

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Electrocardiogram Quiz – Case 29

A 43-year-old man with a history of dilated cardiomyopathy presented with palpitations of a few hours duration. The patient was hemodynamically stable. The initial 12-lead surface electrocardiogram (ECG) is depicted in figure 1. A second ECG of the patient half an hour after presenting to the Emergency Department is shown in figure 2.

ARCHIVES OF HELLENIC MEDICINE 2016, 33(3);431–432
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2016, 33(3);431–432

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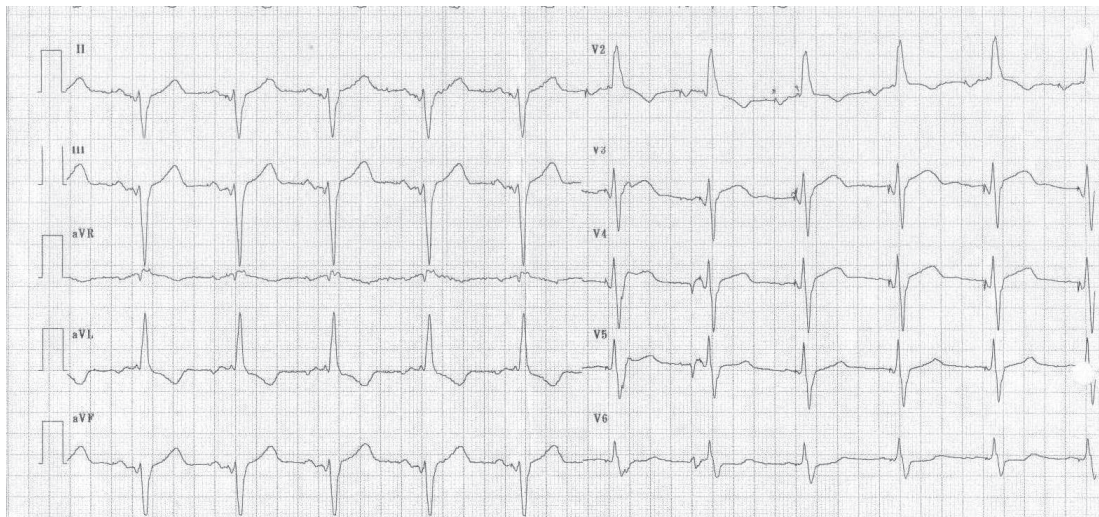


Figure 1

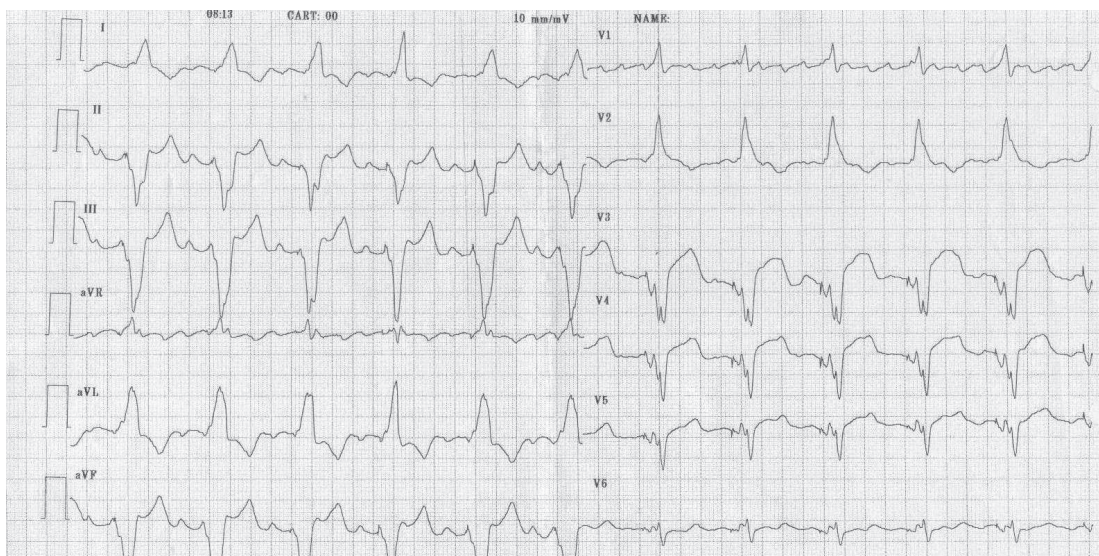


Figure 2

Questions

- What abnormalities are depicted on the 12-lead ECG (fig. 2)?
- Should the treating physician mobilize the Electrophysiology team?

Comment

Dual-chamber pacing controls the heart rate by means of an artificial pacemaker that paces, senses, or does both in the atria and the ventricles. Treatment of patients with dilated cardiomyopathy by short-AV-interval (100 ms) pacing was first reported by Hochleitner et al in 1990.

Early studies have suggested that dual-chamber pacing, especially with a short atrioventricular (AV) delay, may have an important hemodynamic benefit in patients with severe congestive heart failure. Although the exact mechanism has not been fully determined, it is postulated that the improvement in hemodynamics may be related to optimization of ventricular filling or reduction of diastolic mitral regurgitation.

In our patient's first ECG the double pacemaker spikes associated

with each complete cycle of contraction can be noted. The first spike indicates stimuli to the right atrium, while the second spike indicates initiation of ventricular contraction. In the second ECG pacing is limited to the right ventricle due to the initiation of atrial flutter.

References

- HOCHLEITNER M, HÖRTNAGL H, NG CK, HÖRTNAGL H, GSCHNITZER F, ZECHMANN W. Usefulness of physiologic dual-chamber pacing in drug-resistant idiopathic dilated cardiomyopathy. *Am J Cardiol* 1990, 66:198–202
- STAMBLER BS, ELLENBOGEN K, ZHANG X, PORTER TR, XIE F, MALIK R ET AL. Right ventricular outflow versus apical pacing in pacemaker patients with congestive heart failure and atrial fibrillation. *J Cardiovasc Electrophysiol* 2003, 14:1180–1186

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