Journal of Cardiology Cases xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

Journal of Cardiology Cases

journal homepage: www.elsevier.com/locate/jccase

Case Report

Percutaneous closure of aortic pseudoaneurysm in a young female with atrial septal occluder

Shantanu Deshpande (MD, DM)[a,*], Rajeev C. Godbole (MS, MCh, FRCS)[b], Yash Rajeev Godbole (MBBS)[b]

[a] Padmashree Dr D Y Patil Medical College, Nerul, Navi Mumbai, Maharashtra, India
[b] Godbole Hospital, Thane, Maharashtra, India

ARTICLE INFO

Article history:
Received 15 June 2016
Received in revised form 1 September 2016
Accepted 6 October 2016

Keywords:
Pseudoaneurysm of aorta
Atrial septal occlude
Device closure

ABSTRACT

This case report represents a novel technique for the treatment of a pseudoaneurysm of the aorta. Pseudoaneurysm of the aorta has been reported in patients post heart surgery. This case report is about a patient who had a pseudoaneurysm most probably following tuberculosis. Traditionally, the treatment of choice is surgical correction; however, in the current era, there are case reports describing the use of either stent grafts or Amplatzer occluders for occlusion of the pseudoaneurysm in high-risk surgical cases. We performed successful closure of the aortic pseudoaneurysm using atrial septal occluder.
<**Learning objective:** Tuberculous arteritis can result in pseudoaneurysm rarely. Our patient had a large aneurysm compressing adjoining vital structures and was very high surgical risk case. This is the first case report of closure of tuberculous pseudoaneurysm by using atrial septal occluder in a young patient. In this case we have demonstrated that large pseudoaneurysms with narrow neck can be closed very safely using atrial septal occluder with immediate symptom relief and thrombosis of pseudoaneurysm at follow-up of three months.>

Introduction

Aortic pseudoaneurysms have been described following surgery, trauma, or tuberculosis. Tuberculous pseudoaneurysm has been described with an incidence of 0.3% in more than 20,000 autopsies [1]. Tuberculous pseudoaneurysms are caused by contained aortic rupture following tuberculous aortitits. Aortitis is generally secondary to extension of infection from periaortic foci [2]. Presentation of tuberculous pseudoaneurysm can be either due to tuberculous infection or compressive symptoms due to compression of neighboring structures such as esophagus, trachea, or bleeding from aneurysm or embolic episodes. With current advanced imaging techniques such as computed tomography (CT) scan or magnetic resonance imaging diagnosis is generally made. Even though surgery is the most described therapy for patients with aortic pseudoaneurysm, it carries definite risks of morbidity and mortality. There have been case reports describing use of endovascular grafts and atrial septal occluders [4–9] for closure of aortic pseudoaneurysms following cardiac surgery in elderly patients. We describe endovascular closure by atrial septal occluder of large tuberculous aortic pseudoaneurysm in a young patient who was deemed unsuitable for surgery.

Case report

A 25-year-old female presented with symptoms of gradual onset dyspnea over a period of 3 months and had dyspnea at rest [New York Heart Association (NYHA) grade IV] two weeks prior to presentation. She also had dull chest pain along with persistent dry hacking cough. On examination, she was breathless at rest and orthopneic. Oxygen saturation in seated position with high flow oxygen was 90% which would fall to 70% on assuming the supine position.

She was on anti-tuberculous therapy for the treatment of tuberculous pericardial effusion since 5 months which included 3 months of five-drug regimen (streptokinase, isoniazid, rifampicin, pyrazinamide, and ethambutol) and was currently receiving two drugs (isoniazid and rifampicin). Her serial chest X-rays revealed homogenous opacity from left hilum extending into left upper lobe of the left lung which had increased in size over a period of four months. Her echocardiography revealed dilated right atrium and right ventricle secondary to external compression of the main pulmonary artery. There was peak gradient of 58 mmHg across compressed main pulmonary artery. On further investigation with a

* Corresponding author.
E-mail address: drshantanud@yahoo.com (S. Deshpande).

http://dx.doi.org/10.1016/j.jccase.2016.10.004
1878-5409/

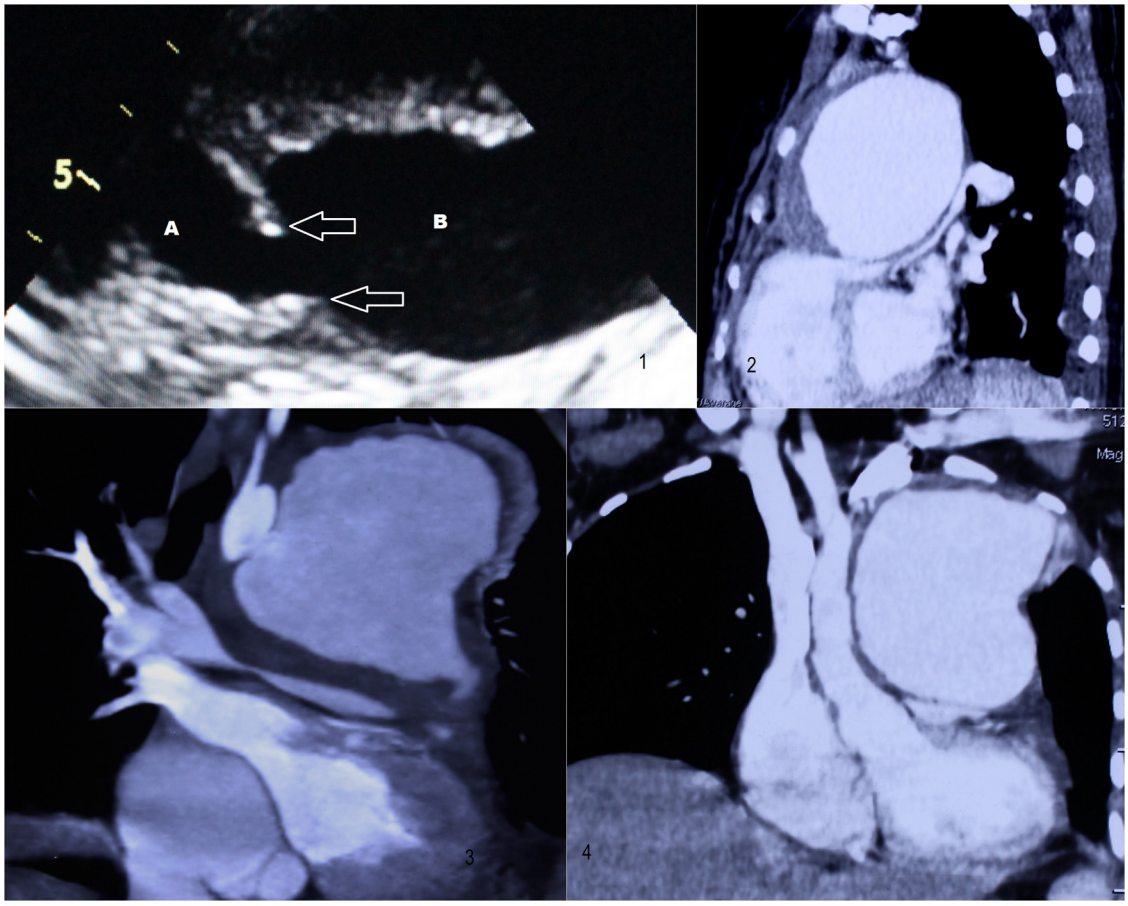

Fig. 1. (1) Echocardiography showing communication between aorta (A) and pseudoaneurysm (B) with well-defined margins. (2) Computed tomography (CT) scan of thorax with contrast revealing large pseudoaneurysm arising from arch of aorta, extending anteriorly up to sternum. (3) CT scan of thorax with contrast revealing large pseudoaneurysm seen compressing main pulmonary and right pulmonary artery. (4) CT scan of thorax with contrast revealing large pseudoaneurysm arising from arch of aorta occupying left upper side of thorax.

CT scan it was found that she had a pseudoaneurysm arising from the undersurface of the aortic arch originating opposite to the origin of the right subclavian artery (Fig. 1). This aneurysm was extending up to the sternum. Echo review suggested a communication neck measuring 9 mm between arch of aorta and aneurysm (Fig. 1).

Cardiac surgery was deemed high risk considering that the aneurysm was in close proximity to the sternum and overall poor condition of patient. The pseudoaneurysm was compressing the main pulmonary artery trunk and pushing its way under the bifurcation of the trachea compressing the left main bronchus. Considering the location of communication opposite to neck vessels a stent graft was not possible. We considered percutaneous closure of the communication using an atrial septal occluder.

Under local anesthesia a 7 Fr bifemoral access was taken. The patient had received 325 mg of aspirin and 300 mg of clopidogrel prior to the procedure; 5000 units of unfractionated heparin were administered. A review angiography in the left anterior oblique and lateral view revealed a 9 mm opening within the undersurface of the aortic arch (Fig. 2, Video 1). Communication was entered using a 6F JR catheter with the help of a 300 cm Terumo wire [Japan]. A 7F long cocoon curved sheath was inserted into the aneurysm. Curved sheath was selected to overcome angulation of the arch of aorta (Fig. 2). A 10 mm Cocoon ASD device [Vascular Innovations Thailand] was inserted, and its position was checked with contralateral aortic pigtail shoot in both right anterior oblique and left anterior oblique views and with transthoracic echocardiography (Video 2). The device was released after confirmation of sealing of communication on echocardiography and angiography (Fig. 2, Video 3). A small leak remained on echocardiography and angiography post procedure. Her follow-up echocardiography showed 90% thrombosis of aneurysm on the third day with complete cessation of the leak. The patient showed gradual improvement in saturation over one week. She was discharged on the 7th day on dual antiplatelet therapy of aspirin and clopidogrel. On discharge, her oxygen saturation at rest was 94% at room air. Over a period of three months her dyspnea resolved completely, and only mild intensity dry cough persisted. Her echocardiograph at her three-month visit showed a gradient of 22 mm across the pulmonary artery. Her follow-up CT scan revealed thrombosed residual pseudoaneurysm with central colliquation and device in situ (Fig. 3). Echocardiography revealed reduction in main pulmonary artery compression. Gradient across main pulmonary artery had reduced to 16 mmHg. Symptomatically, the patient had no dyspnea and was NYHA Grade I/II.

Discussion

Pseudoaneurysms of aorta have been reported rarely following surgery, trauma, or tuberculosis [1,2]. Surgical repair has remained the therapy of choice but with high morbidity and mortality. There are reports of various percutaneous methods such as the use of stent grafts [3], coils, or injection of thrombin for closure of pseudoaneurysms [4]. Use of Amplatzer ASD device [St Jude Medical, USA] has been described in various case reports [5–7].

Please cite this article in press as: Deshpande S, et al. Percutaneous closure of aortic pseudoaneurysm in a young female with atrial septal occluder. J Cardiol Cases (2016), http://dx.doi.org/10.1016/j.jccase.2016.10.004