

## RHYTHM PUZZLE

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### Answer to rhythm puzzle on page 138

The ECG in figure 1A shows sinus rhythm, an intermediate electrical axis, and a normal PQ interval and QRS duration. Furthermore, obvious ST-segment elevation (STE) preceded by pathological Q waves in the right precordial leads, STE in leads I and aVL, and reciprocal ST-segment depression in the inferior leads all imply an acute occlusion of the left anterior descending (LAD) artery, located proximal to the first septal and first diagonal branch.<sup>1,2</sup>

The recording in figure 1B reveals a regular rhythm with broadened QRS complexes, likely a ventricular rhythm, of approximately 100 beats/min without visible atrial activation. The broadened QRS complexes ( $\pm 0.12$  s) show a right bundle branch block (RBBB) configuration and a left anterior fascicular block, which causes the electrical axis to shift leftwards. Corrected QT intervals are normal. ST-segment shifts are comparable to those in figure 1A.

Both the left anterior fascicle and the right bundle branch are supplied by septal branches of the proximal LAD artery. Ischaemia-induced bifascicular block, defined as RBBB along with left anterior (or posterior) fascicular block, has been associated with a 30% excess risk of complete heart block and should therefore be regarded as 'bad news'. Additional prolongation of the

PR interval, known as incomplete trifascicular block, is associated with imminent high-degree AV block and temporary or permanent pacing used to be recommended in these circumstances in the days prior to primary PCI.<sup>3-5</sup> In the prethrombolytic era, in-hospital mortality in these patients could be as high as 80%, which was mainly related to an extensive loss of functioning myocardium.<sup>6</sup>

In an emergency situation, a brief evaluation of the ECG depicted in figure 1B could lead to the misdiagnosis of a multifascicular conduction block caused by acute occlusion of the LAD artery. Nevertheless, and in contrary to the ECG in figure 1A, a normal P wave or other forms of atrial pacemaker activity are absent in this recording. Finally, the ECG recorded just prior to emergency coronary angiography (figure 2) shows both electrocardiographic appearances. We see the transition from the regular ventricular rhythm into sinus rhythm with subsequent disappearance of RBBB configuration and left anterior fascicular block.

In conclusion, it is most likely that an intermittent accelerated idioventricular rhythm (AIVR) originating from the left posterior fascicle caused the widened QRS complex rhythm that competes with sinus rhythm. A second, less plausible explanation would be that the atrioventricular node or bundle of His were intermit-

Answer to rhythm puzzle on page 138 (continued).

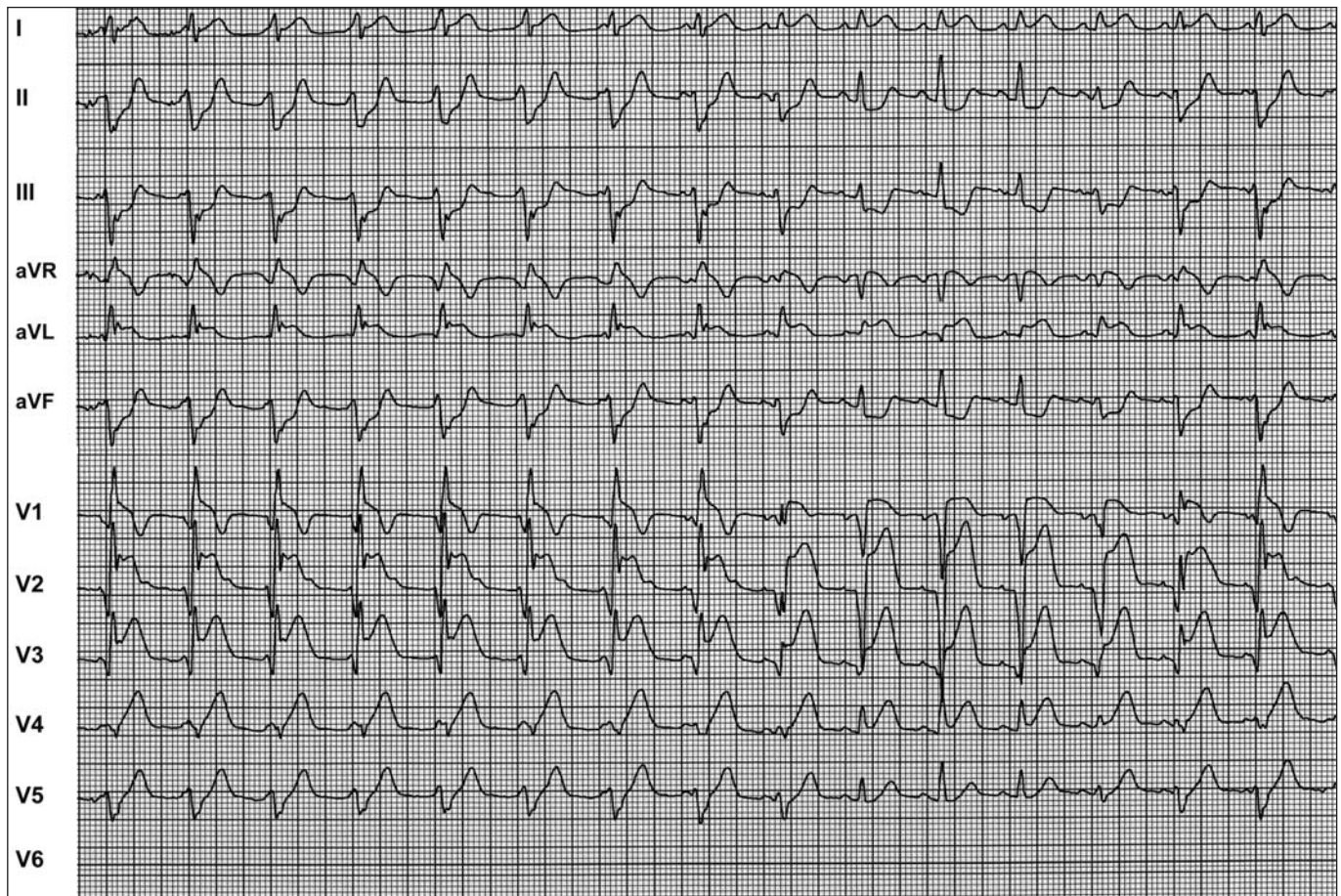


Figure 2.

tently acting as the dominant pacemaker, accompanied by ischaemia-induced conduction disturbance of the right bundle branch and left anterior fascicle, which would be an alarming sign of severe ischaemia affecting an extensive part of the myocardium.

The emergency coronary angiography revealed an occlusion of the proximal LAD artery, which was successfully treated with primary percutaneous coronary intervention (PCI). ■

#### References

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