Aortic Dissection Diagnosed by Ultrasound

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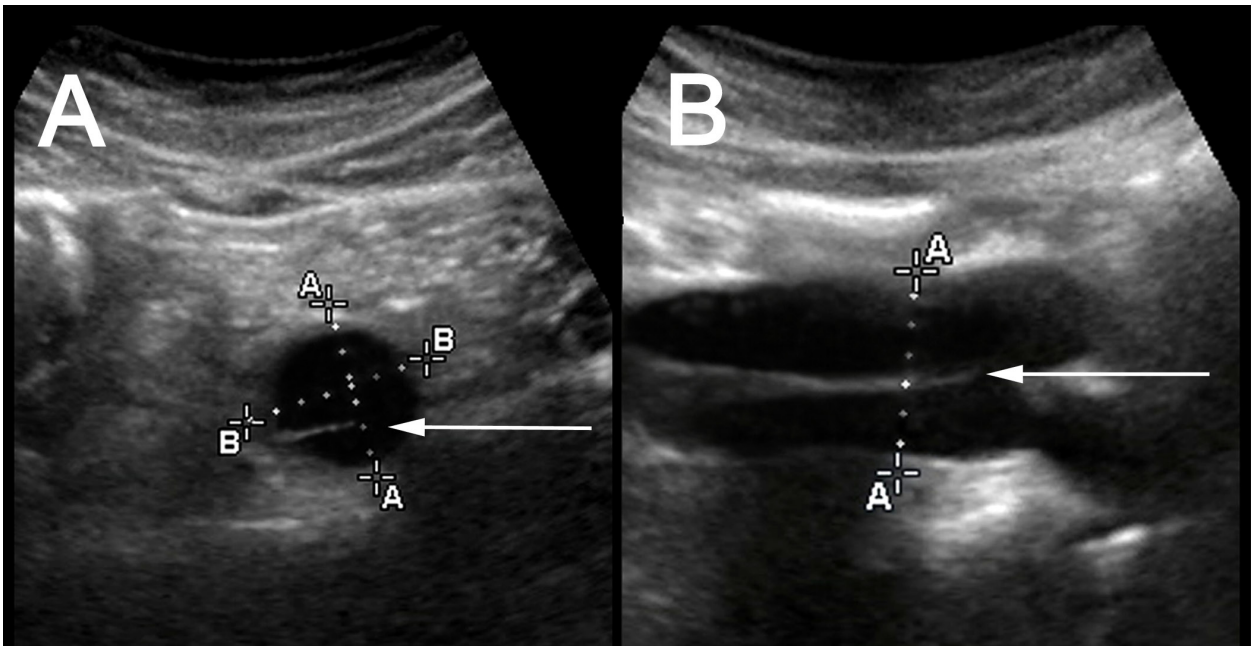

Figure 1. Emergency department ultrasound of the abdominal aorta in transverse (A) and longitudinal (B) axis.

A 45-year-old male with a history of poorly controlled hypertension arrived to the emergency department complaining of ripping chest pain radiating to his back and abdomen. Initial vital signs included a blood pressure of 202/112 mmHg bilaterally and a heart rate of 60 beats/minute. The patient had recently started a new antihypertensive medication regimen, including atenolol and amlodipine. Electrocardiogram and laboratory studies, including a complete blood cell count, serum chemistry panel, troponin, prothrombin time, partial thromboplastin time, lipase, and liver function tests, were unremarkable. On physical exam he had symmetrical peripheral pulses and only mild epigastric tenderness. A portable chest radiograph (CXR) demonstrated a widened mediastinum, and bedside ultrasound showed an intimal flap in the abdominal aorta (Figure 1). Computed tomography (CT) revealed an extensive aortic dissection extending from the descending portion of the aortic arch into both iliac arteries (Figure 2). By convention, this is classified as either a Stanford type B or a DeBakey type III aortic dissection.

Aortic dissections form when shearing intravascular forces separate the layers of the aortic wall. If untreated, patients with proximal aorta involvement have a two-week mortality rate of approximately 80%.[1] The CXR in 12-18% of patients with aortic dissection may be unremarkable.[1,2] Multi-planar transesophageal echocardiography, magnetic resonance imaging, and CT have largely replaced aortography as diagnostic modalities. Emergency physicians routinely use bedside ultrasound to evaluate the abdominal aorta for

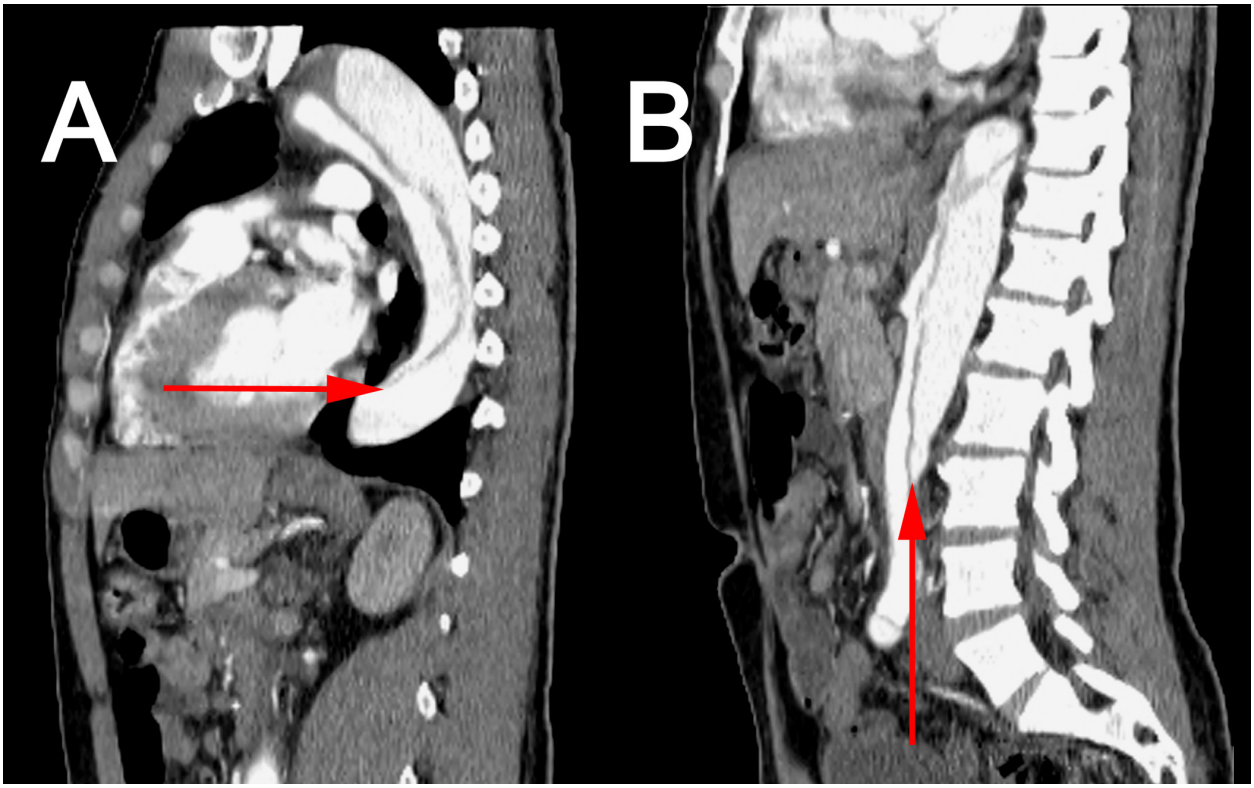

Figure 2. Sagittal computed tomography images demonstrating the thoracic (A) and abdominal (B) portions of the involved dissecting aorta with arrows indicating the dissecting intimal flap.

aneurysm. Visualization of an intimal flap by ultrasound may carry a sensitivity of 67-80% and specificity of 99-100% for dissection.[3] This rapid, non-invasive method of diagnosis may aid in the early detection and treatment of this deadly diagnosis.

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