CLINICAL IMAGES

Sgarbossa criteria for acute myocardial infarction

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A 63-year-old man presented to the emergency department with a four-hour history of severe central chest pain. He had a history of smoking, hypertension and diabetes mellitus; a single-chamber pacemaker had been implanted for third-degree heart block four years earlier. The baseline electrocardiogram (ECG; Figure 1A) had a ventricular paced rhythm. On presentation, the ECG showed discordant ST-segment elevation (> 5 mm) in leads V2 and V3 and concordant ST-segment elevation (> 1 mm) in lead V4 (Figure 1B), which satisfied two of the three Sgarbossa criteria for acute myocardial infarction (MI) in the setting of endocardial right ventricular paced rhythm or left bundle-branch block.^{1,2}

The Sgarbossa criteria consist of ST-segment elevation of 1 mm or more concordant with the QRS complex (i.e., positive complex) in any lead (score of 5), ST-segment depression of 1 mm or more in lead V1, V2 or V3 (score of 3) and ST-segment elevation of 5 mm or more discordant with the QRS complex in any lead (score of 2).¹ In patients with right ventricular paced rhythm, the third criterion provides the highest likelihood of acute MI (positive likelihood ratio 4.41).² By comparison, the first criterion has a positive likelihood ratio of 3.1 and the second criterion a positive likelihood ratio of 1.64.² Although there is no true rule-in or rule-out score, a combination of these criteria improves the overall specificity.

This patient had a score of 7, specificity of 88%, positive likelihood ratio 4.41 ($p = 0.025$) and relative risk 2.35 (95% confidence interval 1.26–4.39).² A chart review³ provided further support for the clinical utility of the third Sgarbossa criterion in patients with right ventricular paced rhythm. Rapid recognition of acute MI remains essential, and the Sgarbossa criteria represent a helpful tool for early diagnosis.

The patient was taken within 90 minutes for coronary angiography, followed by primary percutaneous revascularization of 90% stenosis of the mid left anterior descending coronary

Figure 1: Electrocardiograms (ECGs) of a 63-year-old man with chest pain and a single-chamber pacemaker implanted for third-degree heart block. (A) Baseline ECG, showing ventricular paced rhythm. (B) ECG at the time of presentation, showing discordant ST-segment elevation in leads V2 and V3 and concordant ST-segment elevation in lead V4.

artery (Appendix 1, available at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.150195/-/DC1). Transthoracic echocardiography 24 hours after presentation showed left ventricular ejection fraction of 35% with anterior and apical akinesis. The patient was managed according to contemporary guidelines.

References

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None declared.

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