Image Diagnosis: Thoracic Aortic Dissection and Thoracic Aortic Aneurysm

Sundeep R Bhat, MD
Gus M Garmel, MD, FACEP, FAAEM

Figure 1. Thoracic Aortic Dissection

Although plain film chest radiograph may be used to screen for a widened mediastinum (Image A) which suggests thoracic aortic dissection, computed tomography (CT) angiography or traditional angiography are gold-standard tests and should be obtained in any stable patient for whom dissection is suspected. Thoracic aortic dissection is generally classified using the Stanford scheme, although some texts and cardiothoracic surgeons still use the DeBakey classification (types I-III). Image B demonstrates dissection flaps seen in both the ascending and descending aorta (Stanford Type A—any involvement of the ascending aorta irrespective of site of intimal tear or distal extension). Complications of Type A dissections include aortic valve insufficiency, dissection into coronary vessels causing acute myocardial infarction, and dissection into the pericardial sac (Image C) causing hemopericardium and possible tamponade physiology. Type A dissection requires immediate surgical intervention. Image D shows an intimal flap in the descending aorta only (Stanford Type B). Patients with uncomplicated Type B dissections are typically managed medically, with blood pressure control by pharmacologic intervention.
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Figure 2. Thoracic Aortic Aneurysm with Rupture

Aneurysmal dilatation of the descending thoracic aorta can be seen in patients with atherosclerotic disease, as well as in patients with collagen vascular disorders like Marfan's syndrome. These images (Image A and B) demonstrate thoracic aortic aneurysm rupture with extravasation of blood into the adjacent pleural space. Risk of rupture increases with size; growth may be 0.1 - 0.4 centimeters (cm) per year; risk of rupture becomes high after reaching 6 cm in diameter. For stable patients without symptoms, computed tomography or magnetic resonance imaging at regular intervals is recommended, as is beta-blocker therapy for blood pressure control.

References