

ECG CLINIC

“To Lyse or Not to Lyse, That is the Question”

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Vignette

A 66-year-old woman presents with a history of severe chest pain which began approximately four hours earlier. She has no history of cardiac disease and no apparent contraindications to the administration of thrombolytic therapy. Her electrocardiogram (ECG) is shown in Figure 1.

Questions

- 1) Do you administer thrombolysis?
- 2) What additional investigations might be helpful in making this decision?

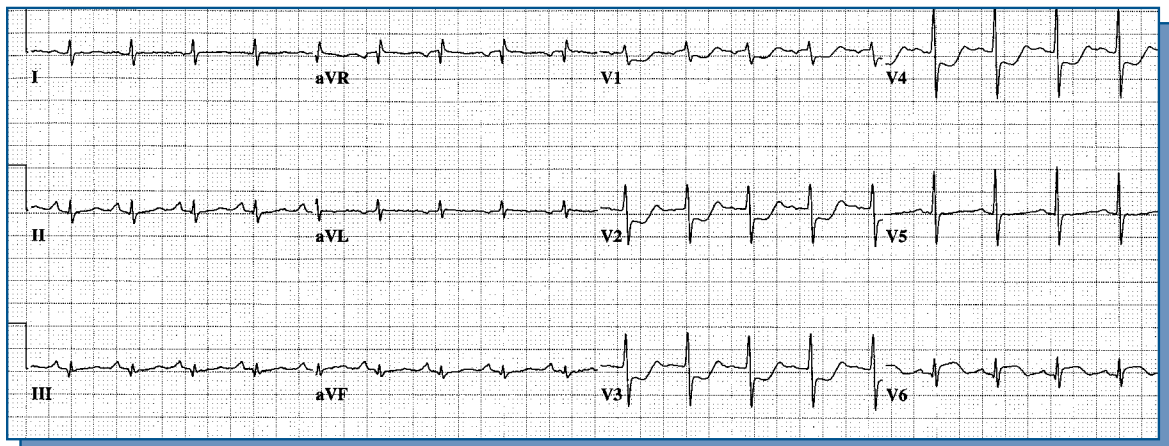


Figure 1

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Answer

1) The clinical presentation is highly suggestive of an acute myocardial infarction (MI). Reperfusion therapy (either thrombolysis or coronary angioplasty), administered early in the course of acute ST segment elevation MI, has been shown to save lives. In the setting of an acute unstable coronary syndrome associated with ST segment depression rather than elevation, however, thrombolysis has not been shown to be beneficial and may even be associated with an unfavourable risk-benefit ratio. The reason for this presumably relates to the lesser likelihood that a non-ST segment elevation MI is due to acute thrombotic occlusion of a major epicardial vessel. In this patient, the 12-lead ECG does not show ST segment elevation suggestive of acute transmural injury, although V₆ is a little suspicious. There is marked ST segment depression in leads V₁ to V₄, suggesting the possibility of anterior subendocardial ischemia or injury.

2) Anterior ST segment depression is commonly seen in patients with acute inferior MI. Sometimes referred to as a “reciprocal” change, it is now recognized that it is often a sign of acute posterior wall injury. Try turning the ECG upside down, reversing it and holding it up to the light to appreciate this. An isolated acute occlusion of the circumflex artery (as subsequently proved to be the case in this patient) may produce only posterior injury without associated inferior ST segment elevation, and present as an acute coronary syndrome with ST segment depression. Posterior ECG leads may be diagnostic. A common practice is to obtain a “15-lead ECG,” in which V₄ is right-sided and V₅ and V₆ are placed posteriorly as V₈ and V₉ (at the same level as V₆, over the angle of the scapula and the spine respectively). Figure 2 shows the 15-lead ECG obtained in this patient, demonstrating ST segment elevation in the two posterior leads “V₅” and “V₆.” On the basis of this, an appropriate decision was made to administer thrombolytic therapy. **Dx**

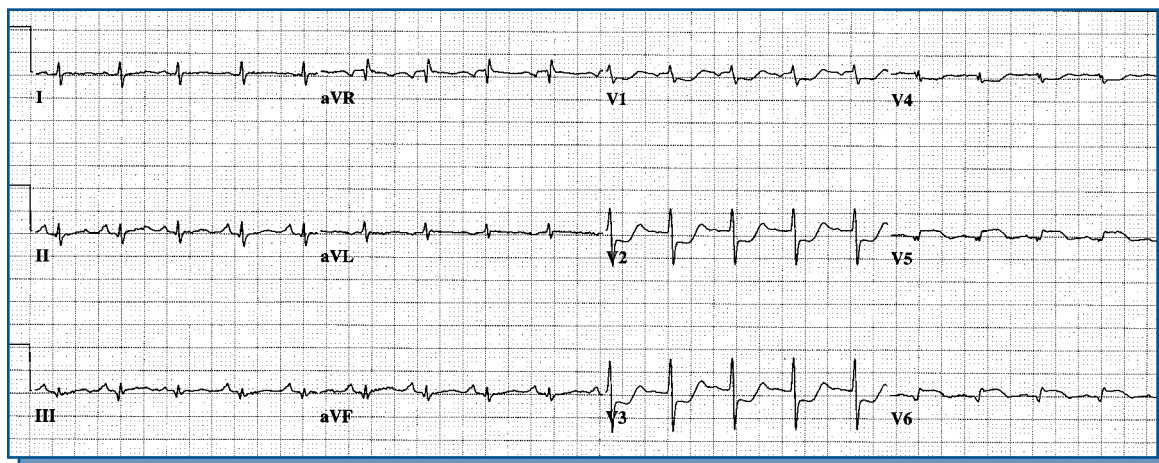


Figure 2