A Case of Tuberculous Aortitis

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ABSTRACT

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Tuberculosis Aortitis (TA) is a rare phenomenon. A 20-year-old female presented with myalgia and arthralgia. Pulse was high volume, wide pulse pressure, forceful and shifted apex beat, dancing carotids, diastolic murmur heard over the aortic area were detected. Echocardiogram showed dilated aortic root with bilobed irregular contrast filled collection from right coronary cusp indicating right sinus of Valsalva pseudoaneurysm(SoVA) and severe aortic regurgitation. CT scan of chest and abdomen revealed mediastinal lymph nodes, abdominal and iliac nodes. Lymphnode biopsy was planned, but patient didn't turn up. At 22 years age she presented with abdominal pain, vomiting and haemorrhagic shock. Echocardiogram showed right coronary cusp aneurysm rupture into interventricular septum, and severe aortic regurgitation. CT Aortogram revealed dissection flap in Abdominal Aorta with partial eccentric thrombus and gross ascites. Infection work up for aneurysm revealed that her Mantoux test and interferon gamma release assay (IGRA) were strong positive. She was started on Anti tuberculosis therapy (ATT), steroids and is being taken up for SoVA repair. Management of TA includes steroids, ATT and surgical intervention when required.

Keywords: Sinus of Valsalva Pseudoaneurysm, Coronary Cusp Aneurysm, Dissecting Aneurysm of Aorta, Tuberculous Aortitis, Aortic Regurgitation.

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INTRODUCTION

Tuberculosis Aortitis (TA) is a rare phenomenon in Tuberculosis (TB) caused due to Mycobacterium Tuberculosis with a prevalence in the range of 1-3 %.[1] Most often infection spreads to vessel wall by contiguous spread from nearby affected organ.[2-4] It carries a high mortality as it leads to perforation of affected segment of Aorta due to weakening of the wall by the microorganism thereby leading to cardiovascular collapse.[2] Hence diagnosing the entity at early stage and instituting appropriate treatment is mandatory for preventing catastrophic complications. Here we describe a young female who was diagnosed to have Sinus of Valsalva (SOV) aneurysm with severe aortic regurgitation. Work up for the SOV aneurysm showed vessel wall thickening in few vascular territories. Considering young age and chronic history initially presumed to be Takayasu arteritis but later found to have matted abdominal lymph nodes with strong positive Mantoux and IGRA (interferon gamma release assay). Hence, she was diagnosed to have TA. She was started on ATT, steroids and planned for SOVA repair.

CASE REPORT

A 20-year-old female presented with myalgia and arthralgia. On examination she had wide pulse pressure, forceful apex down out of the midclavicular line. Pulse was high volume in nature felt in all four limbs. A diastolic murmur was heard at Aortic area. She had dancing carotids, collapsing pulse, duroseiz murmur, with upper and lower limb blood pressure difference more than 20 mm of hg. Blood investigation showed raised acute phase reactants with ESR and CRP being 50 mm/hr and 17 ng/ml respectively.

Echocardiogram showed dilated aortic root with bilobed irregular contrast filled collection from right coronary cusp s/o Right SOV pseudoaneurysm 3.2*1.43*2.6 cm. Projection was below right ventricular outflow tract and interventricular septum into left ventricle. There was thickening of aortic valve with severe aortic regurgitation.

HRCT chest and abdomen lungs revealed mediastinal lymph nodes, abdominal and iliac nodes. Autoimmune

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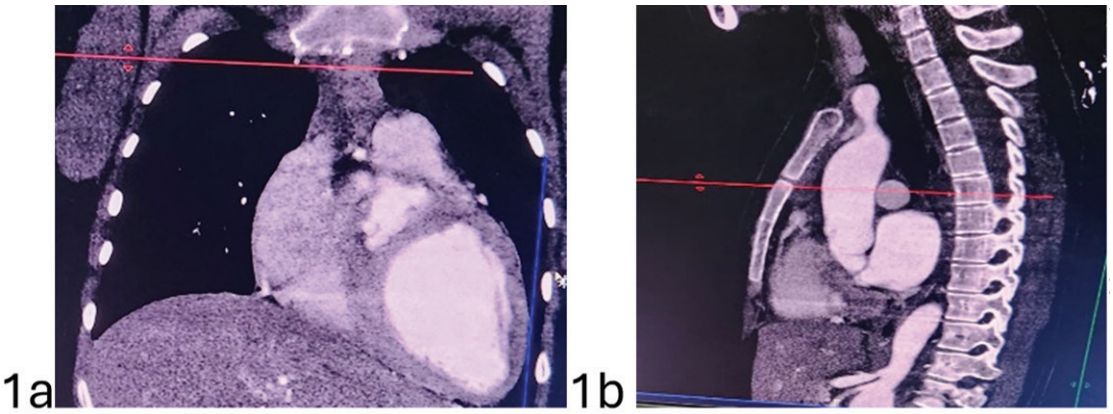

Figure 1a. Right SoVA; 1b. Aneurysmal fusiform dilatation of Abdominal Aorta

investigations including Antinuclear antibody, Antineutrophilic cytoplasmic Antibody, Rheumatoid Factor, Anti cyclic citrullinated peptide. She was advised surgery for biopsy. Patient did not follow up.

At 22 years age she presented with abdominal pain and vomiting. Her haemoglobin was 4 gm/dl on admission and was in haemorrhagic shock. Echo showed Right coronary cusp aneurysm rupture into interventricular septum, aortic annulus measured 30 mm with severe aortic regurgitation. Cardio CT showed RSoVA, ectasia of innominate artery, wall thickening with enhancement of proximal Descending Thoracic Aorta (DTA), aneurysmal fusiform dilation of Abdominal Aorta extending from SMA origin to infrarenal Abdominal Aorta **(Figure 1a & 1b).** In order to find the cause for SoVA CT Aortogram was done which showed wall thickening in Right subclavian artery, Aortic Arch, DTA, Abdominal Aorta, matted lymph node in Right iliac and aortocaval area. There was a dissection flap in Abdominal Aorta with partial eccentric thrombus which had a false lumen with gross ascites. As she was a young female with aneurysms and vessel wall thickening she was initially considered to have Takayasu arteritis but infectious work up for aneurysm revealed that her Mantoux and IGRA were strong positive. VDRL was negative. It was not feasible to carry out the lymph node biopsy. Hence she was started on Antituberculous treatment (ATT), steroids and is being taken up for SoVA repair.

DISCUSSION

On initial admission she was diagnosed to have sinus of Valsalva aneurysm but didn't cooperate for further evaluation. Second admission she was admitted with haemorrhagic shock when detailed evaluation was done. Causes of SOVA are enumerated in the tabular column **(Table 1).**[5]

Table 1. Causes of SOVA

Acquired	Infection: TB/Syphilis/Bacterial Endocarditis Chest Trauma Vasculitis -Aortoarteritis Atherosclerosis
CONGENITAL	Ehlers /Danlos Marfan's Cystic Medial Necrosis VSD/ Aortic Regurgitation Bicuspid Aortic Valve

SoVA is the distension of SoV which is the space between aortic root and aortic valve annulus. Sinus helps the aortic valve opening during systole without compromising coronary artery blood flow. Right coronary artery drains into right coronary sinus and left coronary artery drains into left coronary sinus, posterior sinus is non coronary one. Most of the aneurysm occur in Right coronary sinus followed by non-coronary sinus and rarely left coronary sinus. Sylla has described SoVA in left coronary sinus due to Tuberculosis.[6] So work up of SoVA has led to diagnosis of vascular findings suggestive of aortitis.

Theory behind the TA is that infection from adjacent infected organ mostly from lymph node can spread to aortic wall or haematogenous spread into vasa vasorum or intima of aorta.[1] Tuberculous aneurysms can present as pulsatile masses, chest pain, backache, hoarseness of voice, abdominal pain due to compression of adjacent structures or constitutional symptoms like fever weight loss etc. Complications can occur like perforation, fistula formation of affected vascular segment.

Most common location of TA is junction of Aortic Arch and DTA due to proximity to mediastinal structures. There have been many reports of TB aneurysms involving aortic arch. Bukhari and Alrajahi described a aortic arch and DTA aneurysm in a patient who

underwent surgical resection and graft placement, tissue culture of aortic tissue grew mycobacterium tuberculosis.[4] They had instituted 18 months of ATT. Patient had symptomatic and radiological improvement but 3 months after discontinuation he had developed haemothorax and succumbed to it hence they have proposed that ideally patient should have been put on lifelong INH maintenance therapy

Delaval et al in his case series has described 11 patients with TA who presented with claudication, pulsatile masses, asymmetric Blood Pressure, absent pulses. The vascular lesions described were pseudoaneurysms, aortic wall thickening and vascular stenosis.[1] Vascular territories observed in decreasing order of frequency were Ascending Thoracic Aorta (ATA), DTA, Abdominal Aorta, Subclavian and Iliac arteries. Seven of them who had symptoms of claudication, aortic wall thickening, stenosis, soft tissue changes were treated with steroids ranging from .5 mg/kg to 2 mg/kg along with ATT (Anti tuberculosis therapy) that resulted in either resolution or stabilisation of vessel wall finding at the end of 6 months. Few of them underwent surgical procedures like Bentall procedure, aortic bypass and aneurysm repair. All the patients improved symptomatically.

Shi et al has described two cases of Abdominal Tuberculous aneurysm and aortic ulcer with haematoma in aortic arch.[7] They were treated with ATT in both and stent placement for former case whereas steroids were used for 2 weeks in the latter case.

CONCLUSION

Vascular aneurysms, vessel wall thickening and stenosis are seen in TA[8]. Management includes steroids, ATT and surgical intervention when required. There doesn't exist proper guidelines for dose and duration of steroid use although there exists recommendation globally and regionally for extrapulmonary involvement in TB, No clear policy is drafted for TA but it has improved outcomes in several scenarios of TA.[9]

END NOTE

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Conflict of Interest: None declared

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