

ECG CLINIC

A Narrow Complex Tachycardia

By L.J. Melendez, MD; and Keith J.C. Finnie, MB, ChB

Vignette

The electrocardiogram shown in Figure 1 was obtained on a 79-year-old man who underwent coronary bypass surgery earlier that day. The electrocardiogram shown in Figure 2 was taken in the same patient three days later.

Questions

What are your electrocardiographic diagnoses for the dysrhythmia shown by these recordings?

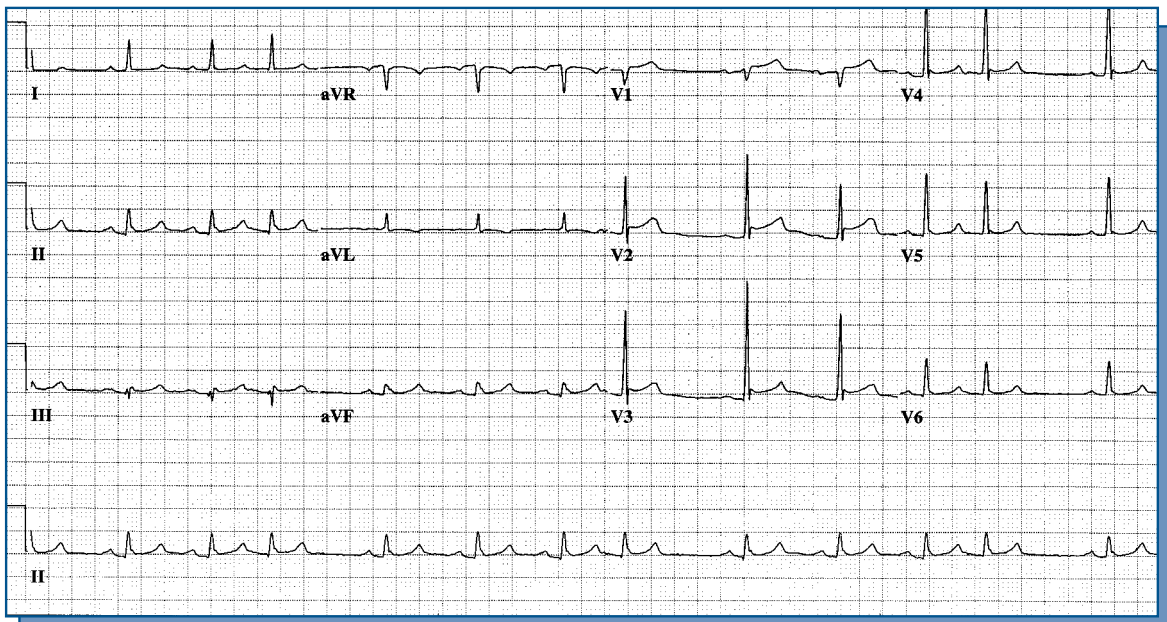


Figure 1

Dr. Melendez is professor of medicine, University of Western Ontario, and cardiologist, London Health Sciences Centre, Victoria Campus, South Street, London, Ontario.

Dr. Finnie is professor of medicine, University of Western Ontario, and site chief of cardiology, London Health Sciences Centre, Victoria Campus, South Street, London, Ontario.

Answer

The first electrocardiogram shows narrow QRS complexes in groups of four beats. In each group, the first three QRS complexes are clearly preceded by a P wave with a similar PR interval. The fourth QRS complex is premature and there is no clear evidence of a P wave preceding it. It may be either a junctional extrasystole or an atrial extrasystole concealed by the preceding T wave. The group appearance is due to the compensatory pause that follows the premature beat. Non-rhythm related findings in this electrocardiogram are the tall R waves in V₂ and V₃, which could be due to a true posterior wall myocardial infarct, and mild ST segment elevation in leads V₁ through V₃, possibly related “pericardial reaction” (often found after cardiac surgical procedures), or anteroseptal myocardial injury.

The second electrocardiogram shows a narrow QRS complex tachycardia at a rate of 137 beats per minute. Close attention to the lead II strip at the bottom of the recording shows that the rhythm is perfectly regular, with two discreet negative indentations for each QRS complex. The identification of these small negative waves in lead II with twice the rate of the ventricular complexes is

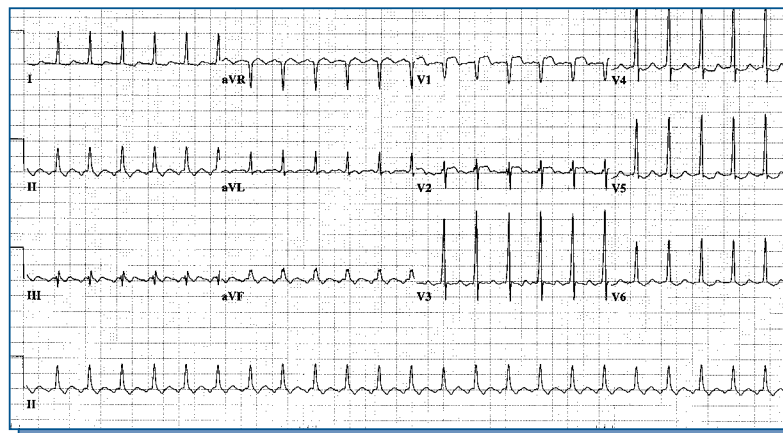


Figure 2

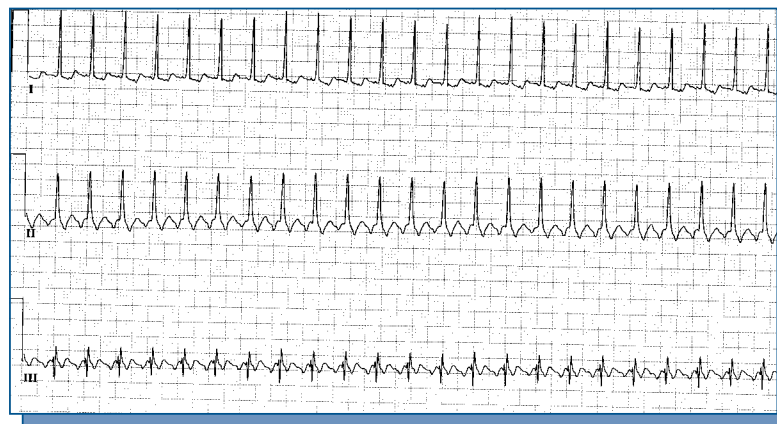


Figure 3

the key to the diagnosis of atrial flutter with 2:1 conduction to the ventricles. Figure 3 shows leads I, II and III recorded at twice the usual voltage standardization, which facilitates the recognition of the flutter waves. A non-rhythm observation is the change of the QRS complexes in leads V₁ through V₃, which may be related to different electrode positions or to an acute anteroseptal myocardial infarction. **Dx**