Giant left ventricular outflow tract pseudoaneurysm presenting as anterior mediastinal mass: diagnosis by MDCT

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Received: 24 June 2020 / Revised: 12 July 2020 / Accepted: 14 July 2020 / Published online: 11 August 2020
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Abstract

We report a case of giant left ventricular outflow tract pseudoaneurysm diagnosed by multidetector computed tomography cardiac angiography. This report highlights the importance of preoperative computed tomography in the evaluation of left ventricular outflow tract pseudoaneurysm which can be kept as a differential diagnosis for anterior mediastinal masses.

Keywords CT · Pseudoaneurysm · Idiopathic · Ultrasound

Case report

A 44-year-old male patient presented with grade 2 shortness of breath and a dull aching persistent pain in chest for 3 days. Pain was not aggravated by exertion. Patient did not have a history of diabetes, hypertension, pre-existing cardiac disease, or trauma. Chest radiograph demonstrated a large homogenous mass lesion in the anterior mediastinum abutting left heart border (Fig. 1). Routine blood tests and electrocardiogram (ECG) were entirely normal. Echocardiogram showed the presence of a large aneurysm, probably arising from left ventricular outflow tract (LVOT) or left sinus of Valsalva. No other significant finding was noted on echocardiogram. Multidetector computed tomography (MDCT) cardiac angiography showed presence of a large pseudoaneurysm, measuring $7.6 \times 7.5 \times 7.4$ cm, with a wide neck measuring 2.7 cm. It was arising from the LVOT, involving its left lateral wall, and extending to anterior mediastinum compressing the main pulmonary artery, left pulmonary artery, left atrium, and the adjacent upper lobe and lingula of left lung (Figs. 2 and 3). The lung was normal, except for compression subsegmental atelectasis of the left upper lobe.

There was no thrombosis noted within the aneurysmal sac. No evidence of rupture was noted. The aortic root and the coronary arteries were normal (Figs. 2 and 3). Mild right pleural effusion was noted. The pulmonary arteries were normal. Catheter coronary angiography was not done. Patient underwent surgical repair of the pseudoaneurysm. On surgical exposure, aneurysm neck was found to be arising from the left lateral aspect of LVOT, below the left coronary sinus. Opening of the sac was closed with interrupted pledgeted sutures. Postoperative period was uneventful. The cause for pseudoaneurysm was not known and likely idiopathic.

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Fig. 1 Chest X-ray showing homogenous opacity abutting left cardiac border

Fig. 2 **a** Coronal CT angiography image showing large pseudoaneurysm (white arrow) arising from the left ventricular outflow tract just below the aortic root on left side. **b** Volume-rendered image showing large pseudoaneurysm with the normal aortic root (white arrows)

Discussion

Left ventricular outflow tract pseudoaneurysm is extremely uncommon with only few reported cases in the literature. It is usually contained within the thickened epicardial or pericardial layers and does not contain entire wall of the ventricle; hence it is easily prone for rupture and once ruptured it is usually fatal [1–3]. Most of these cases present with nonspecific symptoms like chest pain, angina, or heart failure [3]. One case presenting with chronic cough has been described [4]. Our case presented with nonspecific chest pain and dyspnea. They can also present with symptoms due to compression of adjacent vital structures. Most of these cases can be diagnosed using transthoracic and transesophageal echocardiography [5]; however, echocardiography

cannot give accurate three-dimensional images for pre-operative planning. In our case, although transthoracic echocardiography confirmed the presence of aneurysm, the exact site, size, shape, its relationship with aortic root, coronary artery status, presence of complications like thrombus, rupture, fistula, compression of adjacent structures, and associated lung findings were exactly delineated by MDCT cardiac angiography [6, 7]. The various causes for LVOT pseudoaneurysm described in literature are cardiac surgery, myocardial infarction, trauma, infective endocarditis, and prosthetic aortic valve replacement [8]. In our case, none of these causes was found. Hence, we presume it to be idiopathic [8]. We propose non-invasive cardiac CT angiography as an excellent imaging modality for diagnosis and treatment planning for LVOT pseudoaneurysms.

Fig. 3 **a, b** Axial MDCT angiography images showing relationship of pseudoaneurysm with the coronary arteries and main pulmonary artery (white arrows)

Funding None

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed consent Informed consent taken

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