A 64-year-old woman presented to a district general hospital with left-sided chest pain that radiated through to the back. Her medical history included a previous myocardial infarction. After assessment in the emergency department, acute aortic dissection was suspected, and a computed tomography (CT) aortogram was performed (Figure, A). This aortogram did not demonstrate evidence of acute aortic pathology. However, a soft-tissue mass was visualized in the left upper mediastinum adjacent to the distal aortic arch, suggestive of either an inflammatory process or a neoplastic lesion.

She was referred to our center for further investigation. A CT-guided biopsy of the mass was scheduled ≈ 4 weeks after initial presentation. In view of her history of ischemic heart disease, she underwent transthoracic echocardiography before the procedure. Echocardiography demonstrated a well-circumscribed, echoluent structure measuring 30×17 mm adjacent to the superior aspect of the distal aortic arch from the suprasternal and left supraclavicular views. Blood flow within the structure could not be demonstrated on color Doppler imaging (Figure, B). The ostium of the left subclavian artery could not be visualized, and an aneurysm of either the left subclavian artery or the distal aortic arch was suspected.

To better delineate the anatomy of the aortic arch, an intravenous ultrasound contrast agent (Sonovue, Bracco Diagnostics) was administered. Contrast-enhanced echocardiography from the suprasternal window demonstrated a wide-necked (10 mm) pseudoaneurysm distal to the origin of the left subclavian artery, with evidence of mural thrombus formation (Figure, C). The ostia of both the left common carotid and subclavian arteries were visualized and confirmed to be patent; the latter vessel was compressed and displaced superiorly by the pseudoaneurysm.

The findings of a thoracic aortic pseudoaneurysm, rather than a soft-tissue mass within the lung, were communicated to the clinical team. CT aortography was repeated, and on this occasion, the pseudoaneurysm was clearly visualized (Figure, D), and a potentially catastrophic biopsy procedure was avoided. Initial CT aortogram images were reviewed and demonstrated a clear inflammatory component within the lung adjacent to the aorta, which had resolved on subsequent scans. Although the cause of the aneurysm remained unclear, the patient was referred for consideration for endovascular stenting.

Thoracic aortic pseudoaneurysms or false aneurysms are rare and are almost exclusively encountered as a complication after aortic surgery. They typically occur at sites of previous aortic manipulation, and infection is demonstrable in most cases. Thoracic aortic pseudoaneurysms are caused by partial disruption of the aortic wall, limited by remaining arterial layers and adjacent structures. The clinical spectrum of thoracic aortic pseudoaneurysm is broad and includes dysphagia, stridor, and a clinical picture mimicking myocardial ischemia. Thoracic aortic pseudoaneurysms may lead to sudden death, hemomediastinum, or cardiac tamponade. Emergent surgery is the treatment of choice.

Diagnosis of thoracic aortic pseudoaneurysm is based on clinical suspicion, supported by confirmatory evidence from an array of imaging modalities, including CT, magnetic resonance imaging, transesophageal echocardiography, and angiography. Contrast-enhanced echocardiography is conventionally indicated to improve endocardial definition of the left ventricle. Ultrasound contrast agents have increasingly been used to improve visualization of extracardiac structures such as the carotid arteries and the aorta. This case demonstrates the value of contrast-enhanced echocardiography to distinguish between possible soft-tissue masses in the lungs and true aortic pathology.

Disclosures

None.

References


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Figure. A, Presenting computed tomographic (CT) aortogram demonstrating the suspected para-aortic mass (asterisk). B, Transthoracic echocardiogram with color Doppler demonstrating an echolucent para-aortic structure. C, Contrast-enhanced echocardiogram demonstrating a wide-necked aortic pseudoaneurysm (asterisk). D, CT aortography confirming the presence of an aortic pseudoaneurysm (asterisk).
Mass Confusion: Defining Aortic Pathology With Ultrasound Contrast
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