A 68-year-old white man, an active smoker with hypertension and hyperlipidemia, presented to the emergency department with substernal chest pain. His chest pain began acutely 2 hours earlier, was described as intense pressure radiating to the back, 10/10 in severity with associated diaphoresis, nausea, and vomiting. Chest pain persisted despite sublingual nitroglycerin and subsequent intravenous nitroglycerin and morphine. He remained hemodynamically stable, and the results of his clinical examination were unremarkable. His initial ECG demonstrated nonspecific ST-segment changes (Figure 1). Serial ECGs remained unchanged; a posterior ECG was not performed. Initial cardiac enzymes were also nondiagnostic. He was given aspirin and started on a heparin drip given a concern for acute myocardial infarction (AMI).

Computed tomography (CT) scan of the chest with contrast was performed to rule out aortic dissection that demonstrated hypoenhancement in the left ventricle wall consistent with AMI (Figure 2). He was taken emergently to the cardiac catheterization laboratory where 100% ostial occlusion of the second obtuse marginal was found (Figure 3).

Although resting myocardial perfusion defects have been noted in AMI in retrospective studies on CT,1 here, we report a novel diagnosis of AMI on CT chest scan in a patient with otherwise nondiagnostic cardiac enzymes and ECG. Although beam-hardening artifacts can sometimes occur in this distribution and mimic this finding, newer processing techniques can reduce the prevalence of such artifacts.2 This case highlights the importance of the clinical presentation in AMI, and the performance of the CT scan may have delayed the diagnosis in this patient with classic symptoms. A posterior ECG would also have been helpful in diagnosing AMI in this territory. Although ECG-gated coronary CT angiography is very sensitive, reduces hospital stay in patients with normal ECGs and biomarkers, but results in increased radiation exposure and downstream costs,3 the prevalence and significance of this finding on CT angiogram remains unknown, requiring further investigation.

Disclosures
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References

Figure 1. ECG demonstrates nonspecific changes in the ST segment without any evidence of acute myocardial injury.
Figure 2. A, Transverse section of computed tomography scan of the chest with contrast demonstrates hypodensity (red arrow) in the lateral wall of the left ventricle indicative of myocardial ischemia. B, Coronal section of computed tomography scan of the chest with contrast demonstrates reduced uptake of contrast in the left ventricular wall (red arrow) suggestive of myocardial ischemia. C, A reformatted short-axis view of the left ventricle from the computed tomography scan shows hypoperfusion (red arrow) in the posterior wall.

Figure 3. Pre- and post-stenting cardiac catheterization films indicate total occlusion of the second obtuse marginal that is relieved with a drug-eluting stent.
Diagnosis of Acute Myocardial Infarction on Computed Tomography Angiogram
Haider J. Warraich, Craig C. Benson, Faisal Khosa and David E. Leeman

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