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Case Report

Abscess and aneurysm: A case of tuberculous abscess causing an aortic pseudo-aneurysm [☆]

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ABSTRACT

Thoracic aortic pseudoaneurysms are a rare but serious complication of infectious processes, often resulting from mycotic (infectious) aneurysms, occurring when the vessel wall is compromised by an infection, leading to the formation of a pseudoaneurysm [1]. Mycotic aneurysms typically result from bacteremia or fungemia, with common sources being infective endocarditis or other systemic infections. Tuberculosis, though a common infectious disease worldwide, is an unusual cause of aortic pseudoaneurysm formation. We present the case of a 26-year-old Asian male with a history of positive Quantiferon test, who presented with two weeks of back pain, hemoptysis, cough, night sweats, fever, and chills. CT imaging revealed a pseudoaneurysm at the T11-T12 level, associated with an epidural abscess, prevertebral rim-enhancing collection, and signs of osteomyelitis. The patient underwent endovascular repair of the aortic aneurysm, followed by drainage and biopsy of the epidural abscess and antibiotic therapy for the underlying infection. This case demonstrates the rare occurrence of a mycotic aneurysm caused by tuberculous infection, and the importance of early diagnosis and prompt surgical intervention to prevent catastrophic complications such as rupture, sepsis, or neurological impairment.

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Introduction

Extrapulmonary tuberculosis represents a significant and challenging aspect of tuberculosis infections, often leading to severe and life-threatening complications. While pulmonary tuberculosis is well-recognized for its characteristic respiratory manifestations, extrapulmonary involvement can present with a wide spectrum of clinical syndromes, requir-

ing a high index of suspicion for making a timely diagnosis. Common complications of extrapulmonary tuberculosis include lymphadenitis, pleural effusion, pericarditis, peritoneal tuberculosis, and skeletal involvement such as Pott's disease, which involves the vertebrae. Rarely, tuberculosis can lead to more devastating sequelae, such as central nervous system involvement (tuberculous meningitis or tuberculomas), genitourinary tuberculosis, or vascular complications like pseudoaneurysms and mycotic aneurysms.

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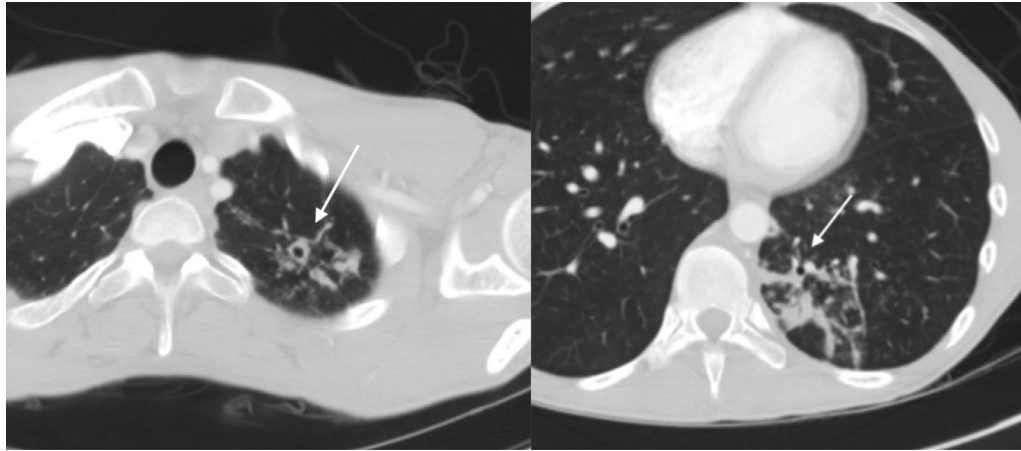


Fig. 1 – CT images of the lungs. Left image: CT axial image with arrow pointing to scarring of left lung apex, demonstrating likely pulmonary tuberculosis. Right image: CT axial image with arrow pointing to airspace opacities with tree-in-bud nodules in the left lower lobe of the lung, demonstrating likely pulmonary tuberculosis.

In this report, we present the rare case of a young male who initially presented with hemoptysis, fever, night sweats, and cough as well as back pain which lead to the diagnosis of a thoracic aortic pseudoaneurysm secondary to a tuberculous epidural abscess and vertebral osteomyelitis. Diagnostic imaging revealed a pseudoaneurysm at the T11-T12 level associated with an epidural abscess, prevertebral rim-enhancing collection, and vertebral osteomyelitis, prompting urgent endovascular repair of the aneurysm followed by abscess drainage and biopsy and prolonged antituberculous therapy, with the patient subsequently recovering and experiencing full resolution of symptoms. The patient's clinical course highlights the importance of maintaining a high index of suspicion for extrapulmonary tuberculosis in endemic regions or patients with positive tuberculosis testing.

Case presentation

A 26-year-old Asian male presented with a 2-week history of worsening back pain, hemoptysis, cough, night sweats, fever, and chills. He described his back pain as “tender” and “stiff” and was most severe at night and temporarily relieved by over-the-counter analgesics.

He had no prior history of chronic illness, but in-patient testing showed a positive Quantiferon test. Given his constitutional symptoms and history of hemoptysis, tuberculosis was considered a potential diagnosis.

On physical examination, the patient appeared ill, with low-grade fever, mild tachycardia, and reduced breath sounds in the lower lung fields. Importantly, his neurological examination was unremarkable, with no motor or sensory deficits, preserved reflexes, and no signs of bowel or bladder dysfunction. The absence of neurological findings at presentation was surprising considering the extent and severity of his condition as imaging later revealed.

Laboratory workup revealed elevated inflammatory markers, including ESR and CRP, but routine blood cultures were

negative. A chest CT demonstrated bilateral airspace opacities with tree-in-bud nodules, most prominent in the left lower lobe, along with scarring of the bilateral lung apices. These findings further confirmed a diagnosis of pulmonary tuberculosis [Figs. 1–4](#).

Further evaluation with a thoracic CT scan revealed a $1.4 \times 1.7 \times 1.3$ cm pseudoaneurysm at the T11-T12 level with an adjacent epidural fluid collection. The pseudoaneurysm extended dorsally into a prevertebral abscess collection, which measured from T9 to L1 levels. Cortical disruption at the T11-T12 anterior vertebral bodies was consistent with osteomyelitis, and the prevertebral rim-enhancing collection was suggestive of a tuberculous abscess, especially given his positive Quantiferon test.

Given the critical nature of the pseudoaneurysm and the risk of rupture, the patient was referred for urgent endovascular repair. He underwent a successful endovascular repair of the thoracic aortic pseudoaneurysm, followed by non-contrast CT imaging for localization of the prevertebral abscess for drainage and biopsy.

After the spinal abscess drainage, the pathology report of the specimen confirmed the presence of *Mycobacterium tuberculosis*, consistent with a diagnosis of tuberculous spondylitis complicated by a mycotic pseudoaneurysm. Following the surgical interventions, the patient was stabilized and continued his prolonged course of antituberculous therapy. Postoperatively, the patient's symptoms improved, with resolution of fever, chills, and back pain.

Discussion

Thoracic aortic pseudoaneurysm secondary to tuberculous infection is an extremely rare complication of tuberculosis. While tuberculosis is commonly associated with pulmonary manifestations, it can also present with extrapulmonary complications such as vertebral osteomyelitis and epidural abscess formation.



Fig. 2 – CT images with contrast of the thoracic/abdominal spine. Left: Sagittal thoracic/abdominal CT with contrast. Arrow pointing to T11/T12 epidural abscess. Right: Sagittal thoracic/abdominal CT with contrast. Arrow pointing to T11/T12 epidural abscess.

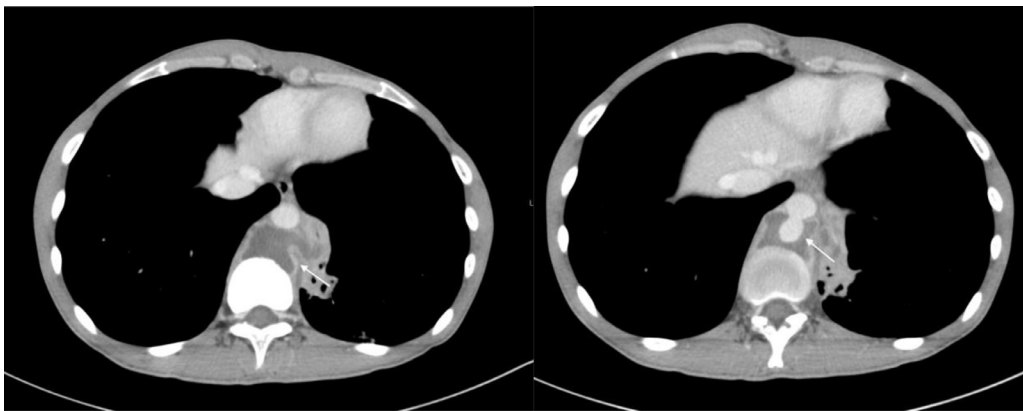


Fig. 3 – CT images with contrast of the lungs showing epidural abscess. Left: Axial CT with contrast. Arrow pointing to T11-T12 level paraspinal epidural abscess. Right: axial CT with contrast. Arrow pointing to T11-T12 pseudoaneurysm with an adjacent paraspinal epidural abscess.

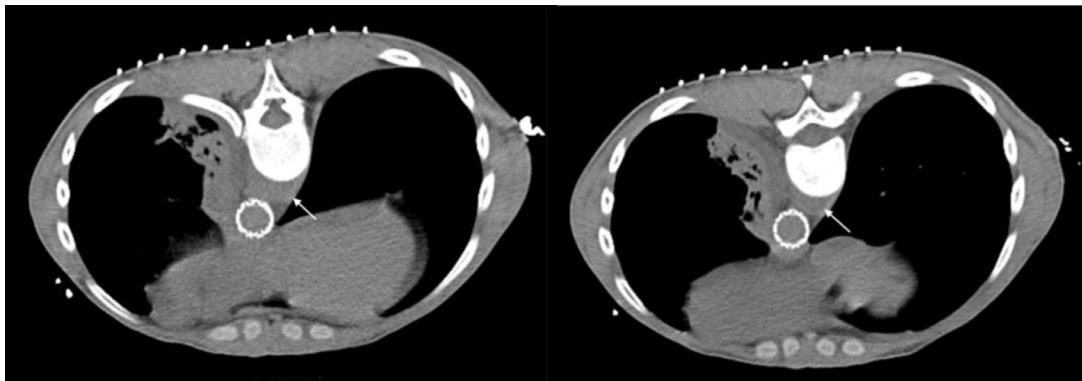


Fig. 4 – Axial CT images demonstrating endovascular repair with thoracic stent graft.

The primary imaging modality used to diagnose a mycotic pseudoaneurysm is computer tomography (CT) as it is able to detect the mycotic pseudoaneurysm, assess the characteristics of the lesion, and identify adjacent affected structures. CT findings of an infected pseudoaneurysm are described as a “blind, saccular outpouching” of the aortic segment that contains an arterial wall with nonuniform wall contour and adjacent edema or soft-tissue swelling [2]. Mycotic aortic aneurysms run the risk of rapid growth and subsequent rupture, a life-threatening complication that can quickly cause hemodynamic instability and massive blood loss.

The presentation of infectious aneurysms is generally with rapid and sudden onset abdominal or back pain, but without the symptoms of hypovolemic shock (low blood pressure, clammy skin, decreased urine output, altered mental status) [3]. In general, infectious aortic aneurysms occur most commonly in men over the age of 50 with pre-existing thoracic or abdominal aortic wall damage - such as aneurysmal dilatation or atherosclerosis of the aortic wall [4]. In cases involving tuberculosis, the thoracic aorta can be affected due to contiguous spread from nearby infected tissues, such as lymph nodes, lung tissue, or hematogenously such as in miliary tuberculosis [5].

In this patient, the infection likely originated from infected lung tissue, then became a tuberculous focus in the vertebral bodies, leading to the development of an epidural abscess, which subsequently extended to involve the thoracic aorta, resulting in a pseudoaneurysm forming. Angioembolization can be utilized in treatment for a pseudoaneurysm; however, endovascular stent grafts are often preferred as they preserve vessel patency, promote faster recovery, reduce complications, and minimize the risk of extravasation [6].

The successful management of this case involved a multidisciplinary approach, with endovascular repair of the aneurysm, drainage of the abscess, and prolonged antibiotic therapy to control the underlying infection. This case demonstrates the importance of considering tuberculosis in the differential diagnosis of paraspinal abscesses and

thoracic aortic pseudoaneurysms, especially in patients with risk factors or a history of latent tuberculosis infection. Early diagnosis, prompt surgical intervention, and appropriate antimicrobial therapy are essential to prevent life-threatening complications (such as rupture of the aneurysm and death) in such cases.

Patient consent

The authors confirm that written informed consent was obtained from the involved patient, and they have given approval for this information to be published in this case report.

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