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
Dr Khosa receives funding as an American Roentgen Ray Society Scholar. The authors would like to acknowledge Dr Melvin E. Clouse, from the Department of Radiology, Beth Israel Deaconess Medical Center, Boston, MA, for helping with image reformatting.

References
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

Circulation. 2014;129:272-273
doi: 10.1161/CIRCULATIONAHA.113.004304
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2014 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://circ.ahajournals.org/content/129/2/272

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published
in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial
Office. Once the online version of the published article for which permission is being requested is located,
click Request Permissions in the middle column of the Web page under Services. Further information about
this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org//subscriptions/