

aortic coarctation. Aortic dissection can be divided into types A and B (Stanford system). Type A dissection involves the ascending aorta, whereas type B involves the distal aorta. The DeBakey system subdivides aortic dissection into three subtypes: I, II, and III. Type I dissection involves the entire aorta, whereas type II involves only the ascending aorta and type III involves only the descending aorta. Aortic dissection involving the ascending aorta carries a high mortality rate of 1% to 2% per hour during the first 24 to 48 hours. Patients usually develop acute onset of severe chest or back pain. Abdominal pain, syncope, and stroke are common. Retrograde propagation of the dissection can cause pericardial tamponade or coronary artery dissection with acute myocardial infarction. Dissection involving the aortic valve causes acute severe aortic insufficiency with acute pulmonary edema. The dissection plane may propagate in an antegrade direction to compromise flow in the carotid and subclavian arteries, producing a stroke or acute upper limb ischemia.

Patients with distal (type B) aortic dissection exhibit acute onset of back pain or chest pain, often accompanied by lower-extremity ischemia and ischemic neuropathy. The physical findings include pulse deficits, neurologic deficits, or a diastolic murmur of aortic regurgitation. However, acute aortic regurgitation into an unprepared ventricle produces only a short, soft diastolic murmur that is often missed. Widened pulse pressure and associated physical findings of chronic aortic regurgitation are absent, and the clinical picture is that of an acutely ill patient with tachypnea, tachycardia, and a narrow pulse pressure. Hypotension, jugular venous distention, and pulsus paradoxus should prompt the diagnosis of pericardial tamponade. Transesophageal echocardiography, MR angiography, or CT angiography confirm the diagnosis by demonstrating an intimal flap that separates the true lumen from the false lumen (Fig. 12-3).

Type A aortic dissection is uniformly fatal without emergent surgical repair. With surgery, mortality is reduced to 10% at 24

hours and 20% at 30 days. Patients with type B aortic dissection should be treated medically because the 1-year survival rate is higher with medical therapy than with surgery (75% vs. 50%). However, surgery is indicated if type B dissection compromises blood flow to the legs, kidneys, or other viscera. Tight control of BP is essential because aortic aneurysm develops in 30% to 50% of patients with type B aortic dissection studied for 4 years.

Penetrating Aortic Ulcers and Intramural Hematoma

Penetrating aortic ulcers and intramural hematomas exhibit chest pain that is indistinguishable from that of aortic dissection. In contrast to aortic dissection, however, the pathologic condition is localized. No identifiable intimal flap, and therefore no branch vessel occlusion, is produced. Disruption of the internal elastic lamina produces aortic ulcers that erode into the medial wall and protrude into the surrounding structures. Rupture of the vasa vasorum causes formation of localized hematoma underneath the adventitia with resultant asymmetric thickening of the aortic wall. Patients with either condition typically are older than those with aortic dissection, have a larger aortic size, and have a higher prevalence of AAA. Aortic rupture is the major complication of both penetrating ulcers and intramural hematomas, particularly if the aneurysm is located in the ascending aorta. The diagnosis is made with invasive angiography, CT angiography, or MR angiography (Fig. 12-4). Surgical intervention should be considered for ulcers and hematomas of the ascending aorta, for deeply penetrating ulcers, and for severely bulging hematomas, irrespective of their location. Ulcers and hematomas of the descending aorta may be managed successfully with β -blockade and tight control of BP.

Other Arterial Diseases

Buerger's Disease

Buerger's disease is a nonatherosclerotic disease of the arteries, veins, and nerves of the arms and legs that affects mostly men



FIGURE 12-3 Computed tomographic angiogram of the aorta shows type B aortic dissection. The intimal flap (*arrow*) separates the true lumen (*T*) from the false lumen (*F*) and compromises blood flow to the right kidney, causing renal atrophy and cortical thinning. (Courtesy Bart Domatch, MD, Radiology Department, University of Texas Southwestern Medical Center, Dallas, Tex.)

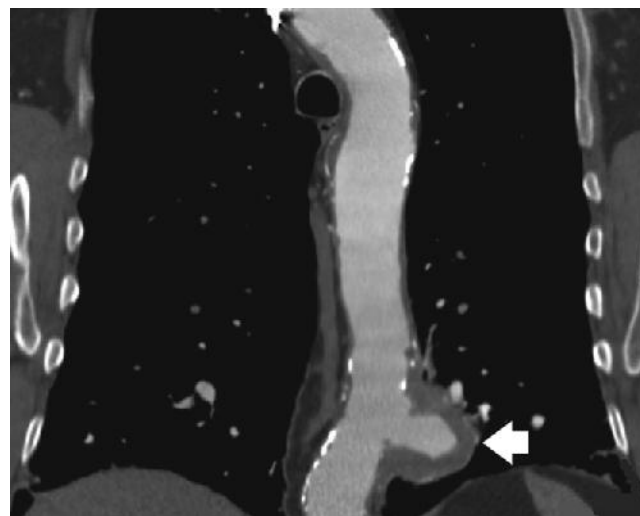


FIGURE 12-4 Computed tomographic angiogram of the descending thoracic aorta shows a large penetrating aortic ulcer above the diaphragm (*arrow*). (Courtesy Bart Domatch, MD, Radiology Department, University of Texas Southwestern Medical Center, Dallas, Tex.)