Images in Aortic Disease

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An Ascending Aortic Rent with a Saccular Aneurysm: Role of Multimodality Imaging

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Abstract

We report an unusual case of 26 year old previously healthy man who presented with exertional breathlessness of 6 months duration with clinical findings suggestive of moderate aortic regurgitation (AR). There was no previous history suggestive of trauma or chest pain. Trans-thoracic and trans-esophageal echocardiography showed an ascending aortic aneurysm compressing the Left atrium and presence of moderate AR. A 64 slice cardiac CT with intraaortic endoscopic reconstruction further clarified the anatomy. This revealed an ascending aortic aneurysm, extending into the middle mediastinum with a clear rent in the ascending aorta, communicating with the aneurysm. More importantly, CT imaging also confirmed the absence of a dissection flap. The case demonstrates the usefulness of multimodality imaging in defining the morpho-anatomic features in such unusual situations.

Key Words

Ascending aorta · Saccular aneurysm · Multimodality imaging

Introduction

A 26-yr-old male presented with exertional dyspnea for six months. There was no history of chest trauma or angina, chronic fever, night sweats, generalized muscle aches, malaise, or rash. There was no history of intravenous drug abuse or unprotected sexual intercourse. There was no family history of aortic diseases. Clinical examination revealed an early diastolic murmur without any marfanoid habitus. A prominent right upper cardiac border was seen on the X-ray, suggesting a dilated ascending aorta (Fig. 1). On transthoracic echocardiography, a mildly dilated left ventricle with moderate aortic regurgitation was noted; in addition, a large saccular structure, compressing the left atrium (LA), was visualized (Fig. 1; see supplemental Video 1 at http://dx.doi.org/10.12945/j.aorta.2013.13.042.vid.01). Transesophageal echocardiography delineated a defect in the ascending aorta, with a flap-like opening (3.5 × 4.5 mm) just above the sinotubular junction, communicating with a huge sac-like aneurysm (Fig. 1; see supplemental Video 2 at http://dx.doi.org/10.12945/j.aorta.2013.13.042.vid.02). A 64-slice multidetector cardiac computerized tomography (MDCT) apparatus with virtual intra-aortic endoscopic reconstruction confirmed a large (59 × 66 mm) saccular ascending aortic aneurysm, extending into the middle mediastinum (Fig. 1D–1G). While no dissection flap was visible, a defect in the ascending aorta communicating with the aneurysm was clearly demonstrable.

Use of the 64-slice MDCT demonstrated the dimensions of saccular aneurysm along with the presence and size of communication between aorta and aneurysm and their relationship with surrounding structures, including the compressive effects on the LA and aorta. Importantly, it CT also delineated that no dissection flap or false lumen was visible. In view of the absence of any obvious trauma or dissection, these findings suggested that possible chronic insidious degeneration with weakening of the aortic media and resultant rupture caused this pseudoaneurysm.

The patient underwent urgent surgery with repair

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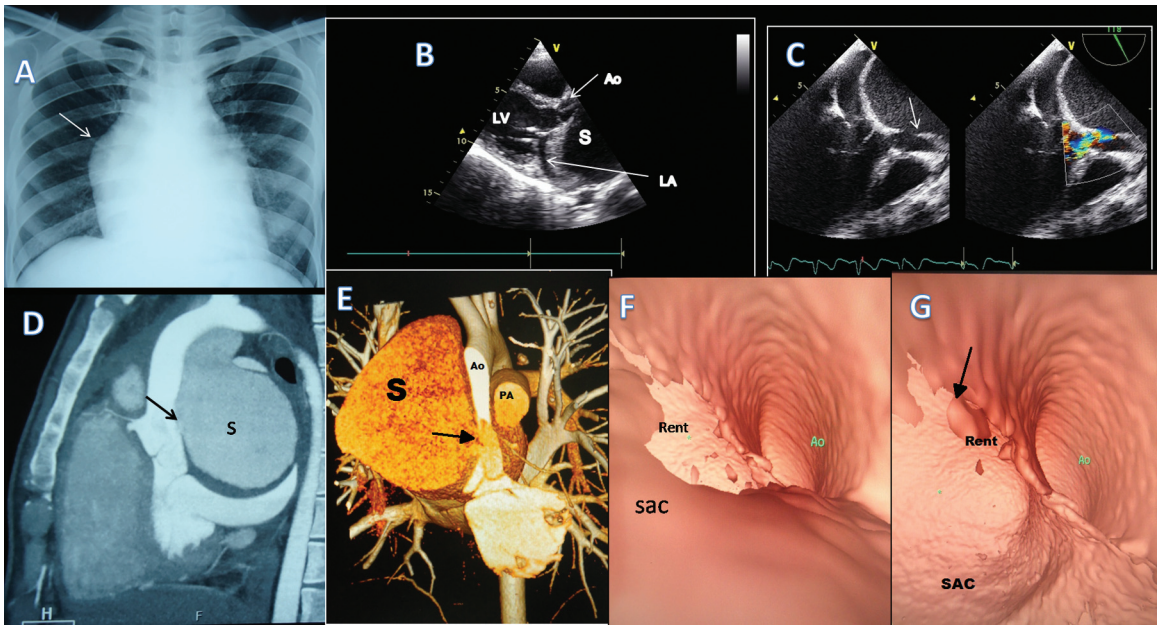

Figure 1. A. Chest X-ray showing prominent mid and upper right cardiac border suggestive of a dilated ascending aorta. B. Transthoracic echocardiography revealed a large saccular mass (S) arising close to the ascending aorta and compressing the LA to almost a sliver. C. Transesophageal echocardiography (marked arrow) delineated a rent in the ascending aorta just above the sino-tubular junction. The saccular mass was connected with the ascending aorta via a flap-like communication with demonstrable color flow across it. D and E. A 64-slice multidetector cardiac CT imaging confirmed the presence of the saccular mass (S) arising from the ascending aorta. F and G. Intra-aortic virtual endosocpic reconstruction of the multidetector CT images clearly outlined the rent in the proximal portion of ascending aorta, above the sino-tubular junction, leading into the large sac like aneurysm.

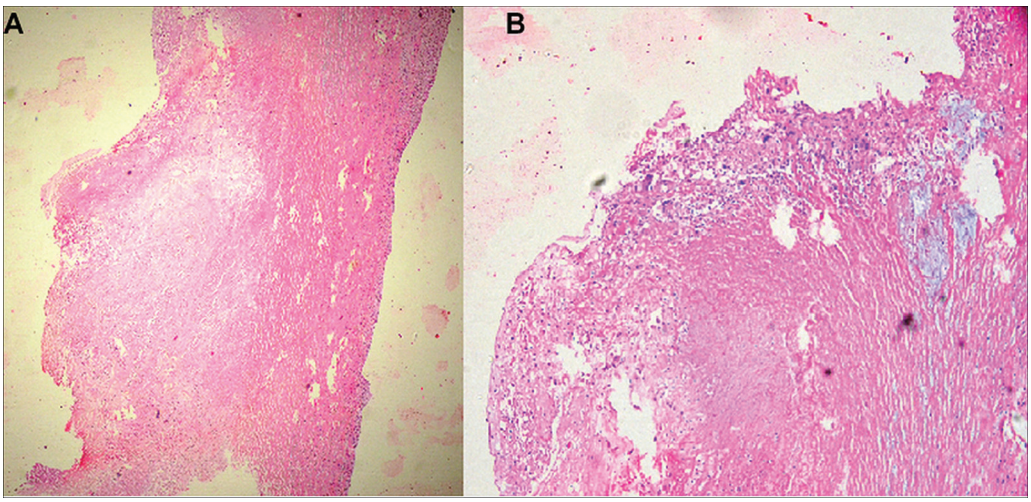

Figure 2. A. Histopathologic examination revealed degenerative changes in the form of myxoid changes with fibrinoid necrosis and (B) mixed inflammatory infiltrates.

of the ascending aorta after excision of the saccular aneurysm and placement of a Dacron graft. Aortic valve was tricuspid and mildly thickened and replaced with a size 22 SJM bileaflet mechanical prosthesis. The aortic tissue at the site of defect was grayish white in appearance and histopathologic examination revealed degenerative changes in the form of myxoid changes with fibrinoid necrosis and mixed inflammatory infiltrates (Fig. 2).