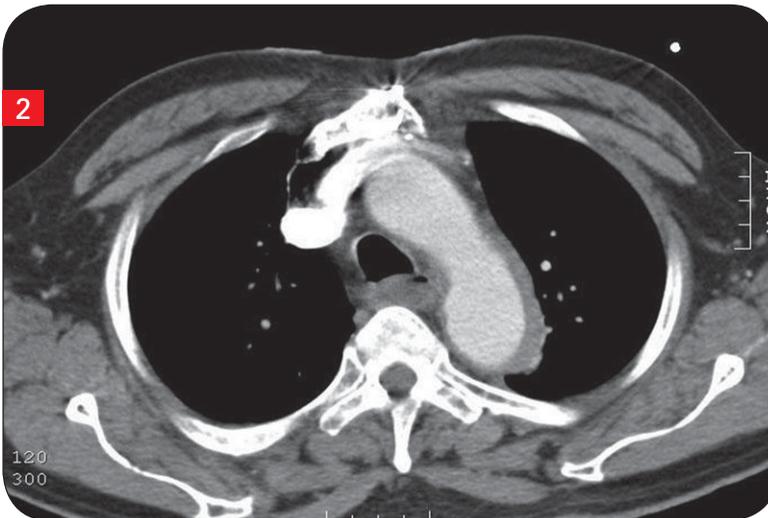
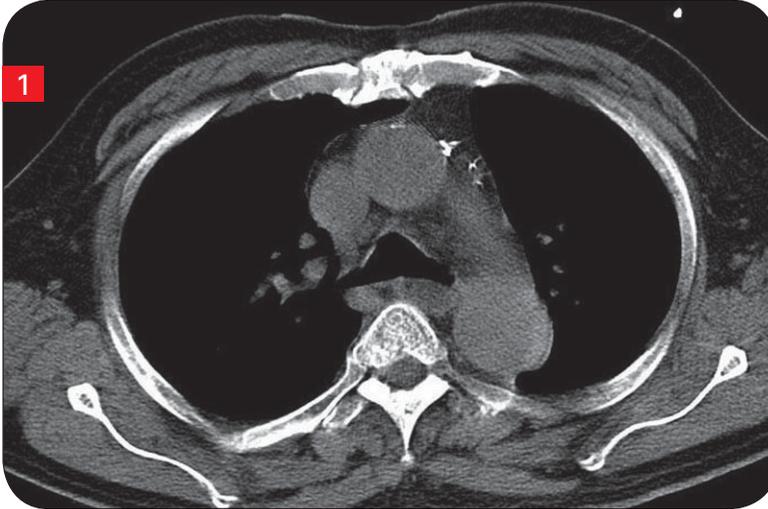


## PROBLEM

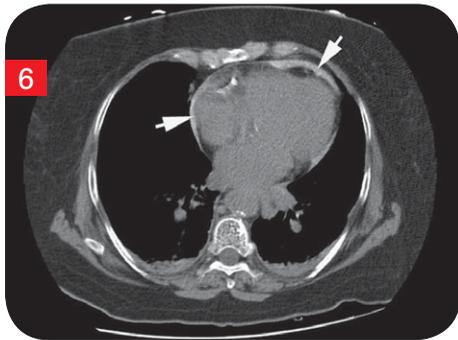
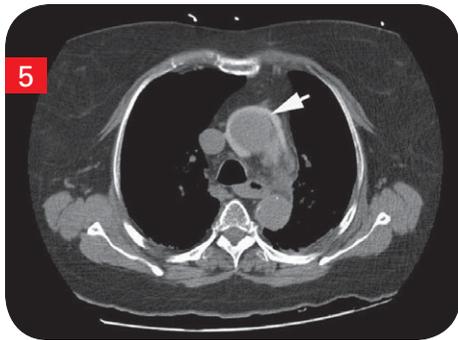
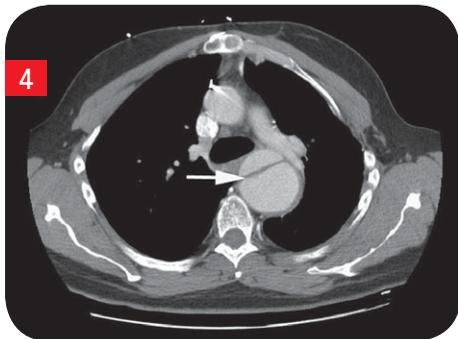
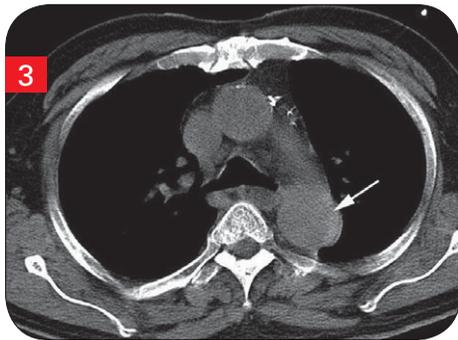


>>> A 60-year-old man arrives at your emergency department with a chief concern of burning chest pain radiating to the back. His initial chest radiograph is normal, as are his cardiac enzyme levels and ECG results. Chest CT without and with contrast is performed. Axial slices from the precontrast and postcontrast series (Figures 1 and 2, respectively) illustrate the cause of this patient's pain.

**What is your diagnosis?**

Turn page for answers >>>

## ANSWER



>> Figures 1 and 2 demonstrate an acute aortic intramural hematoma, a spontaneous hemorrhage of the vasa vasorum of the medial layer of the aortic wall. Intramural hematoma is an etiology of acute aortic syndrome, as are aortic dissection and penetrating atherosclerotic ulcer. Risk factors (including hypertension) and clinical presentation are similar for all three conditions. However, unlike aortic dissection, intramural hematoma does not involve an intimal tear. Furthermore, the hemorrhage associated with intramural hematoma does not communicate with the lumen of the vessel, which is not the case with the hemorrhage in aortic dissection.<sup>1,2</sup> With intramural hematoma the hemorrhage is therefore confined to the wall, resulting in wall thickening and increased density on the precontrast image (white arrow, Figure 3). Patients presenting with acute aortic syndrome should undergo CT both without and with contrast to detect intramural hematoma. Intravenous contrast within the lumen of the aorta may make it difficult to detect the high density within the wall.

Classification and treatment of intramural hematoma are typically the same as for aortic dissection. Medical management is the preferred treatment for Stanford type B lesions, or those not involving the ascending aorta. Surgery is reserved for Stanford type A lesions, which do involve the ascending aorta. There is variability in the progression of intramural hematoma. Some cases may progress through the intima, resulting in true aortic dissection with a true and false lumen separated by an intimal flap detected on contrast-enhanced CT (white arrow, Figure 4). Others may weaken the wall, resulting in a pseudoaneurysm. Some may evolve into a rupture of the adventitial layer of the aortic wall, resulting in hemothorax or hemopericardium. Figure 5 illustrates a Stanford type A intramural hematoma involving the aortic arch (white arrow). Figure 6, a slice obtained lower in the chest of the same patient, demonstrates similar high-density material (blood; white arrows) surrounding the heart, indicating a hemopericardium resulting from extension of the intramural hematoma through an adventitial tear.

Despite the similar classification and treatment of the two conditions, overall clinical outcome is better with intramural hematoma than with aortic dissection.<sup>1</sup>

### REFERENCES

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2. Bhalla S, West OC. CT of nontraumatic thoracic aortic emergencies. *Semin Ultrasound CT MR*. 2005;26(5):281-304.

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