

Country cardiograms case 48: Answer

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Figure 1 (on page 99) displays normal sinus rhythm, with a rate of 76 beats/min. PR interval, QRS duration and QT interval are normal. Abnormal Q waves are present in leads V1 through V3. Marked ST segment elevation is present in leads V1 through V4 and in lead aVL. Reciprocal ST segment depression is present in inferior leads II, III and aVF. Even without a previous electrocardiogram (ECG) for comparison, in this clinical setting, extensive acute anterior ST elevation myocardial infarction can be diagnosed with confidence.

The wide-complex tachycardia observed in this patient has the features of an accelerated idioventricular rhythm (AIVR). Figure 2 (on page 100) displays sinus arrhythmia with a mean rate of 72 beats/min, and a premature ventricular complex. The obvious interval change lies in the ST segments in leads V1 through V4, which now exhibit extreme elevation (as much as 10 mm in V3 and V4).

Accelerated idioventricular rhythm is frequently encountered in the post-thrombolysis setting and is regarded as a reperfusion arrhythmia. Given that in this patient the exacerbation of ST segment elevation immediately followed the AIVR, could this likewise be considered a reperfusion phenomenon?

Continuous ST segment monitoring sometimes indicates a transient exacerbation of ST segments during or immediately following reperfusion, before resolution of the ST segment elevation.

This may be picked up on a postthrombolysis ECG.

Alternatively, a profound rise in ST elevation postthrombolysis may be a more sinister occurrence — a marker of reperfusion injury, a sign that an extensive area of myocardium is involved or an indication that rescue percutaneous coronary intervention may be needed.

In summary, the development of AIVR postthrombolysis usually heralds reperfusion. Cautious optimism combined with a continuous appraisal of rhythm, in case more malignant arrhythmias develop, is appropriate. Something similar could be applied to the development of extreme ST segment elevation as demonstrated in this example: it probably indicates reperfusion, and that things sometimes seem to get worse just before they get better. However, remember the potential concerns about large areas of myocardium being involved and the possible need for further intervention. In other words, stay the course, stay at the bedside and consider referral.

In this case, although ST segment elevation partially resolved soon after the ECG shown in Figure 2 was recorded, the patient was referred to a tertiary centre, where he underwent coronary angiography and the insertion of 3 stents. Markedly elevated troponin levels developed, peaking at above 90 µg/L.

For the question, see page 99.

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