10.5005/jp-journals-10034-1042

PHOTO ASSAY

Unique Regurgitant Jet in a Patient with Takayasu Arteritis

[1]Brett Cronin, [2]Euqene Golts, [3]Victor Pretorius

ABSTRACT

A 37-year-old female with a history of Takayasu arteritis was admitted for repair of a descending thoracic aortic aneurysm with penetrating ulcer and left ventricular outflow track (LVOT) pseudoaneurysm. A unique regurgitant jet was subsequently identified by transesophageal echocardiography after induction of anesthesia and endotracheal intubation.

Keywords: Left ventricular outflow track pseudoaneurysm, LVOT, Takayasu arteritis, TEE, Transesophageal echocardiography.

How to cite this article: Cronin B, Golts E, Pretorius V. Unique Regurgitant Jet in a Patient with Takayasu Arteritis. J Perioper Echocardiogr 2015;3(2):66-67.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

A 37-year-old female with a history of Takayasu arteritis was diagnosed with a penetrating ulcer of descending thoracic aorta and left ventricular outflow tract (LVOT) pseudoaneurysm. A hybrid procedure which included aortic valve and root replacement and endovascular exclusion of the penetrating ulcer with aneurysmal dilatation of the descending thoracic aorta was planned based on this diagnosis. Her extensive medical history included aortic valve (AV) insufficiency status postmechanical valve replacement, chronic anticoagulation, left carotid artery aneurysm status post left subclavian to left carotid bypass and chronic occlusion of bilateral subclavian arteries. The patient was taken to the operating room where transesophageal echocardiography (TEE) was performed after anesthetic induction and endotracheal intubation (Figs 1 to 3).

[1]Assistant Clinical Professor, [2,3]Associate Clinical Professor

[1]Department of Anesthesiology, University of California, San Diego, California, USA

[2,3]Department of Surgery, University of California, San Diego California, USA

Corresponding Author: Brett Cronin, Department of Anesthesiology, University of California, San Diego, California, USA Phone: 602-689-1309, e-mail: bcronin@ucsd.edu

WHAT IS THE DIAGNOSIS?

Left Ventricular Outflow Track Pseudoaneurysm

The initial intraoperative TEE exam identified what appeared to be a regurgitant jet consistent with a paravalvular leak (Fig. 1, Video 1). This regurgitant jet was clearly identified in the midesophageal (ME) long-axis (LAX) view with color flow Doppler (CFD) and was determined to be outside of the annular ring. Further analysis revealed the saccular structure just posterior to the non or left coronary cusp. Even though this structure was clearly isolated from the aortic root, it appeared to fill on CFD during systole in the ME LAX view (Fig. 2, Video 2). This structure was examined in perpendicular views (Fig. 3, Video 3) and determined to be consistent with the LVOT pseudoaneurysm rather than a paravalvular leak. In fact, the subvalvular pseudoaneurysm extended posteriorly above the annular ring as evidenced by the modified ME AV short-axis view (Fig. 3) and the preoperative contrast tomography (CT) of chest, three-dimensional (3D) reconstruction (Fig. 4). The pseudoaneurysm expanded during systole and emptied into the LVOT during diastole via a narrow neck. The associated jet that was generated during diastole was initially thought to be a paravalvular leak when viewed with CFD in the ME LAX view (Fig. 1). An aortic root replacement with coronary reimplantation was completed and followed by the deployment of an endovascular stent graft in the descending thoracic aorta (Fig. 5). The remainder of the hospital course was uneventful and the patient was discharged from the hospital on postoperative day 11.

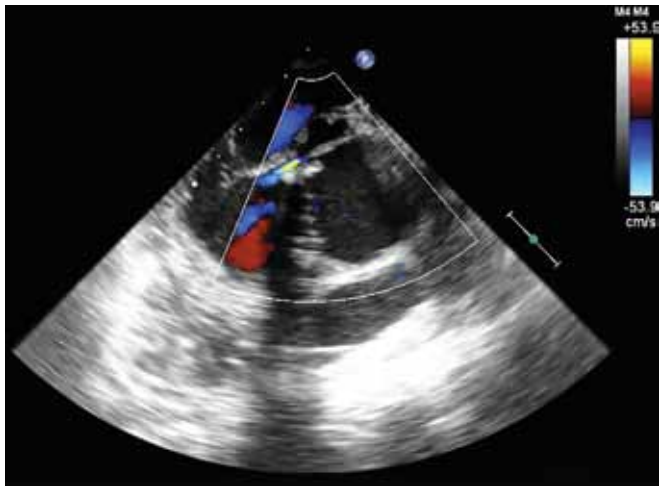

Fig. 1: Transesophageal echocardiography, modified midesophageal long axis with color flow Doppler (diastole)

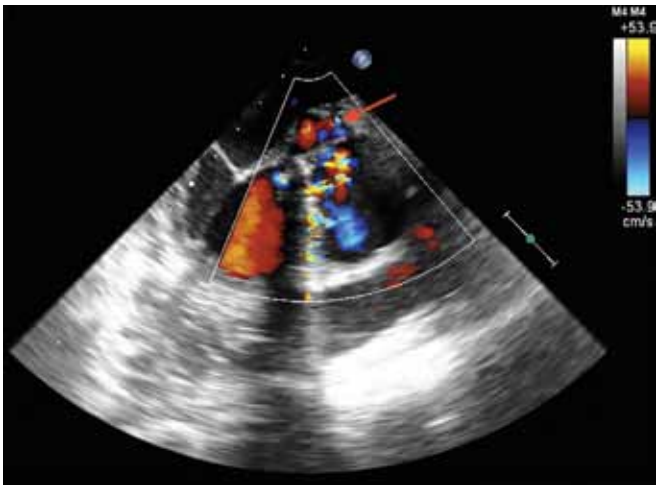

Fig. 2: Transesophageal echocardiography, modified ME long axis with color flow Doppler (mid-systole). The LVOT pseudoaneurysm (red arrow) fills during systole as evidenced by color flow Doppler

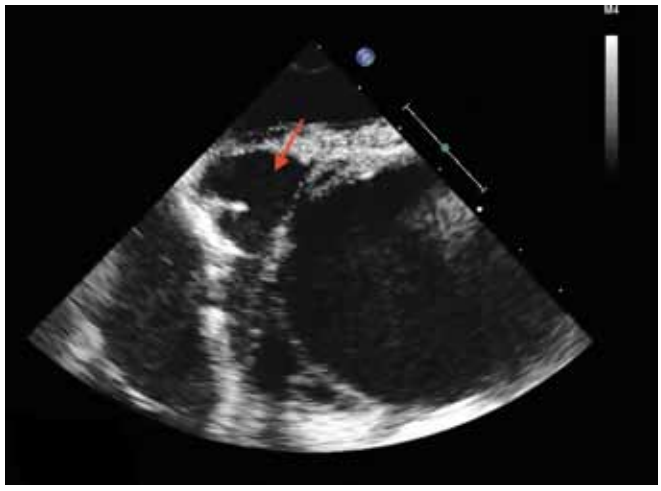

Fig. 3: Transesophageal echocardiography, modified ME AV short axis (diastole, depth decreased). The LVOT pseudoaneurysm (red arrow) without evidence of communication to the aorta is seen in short axis at the supravalvular level

Fig. 4: Preoperative CT of chest with intravenous contrast, 3D reconstruction

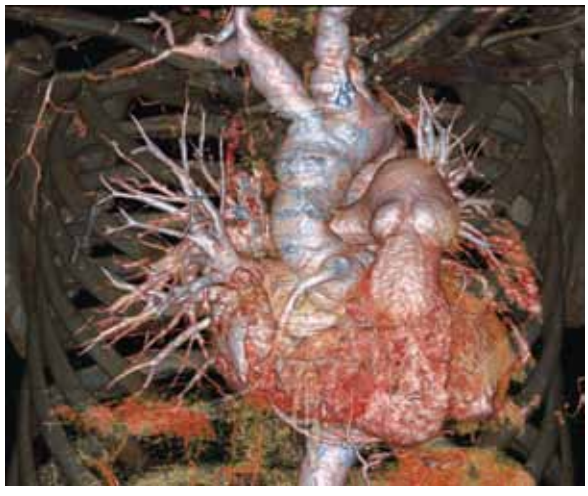

Fig. 5: Postoperative CT of chest with intravenous contrast, 3D reconstruction

Takayasu arteritis is a chronic idiopathic granulomatous vasculitis with a tendency to affect Asian females (female to male ratio is 8:1) younger than 50 years of age. The disease, which predominantly affects large and medium-sized vessels, can have a diverse clinical presentation secondary to the underlying inflammation, atherosclerosis, and eventual fibrosis.[1] Clinical manifestations include vascular stenosis, occlusion, aneurysm formation and/or dissection. Treatment largely relies upon glucocorticoids and disease modifying agents. While surgical treatment may become necessary, occlusion of the arch vessels does not mandate surgical treatment as collateral circulation is often well developed. Furthermore, revascularization procedures for these vessels suffer high restenosis and failure rates.[2]

Even though aneurysm formation in the setting of Takayasu arteritis is not uncommon, LVOT pseudoaneurysm formation is rare. Possible predisposing factors include a history of prosthetic aortic valve replacement, myocardial infarction, chest trauma, infective endocarditis and congenital heart disease. Left ventricular outflow tract pseudoaneurysm formation is attributed to the avascular, vulnerable nature of mitral-aortic intervalvular fibrosa and typically arise posterior to the aortic root.[3,4]

REFERENCES

1. Maleszewski JJ. Inflammatory ascending aortic disease: perspectives from pathology. J Thorac Cardiovasc Surg 2015 Feb; 149(Supp 2):S176-183.
2. Chatterjee S, Flamm SD, Carmela DT, et al. Clinical diagnosis and management of large vessel vasculitis: Takayasu arteritis. Curr Cardiol Rep 2014 Jul;16(7):499.
3. Jha AK, Pandey R, Gharde P, et al. Idiopathic left ventricular outflow track pseudoaneurysm. Ann Card Anaesth 2013;16(3): 209-211.
4. Da Col U, Ramoni E, Di Bella I, et al. An unusual left ventricular outflow pseudoaneurysm: usefulness of echocardiography and multidetector computed tomography for surgical repair. Cardiovasc Intervent Radiol 2009 Jan;32(1): 188-191.