

A case of late dissection of aorta post aortic valve replacement

Abstract

Dissection of aorta post aortic valve replacement (AVR) is a potentially fatal and rare complication. Presence of bicuspid valve, aortic regurgitation, systemic hypertension and marfans syndrome prior to surgery are predictors for such events post aortic valve replacement. The measurement of aortic root and ascending aorta diameter by transesophageal echocardiography (TEE), computed tomography (CT) or magnetic resonance imaging (MRI) helps to choose which patients should undergo prophylactic ascending aorta graft along with AVR to prevent such catastrophes in future.

Keywords: aortic valve replacement, transesophageal echocardiography, computed tomography, AVR, MRI

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Abbreviations: AVR, aortic valve replacement; TEE, transesophageal echocardiography; CT, computed tomography; MRI, magnetic resonance imaging

Introduction

Type A dissection is seen in 0.6 % of patients late after aortic valve replacement and 13 % of patients with type A dissection have a history of AVR.¹ Patients with an aortic root diameter of ≥ 43 mm should be assessed for potential risk factors for late dissection and are likely to benefit from a prophylactic aortic surgery.²

Case report

A 43year old male had undergone an aortic valve replacement using bileaflet mechanical prosthesis for bicuspid aortic valve causing severe aortic stenosis and a moderate aortic regurgitation at an outside hospital five years ago. He presented to our emergency department with history of acute onset of sudden severe chest pain radiating to interscapular region and back with an episode of vomiting and transient loss of consciousness leading to a fall one hour ago.

On examination, he was conscious oriented, responding to verbal commands and moving all limbs. His pulse rate was 105/minute, blood pressure -100/70mmHg. Peripheral pulses were feeble. ECG revealed a sinus tachycardia. A prosthetic valve click was heard on cardiac auscultation. There were normal vesicular breath sounds heard bilaterally. No adventitious sounds or murmur was heard. Chest x-ray was suggestive of mediastinal widening.

A transthoracic echocardiogram was done which revealed a normal functioning mechanical prosthesis at aortic position with no valvular or paravalvular regurgitation. A huge aneurysm of ascending aorta with a maximum diameter of 10cm was noted (Figure 1A). There was a strong suspicion of a dissection flap along the aneurysm. A small loculated pericardial collection was seen anteriorly. An urgent CT aortogram (Figure 1B) was done which confirmed a large ascending aorta aneurysm with a dissection flap arising near to the origin of right coronary artery and extending into aortic arch. There was no dissection of the coronaries. There was a focal rupture of distal ascending aorta with a pericardial leak suggesting a contained rupture. Minimal ascites and minimal pleural effusion was noted. Patient was taken up for an urgent ascending aorta repair and graft but unfortunately he expired during surgery.

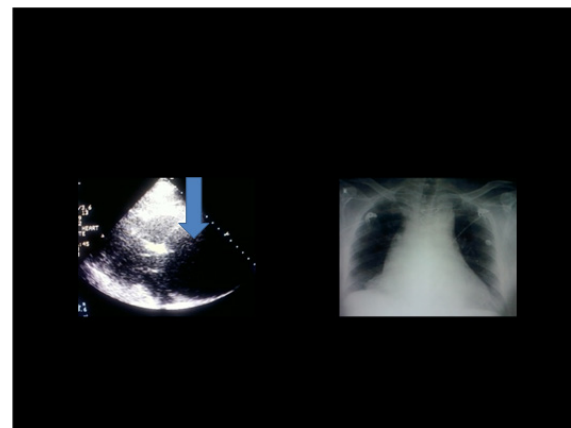


Figure 1A Parasternal long axis view (PLAX) on transthoracic echocardiogram showing ascending aorta aneurysm (arrow mark) and chest x-ray showing mediastinal widening (right).

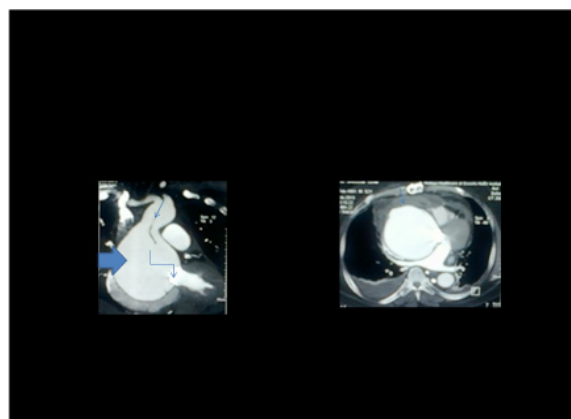


Figure 1B CT scan showing large ascending aorta aneurysm (bold arrow), dissection flap (down arrow), aortic mechanical prosthesis (bend square arrow) on left image and pericardial collection (arrow mark) suggesting a contained rupture on right image.

Discussion

Aortic regurgitation in presence of moderate aortic root dilatation reflects an aortic root disease and isolated AVR is an incomplete

treatment. In general aortic diameter of <50mm carries a low risk of dissection or rupture.³ Aortic wall fragility in combination with aortic thinning or aortic regurgitation carries a 64% or 79% probability of dissection which increases to 96 % in presence of all these factors. There has been a high prevalence of aortic regurgitation (92%), arterial hypertension (57%), cystic medial necrosis (39%) and bicuspid aortic valves (24%) in these cases while paravalvular leak after AVR plays a major role in development of non-dissecting aneurysms.⁴

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Conflicts of interest

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