



University of  
Ottawa Heart Institute

# ECG of the Month

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## The Territorial Imperative

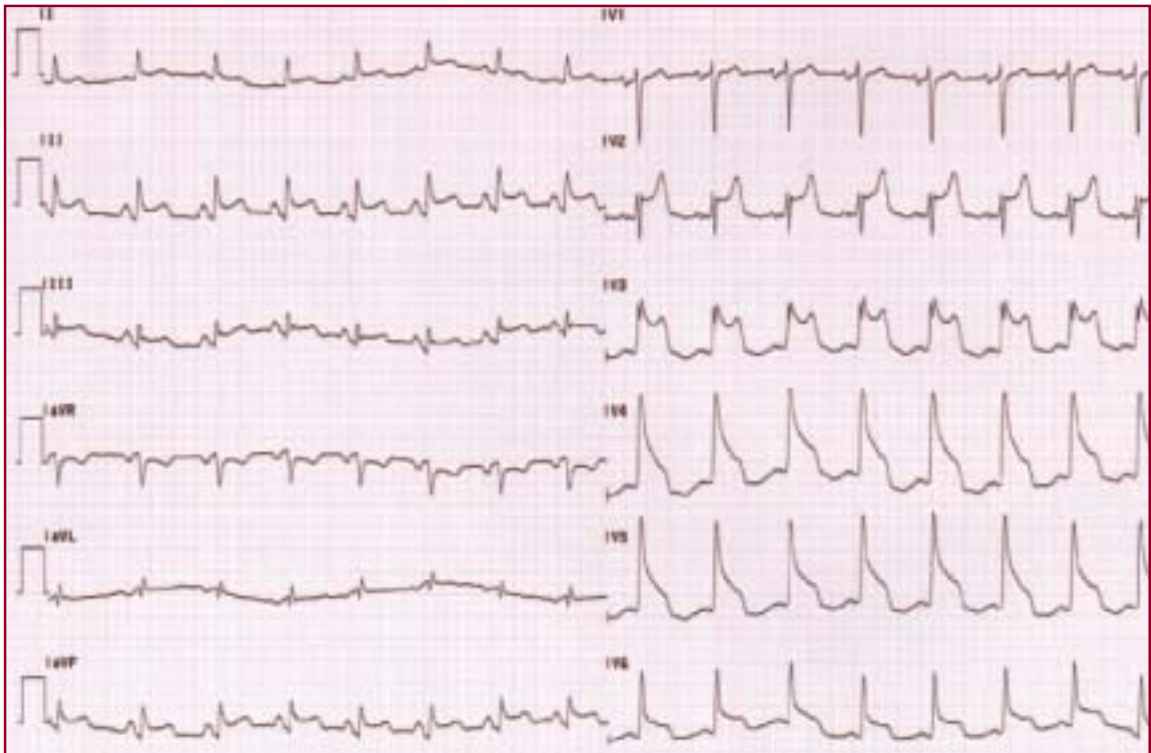
A 54-year-old man presents with chest pain of two hours duration.

*What is the diagnosis?*

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# This Month's ECG Diagnosis

This ECG shows sinus rhythm with ST elevation in V2, V3, V4, V5, V6, as well as in leads II, III and aVF. There appears to be a small amount of ST elevation in lead I as well, although this is difficult to assess in view of the wandering baseline. The ST elevation is most pronounced in the mid precordial leads with lead V2 and lead V3 showing upward concavity of the ST segment.

This ECG shows widespread ST elevation which at first glance appears to be in two coronary regions. Clearly, there is injury current on the anterior wall, but there is also ST elevation in leads II, III and aVF suggesting injury in the inferior wall.

When ST elevation is seen that does not appear to be in keeping with the distribution of a single coronary artery, one must consider a more generalized process, such as pericarditis. Pericarditis, however, would also typically have ST elevation in lead V1. Also the acuity of the story would be in favor of myocardial infarction ahead of pericarditis.

In this particular case, one must consider that the infarction does indeed involve the territory of a single coronary artery. This would

most likely be occlusion of the left anterior descending coronary artery in a situation where the LAD wraps around the apex of the heart and also supplies the distal inferior wall. This explains the ST elevation in what appears to be two territories.

An alternative explanation would be a previous occlusion of the right coronary artery with an acute anterior infarct due to occlusion of the left anterior descending that previously supplied collaterals to the right coronary artery, thus giving two territories. Nevertheless, this would involve two separate events and the LAD that wraps around the apex is much more likely.

In this particular case, the patient was given early thrombolytic therapy with rapid resolution of the ST segment abnormalities and was left with only a small antero-apical infarction and preserved left ventricular function.

Although pericarditis has typically been described with upward concavity of the ST segment, this is not a specific finding and should not rule out the diagnosis of myocardial infarction. 