J Cardiovasc Imaging. 2019 Apr;27(2):150-153
https://doi.org/10.4250/jcvi.2019.27.e1
pISSN 2586-7210·eISSN 2586-7296

Journal of Cardiovascular Imaging JCVI

Images in Cardiovascular Disease

Multimodality Imaging in Giant Ascending Aortic Aneurysm

Prasad Prabhakar Shah, DM[1], Pooja Ajit Mehta, MD[2], and Pritam Ramchandra Titar, MD[1]

[1]Cardiology Department, Poona Hospital and Research Centre, Pune, India
[2]Radiology Department, PDS Scan, Poona Hospital and Research Centre, Pune, India

Received: Oct 10, 2018
Revised: Nov 3, 2018
Accepted: Nov 20, 2018

Address for Correspondence:
Pritam Ramchandra Titar, MD
Cardiology Department, Poona Hospital and Research Centre, 27, Sadashiv Peth, Pune, Maharashtra, Pin - 411030, India.
E-mail: pritam_ibb@yahoo.co.in

ORCID iDs
Prasad Prabhakar Shah
https://orcid.org/0000-0002-9895-726X
Pooja Ajit Mehtav
https://orcid.org/0000-0003-0573-4217
Pritam Ramchandra Titar
https://orcid.org/0000-0001-8202-2825

Conflict of Interest
The authors have no financial conflicts of interest.

We report a 53-year-old female patient with giant ascending aortic aneurysm accompanied by a severely compressed superior vena cava (SVC) and right pulmonary artery (PA) without dissection.

She presented with NYHA class II dyspnea on exertion and chest heaviness for 2 months and hoarseness of voice for 15 days.

She had no significant family or medical history, no chest trauma and did not smoke. On examination blood pressure was 116/80 mmHg, heart rate 110 bpm and body temperature 36.8°C. All pulses were felt with no radiofemoral or radioradial delay. Jugular venous pressure was not elevated. Oxygen saturation was 98% on room air. Electrocardiogram showed sinus tachycardia, and the chest X-ray revealed an enlarged cardiac silhouette. Hemoglobin was 8.0 g/dL. Other blood tests including erythrocyte sedimentation rate and C-reactive protein, antinuclear antibody, and blood cultures were normal.

The giant ascending aortic aneurysm was diagnosed on imaging. Transthoracic echocardiography revealed an extracardiac mass compressing the left atrium (**Figure 1A-B**, **Movie 1**). Transesophageal echocardiography confirmed the above findings and showed a trileaflet aortic valve. A scanogram of the chest showed lobular mediastinal widening with silhouetting of the ascending aorta, paramedian foci of linear calcification and a laterally displaced prominent conus (**Figure 1C**). Volume rendered computed tomography (CT) angiogram showed a high thrombus to lumen ratio [**Figure 1D**, **Movie 2** – the smaller patent lumen (600 HU) and a large peripheral thrombus (30 to 60 HU) are color-coded red and blue, respectively]. Multi-detector CT angiography revealed a giant aneurysm (80 × 107× 140 mm) with thrombus and calcification arising from the posterior wall of the ascending aorta sinotubular junction (**Figure 1E-F**, **Movie 3**). Severe compression of the SVC (**Figure 1G**, **Movie 4**) and right PA (**Figure 1H**) was seen. Aortography and coronary angiography showed an enormous saccular aneurysm in the posterior wall of the ascending aorta with normal coronaries (**Figure 1I**, **Movie 5-8**). Cardiac MRI showed a variegated hypointense thrombus and severe inferior compression of the atria on sagittal Fast Imaging Employing Steady-state Acquisition (FIESTA) (**Figure 1J**, **Movie 9**). An elective surgical procedure was discussed; however, the patient did not consent to the procedure.

Journal of Cardiovascular Imaging JCVI

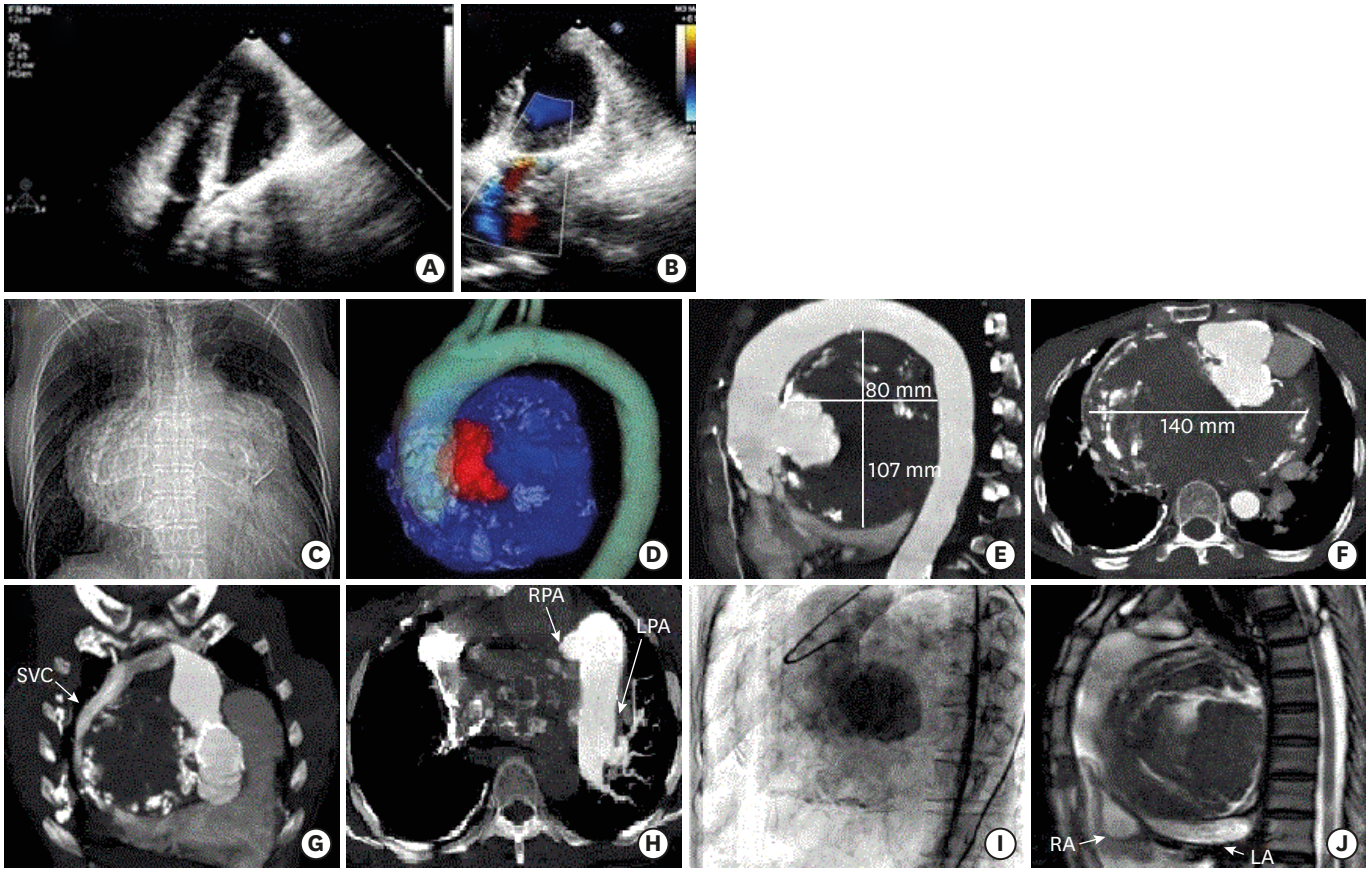

Figure 1. A & B - Transthoracic echocardiography – Extra cardiac mass compressing left atrium. C - Chest scanogram - lobular mediastinal widening with silhouetting of the ascending aorta. D - Volume rendered CT angiogram - Small patent lumen (600 HU) color-coded red and large peripheral thrombus (30 to 60 HU) color-coded blue. E & F - CT angiography - giant partially thrombosed aneurysm (80 × 107× 140 mm) arising from the posterior wall of the ascending aorta sinotubular junction. G - CT angiography - severely compressed patent SVC draping along right lateral aspect of aneurysm. H - Pulmonary arterial phase of CT Angiography - severely compressed Right Pulmonary artery. Mildly dilated opacified left Pulmonary artery. I - Aortography - saccular aneurysm of ascending aorta. J - Cardiac MRI (FIESTA) sagittal - variegated hypointense thrombus with severe inferior compression of the atria.
LA: left atrium, LPA: left pulmonary artery, RA: right atrium, RPA: right pulmonary artery, SVC: superior vena cava.

Giant ascending aortic aneurysm, defined as an aneurysm with a maximal diameter greater than 10 cm, is rare. Our patient presented with exertional dyspnea, which could be due to anemia and/or the aneurysm compressing the left atrium and adjacent vascular structures. Improvements in multi-modality imaging techniques are helpful in the diagnosis, follow-up, and surgical management planning for ascending aortic aneurysms.

SUPPLEMENTARY MATERIALS

Movie 1

Transthoracic echocardiography four chamber view showing an extra cardiac mass compressing left atrium.

Click here to view

https://doi.org/10.4250/jcvi.2019.27.e1

Journal of Cardiovascular Imaging JCVI

Movie 2

Coronal CT cine loop images in the early pulmonary arterial phase depict left lateral displacement of the right ventricular outflow tract with complete opacification of the main pulmonary artery and the left pulmonary artery and its branches. The left pulmonary artery measures 20 mm in diameter. A short stump of the right pulmonary artery is visualized beyond which the artery and its further divisions are not opacified due to mass effects. The opacified superior vena cava is severely compressed and is seen draping along the right lateral aspect of the aneurysmal dilatation. Splaying of the carina can be seen. The compressed atria are seen along the inferior wall of the aneurysm. Early opacification of the hepatic inferior vena cava is seen due to tricuspid regurgitation.

Click here to view

Movie 3

The sagittal CT cine loop images in the aortogram phase depict a large, partially thrombosed saccular aneurysm along the posterior wall of the proximal ascending aorta at the sinotubular junction. The patent aneurysmal lumen is opacified with contrast and is surrounded by the non-enhancing thrombus. Peripheral wall calcification along the neck of the aneurysm and periphery of the thrombus rules out the possibility of aortic dissection. Foci of calcification are also seen within the thrombus. Compression and anterior displacement of the left ventricular outflow tract and the ventricles is noted with inferior displacement and compression of the atria. A small pericardial effusion is seen. The remaining thoracic aorta is normal in caliber. The arch vessels are well opacified. Incidentally seen is a separate origin of the left vertebral artery from the aorta.

Click here to view

Movie 4

Volume rendered CT angiogram showed a high thrombus to lumen ratio. The smaller patent lumen and a large peripheral thrombus are color-coded red and blue respectively.

Click here to view

Movie 5

Aortography and coronary angiography portrayed an enormous saccular aneurysm of the posterior wall of the ascending aorta with normal coronaries.

Click here to view

Movie 6

Aortography and coronary angiography portrayed an enormous saccular aneurysm of the posterior wall of the ascending aorta with normal coronaries.

Click here to view

Movie 7

Aortography and coronary angiography portrayed an enormous saccular aneurysm of the posterior wall of the ascending aorta with normal coronaries.

Click here to view

https://doi.org/10.4250/jcvi.2019.27.e1

Journal of Cardiovascular Imaging JCVI

Movie 8

Aortography and coronary angiography portrayed an enormous saccular aneurysm of the posterior wall of the ascending aorta with normal coronaries.

Click here to view

Movie 9

Two chamber cine FIESTA MRIs depict the large aneurysmal dilatation with a smaller patent lumen and a large hypointense thrombus showing a variegated appearance. Marked inferior compression of the left atrium is noted. Pericardial effusion is seen as a hyperintensity in the dependent position.

Click here to view

https://doi.org/10.4250/jcvi.2019.27.e1