Cardiac MRI of a contained ascending aortic rupture extending into the pericardium

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A 44-year-old male with past medical history of HIV infection and sinus venosus atrial septal defect repair 3 years ago presented to the emergency department (ED) with complaints of chest pain and dyspnoea on exertion for past 1 month. In the ED, serum troponin levels were found to be 1.7 ng/mL (<0.4 ng/mL) and creatine kinase-MB level of 8.5 ng/mL (0–3 ng/mL). The electrocardiogram showed T-wave inversion in leads V1–V4 with new right-axis deviation. An emergent left heart catheterization was performed that showed non-obstructive coronary artery disease. Subsequent transthoracic echocardiography was obtained, which demonstrated a large extracardiac mass with a restrictive physiology secondary to it, and the patient was referred for cardiac MRI. Black-blood images revealed marked thickening around the ascending aorta (Panel A), extending caudally in the mediastinum. Cine images demonstrated an 8.7 × 65.6 cm intrapericardial mass containing fluid (Panel B), causing severe right ventricular compression, and with no late post-contrast enhancement (Panel C). On additional cine imaging, a direct communication between the tubular aorta and the mass could be seen (Panel D). The patient had an emergency surgery, which revealed a large haematoma in the pericardial space and a 1-cm perforation in the ascending aorta at a distance of 7.5 cm from the aortic valve, consistent with contained rupture at the previous cannulation site. As the perforation was situated in the distal ascending aorta/proximal arch, a graft was used to reconstruct the anterior aspect of the aortic arch, and the patient was discharged a week later after an uneventful postoperative course.

This is a unique case of contained rupture of the ascending aorta as demonstrated by cardiac MRI. Thoracic aortic pseudoaneurysm after cardiac surgery is rare, with the reported incidence of ~3% at the cannulation site.1

Conflict of interest: none declared.

Panel A: Axial black-blood image demonstrates heterogeneous signal surrounding the ascending aorta (white arrow). A moderate right pleural effusion is also noted.

Panel B: Bright-blood short-axis still image shows a large heterogeneous mass (white arrow) within the anterior pericardial space compressing the right ventricle with resulting leftward deviation of the interventricular septum (black arrow).

Panel C: Post-contrast delayed image demonstrates heterogeneous enhancement of the mass (black arrow).

Panel D: Still image from a short-axis bright-blood cine shows communication of the ascending aorta with the haematoma (black arrow).

Reference


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