filippo Maria Cauti,² Antonios Pantazis¹¹The Heart Hospital, University College of London, London, UK;²Department of Cardiology, University of Rome "Sapienza", Via di Grottarossa, Rome, Italy**Correspondence to** Dr Filippo Maria Cauti, filippocauti@hotmail.it**DESCRIPTION**

Arrhythmogenic right ventricular cardiomyopathy (ARVC) is an uncommon inherited cardiomyopathy caused by mutations of desmosomal protein genes responsible for cardiomyocyte electrical integrity and intercellular adhesion. ARVC is clinically characterised by:

(1) electrical instability manifested by abnormalities of the resting ECG and ventricular arrhythmias. Sudden arrhythmic cardiac death is a recognised complication.

(2) right ventricular systolic impairment, dilatation and/or regional wall motion abnormalities. Left ventricular involvement is increasingly being recognised. The electrical manifestations tend to precede the structural abnormalities.

The ECG illustrates the typical findings in ARVC: (1) anterior T-wave inversion in the right precordial leads (V1–V3), present in 85% and (2) ϵ -waves, present in 33% of ARVC patients. ϵ -Waves are reproducible low-amplitude signals occurring after the end of QRS complex and before the T-wave in the right precordial leads.

This patient had a maternal first-degree relative who was diagnosed with the condition having presented with aborted sudden cardiac death. Both the proband and the patient were found to have a desmosomal protein gene mutation (plakophilin). The patient also had right ventricular dilatation and regional wall motion abnormalities

with aneurysm formation and >1000 premature ventricular complexes in 24 h consistent with the diagnosis of ARVC.

ARVC is inherited in an autosomal dominant fashion, and first-degree relatives should be offered screening. The 12-lead ECG is an important diagnostic tool (figure 1). Double speed and amplitude traces are invaluable in the detection of ϵ -waves (figure 2).

This case illustrates the sensitivity of the ECG in detecting early electrical abnormalities in this condition.

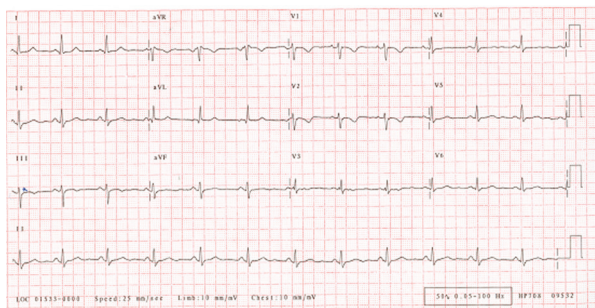


Figure 1 A standard 12-lead ECG showing T-wave inversion in leads V1 and V2.

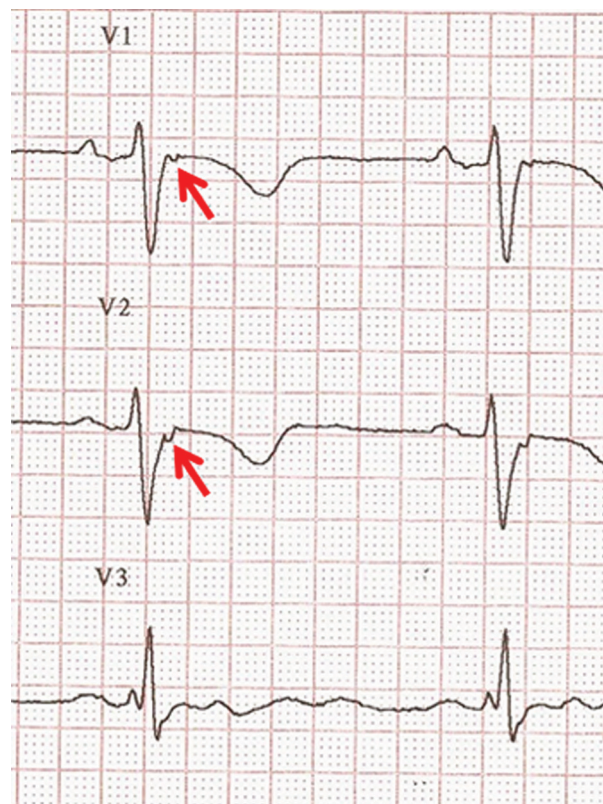


Figure 2 A double speed and amplitude 12-lead ECG (speed 50 mm/s, amplitude 20 mm/mV) demonstrate ϵ -waves (red arrows).

Competing interests None.

Patient consent Obtained.

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