Imaging of Intracoronary Thrombus by Multidetector Helical Computed Tomography Angiography

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A 83-year-old woman presented to the emergency department with a 2-hour history of sudden chest pain and dyspnea. An initial ECG demonstrated nonspecific ST changes, and a portable chest x-ray suggested a widened mediastinum. A thoracic multidetector helical computed tomography (CT) angiogram was obtained to assess the possibility of aortic dissection (GE LightSpeed Plus, 2.5-mm collimation with 1.25-mm reconstructions, 700-ms rotation time; 140 mL Optiray 320 nonionic iodinated contrast injected using Smartprep algorithm, pitch of 1.5:1). The CT angiogram demonstrated a low-density filling defect in the proximal left anterior descending coronary artery (LAD), which suggested a thrombus (Figure 1). Coronary angiography then demonstrated a 95% stenosis of the proximal LAD with evidence of a thrombus (Figure 2).

These findings highlight the potential utility of CT angiography in the diagnosis of an acute coronary syndrome. New multidetector, helical CT scanners with timed, rapid contrast boluses can image the chest with high resolution in a single breath-hold. In addition, multiplanar reconstructions make detailed angiographic evaluation possible and extend the utility of CT in cardiac imaging well beyond calcium scoring in electron-beam CT. Such scanners are already routinely used for the emergent evaluation of pulmonary embolism and aortic dissection. With advancements such as cardiac gating, perhaps CT angiography could be used as a screening tool in the evaluation of chest pain and help in identifying unstable thrombotic coronary lesions.

Figure 1. Thoracic CT angiogram revealing a large, low-density filling defect in the proximal LAD (arrow). AA indicates abdominal aorta; PA, pulmonary artery; LIPV, left inferior pulmonary vein; and SVC, superior vena cava.

Figure 2. Coronary angiogram (right anterior oblique cranial view) confirming a 95% stenosis of the proximal LAD with evidence of a thrombus (arrow).
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