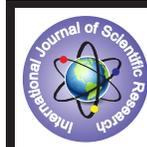


Mycotic Aneurysm of Juxtadiaphragmatic Aorta- A Rare Complication of Tuberculosis



Radiology

KEYWORDS : tuberculosis, aneurysm, mycotic aneurysm, aorta, computed tomography

Rashmi Dixit

Director Professor, Department of Radiodiagnosis, Maulana Azad Medical College and Lok Nayak Hospital, New Delhi-02, India

Swati Gupta

MD, Senior Resident, Department of Radiodiagnosis, Maulana Azad Medical College and Lok Nayak Hospital, New Delhi-02 India

*** Tejeshwar Singh Jugpal**

MD, Senior Resident, Department of Radio diagnosis, Maulana Azad Medical College and Lok Nayak Hospital, New Delhi-02, India, * Correspondence Author

ABSTRACT

Aortic pseudoaneurysm is a rare complication of tuberculosis. However the high prevalence of this infection in developing nations, HIV epidemic and emergence of resistant strains draws our attention to this potentially fatal but treatable complication. Previously, 32 cases have been reported related to all arterial systems from 1993 to 2013. We report a case of aneurysm of juxta-diaphragmatic aorta in a 50-year female patient, detected during evaluation for abdominal pain associated with spinal and pleural tuberculosis. The diagnosis was confirmed on contrast-computed tomography with usage of advanced post processing techniques. Clinico radiological features of this entity are highlighted to facilitate early detection and improved survival of fatal, but treatable condition

CASE REPORT

A 50-year-old woman presented with pain epigastrium and backache of four months duration. She had been diagnosed with left tubercular empyema two years back. She took anti-tubercular treatment for 3 months and stopped medication on her own thereafter.

At presentation the patient was febrile with a temperature of 99°F, was pale and complained of severe pain epigastrium radiating to the back. Her heart rate was 88 and blood pressure 110/70 mmHg. Initial lab investigations revealed that she was anaemic with haemoglobin of 9 gm% and ESR of 55mm. Pleural fluid ADA levels were 45 IU/L.

She was referred for an ultrasound abdomen and endoscopy for evaluation of epigastric pain. The upper GI endoscopy was normal but the ultrasound abdomen revealed dilatation of the upper abdominal aorta and the patient was referred to us for a CT angiogram.

CT angiogram of the patient was done on a 128 slice MDCT scanner following intravenous injection of 100 cc non ionic iodinated contrast with iodine concentration of 400mg% at the rate of 4ml/s followed by saline flush via a pressure injector. The CT images revealed presence of left pleural effusion with thickened, enhancing visceral and parietal pleura and partial collapse of the underlying lung (figure 1). No other parenchymal opacity was evident. There was evidence of a para-vertebral soft tissue mass and retroperitoneal lymphadenopathy. There were lytic lesions in multiple dorsolumbar vertebrae with anterior subperiosteal erosion. On the angiographic images an intensely enhancing outpouching arising from the juxta-diaphragmatic aorta was seen, suggesting a pseudoaneurysm formation at the level of D10 and D11 vertebrae (figure 2). No major visceral arteries were seen arising from the pseudoaneurysm. The patient was put on anti-tubercular treatment and offered surgery that she refused.

Discussion

Tuberculosis remains an important infectious disease in the Indian subcontinent and is currently showing resurgence even in developed countries due to the HIV epidemic. Aortic aneurysms are exceedingly rare but potentially fatal complication of tuberculosis. Kamen first reported tubercular aneurysm of the aorta in 1895². Sporadic case reports

have appeared in literature since then. These were mainly post-mortem reports in the early years. With advancements in diagnostic imaging and treatment antemortem diagnosis became more common.

It has been suggested that *Mycobacterium tuberculosis* can reach the aortic wall in four different ways

- 1) Direct implantation on internal surface of vessel wall
- 2) Bacteria can reach adventitia via vasa vasorum
- 3) Via lymphatics of vasa vasorum
- 4) Direct extension from neighbouring tubercular foci such lymph node abscess or bone.

Extension of infection from contiguous focus has been found to be the commonest cause in most studies in literature accounting for about 75% cases³. The arteries can also be affected by hypersensitivity reaction to tubercular antigen.

Most (87%) tubercular aneurysms are pseudoaneurysms and rarely may be true (9%) or dissecting aneurysm (4%)⁴. The aneurysms are usually solitary and calcification is characteristically absent.

Although tubercular aneurysm can involve any segment of the aorta it most commonly involves thoracic or abdominal aorta. Involvement of the thoracoabdominal aorta has been reported only in 3 cases. This has been attributed to small number of nodes, low incidence of atheroma and separation of the aorta from its surrounding structures in this region³.

Tuberculous aortic aneurysm is associated with a high risk of rupture with hemodynamic complications and mortality. Treatment includes surgical resection with perioperative anti tuberculosis therapy. Surgical options available are open surgery, extra- anatomic bypass, intervention therapy or endovascular repair⁵. In our case, patient was advised endovascular repair, which was refused and eventually expired due to rupture of aneurysm 40 days later.

Pseudoaneurysm formation is a recognized complication of tuberculosis with resurgence due to HIV epidemic. Hence early detection, surgical resection and antituberculous therapy are essential for management of this potentially fatal complication.

Figures

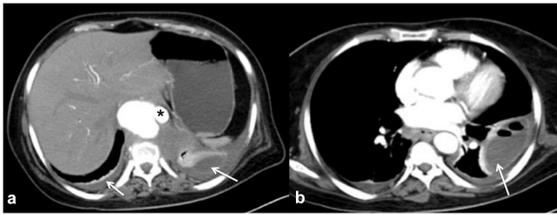


Figure 1: (a) CT angiography axial image shows bilateral emphysema (arrow) with enhancing parietal and visceral pleural lining pleural membranes with juxta-diaphragmatic aorta aneurysm formation (*). (b) Axial CT image at mid thoracic level shows a loculated empyema in left pleural cavity (arrow) with convex inner border and air fluid levels within



Figure2: (a) CT- 3-D Volume Rendered Technique (VRT) image shows a sac like outpouching arising from descending aorta (arrow). (b) CT sagittal image in bone window setting shows presence of erosive changes seen in vertebral bodies of D9-12 vertebrae (white arrowhead) with pseudoaneurysm arising from segment of aorta adjacent to D10-11 (arrow).

REFERENCES

1. Zhang C, Chen B, Gu Y, Luo T, Yang S, Liang W, Wang Z. Tuberculous abdominal aortic pseudoaneurysm with renal and vertebral tuberculosis: a case and literature review. *J Infect Dev Ctries* 2014 Sep 12;8(9):1216-21.
2. Kamen, L Aortenruptur auf tuberculozer grundlage. *Beitr Pathol Anat* 1895;17,416-419
3. Jain AK, Chauhan RS, Dhammi IK, Maheshawari AV, Ray R. Tubercular pseudoaneurysm of aorta: a rare association with vertebral tuberculosis. *Spine J.* 2007; 7:249-253.
4. Chodhary SK, Bhan A, Talwar S, Goyal M, Sharma S, Venugopal P. Tubercular pseudoaneurysms of aorta. *Ann Thorac Surg* 2001;72:1239-44.
5. Kandpal H, Seith A. Rapidly enlarging mediastinal mass in a middle-aged patient with fever. *Br j Radiol* 2008 Apr;81(964):357-9.