Recurrent Tuberculous Pseudoaneurysm of the Descending Thoracic Aorta

A Case Report

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Tuberculous pseudoaneurysm of the aorta is a rare disease that is uniformly fatal if not treated properly. The authors present a case of a recurrent tuberculous false aneurysm of the descending thoracic aorta that was treated surgically with excision and primary repair of the lesion. To their knowledge, this is the first reported case of recurrent disease after a successful surgical treatment.

Introduction

Tuberculous pseudoaneurysm of the aorta is an exceedingly rare entity associated with high mortality. The extension of the infection from neighboring or contiguous inflammatory foci is the cause of the aortitis.[1] These aneurysms are prone to rupture or perforation into adjacent organs, often resulting in fatal exsanguinating hemorrhage.[1,2]

There are few reports of such aneurysms treated surgically in the literature. In this report, we present a case of recurrent tuberculous aneurysm of the descending thoracic aorta after a successful surgical therapy and an effective regimen of antituberculous chemotherapy.

Case Report

A 65-year-old man presented to our hospital with the beginning of complaints comprising cough and hemoptysis. Five months before his presentation he had undergone an operation for thoracic tuberculous spondylitis with posterior stabilization performed on 6th, 7th, and 8th thoracic vertebrae. He had been receiving a full course of antituberculous drug therapy since that time. Blood pressure, pulse, hemoglobin, and hematocrit were within normal limits. Remote medical history was unremarkable.

Computed tomography (CT) showed a centrally opacified periaortic 3.5 × 5 cm mass compatible with a pseudoaneurysm in the descending thoracic aorta at the level of the thoracic 7th and

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8th vertebrae. The aneurysm originated from the left lateral aspect of the descending thoracic aorta. Follow-up CT angiography (Figure 1), performed 6 days later, showed that the diameter of the aneurysm had increased, and emergency surgical therapy was decided. Conventional angiography done in preparation of the patient for surgery also confirmed the diagnosis of a pseudoaneurysm (Figure 2).

Operation was undertaken via a left posterolateral thoracotomy and circulatory arrest. The aneurysm appeared to be of the false variety. It was resected and the hole in the aortic wall was closed by patch aortoplasty. The excised material was later demonstrated to be necrotizing granulomatous inflammatory tissue containing innumerable acid-fast bacilli and proved to be abundantly culture-positive for *M. tuberculosis.* The patient's postoperative course was uneventful. Antituberculous chemotherapy that was introduced preoperatively was continued and the patient was discharged from the hospital on day 8 following surgery. Pseudoaneurysm was no longer seen on control CT angiography performed 1 week later. The patient, 4 months later, developed recurrence of his symptoms comprising cough and hemoptysis. CT angiography revealed a new pseudoaneurysm that arose from the posterior wall, at the same level of the pseudoaneurysm that was operated on previously (Figure 3). The patient was reoperated on with an excision-graft in another center.

Discussion

Tuberculous aneurysm of the aorta is an extremely rare but potentially catastrophic complication of tuberculosis. Volini et al[1] described the pathogenesis and complications of tuberculosis of the aorta. The most common (75%) mode of spread to the aorta is by direct extension from an adjacent tuberculous foci such as tuberculous lymphadenitis, pericarditis, empyema, spondylitis, and paravertebral abscess.[3,4] Less often (25%) no contiguous focus of disease can be described, and it is thought that the organisms reach the aorta via hematogenous dissemination.[5,6] Tuberculous aortitis leads to the formation of an aneurysm in about half the cases.[1] The focus of aortitis that occurs causes a destruction in aortic wall. Caseating necrosis that involves all layers of the aortic wall results in transmural perforation with resultant massive hemorrhage or perivascular hematoma. Perivascular hematoma, by tamponade from surrounding tissues, is encapsulated. It is called false aneurysm or pseudoaneurysm by virtue of preservation of its relation with aortic lumen. Most tuberculous aneurysms are saccular and false,[7] representing a walled-off perforation of the aorta.[4]

The specific site of involvement is usually the thoracic or abdominal aorta. If left untreated, tuberculous pseudoaneurysm has extremely poor prognosis and potential catastrophic consequences. The aneurysm generally may rupture

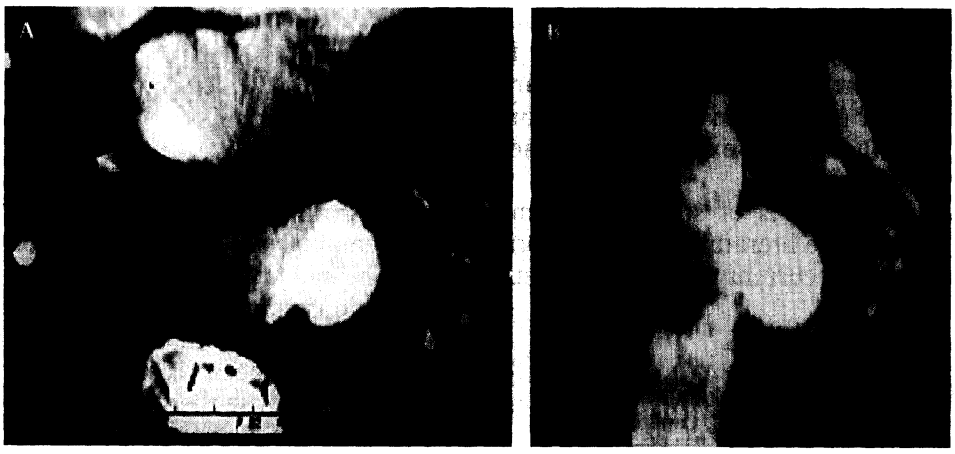

Figure 1. CT angiography obtained 6 days after the initial CT examination (not shown).
A. Axial scan. Pseudoaneurysm originating from the lateral wall of the descending aorta. Broad communication is seen between the native lumen of the aorta and the false lumen of the aneurysm. The diameter of the aneurysm has increased when compared with the previous CT examination (not shown).
B. Coronal reformatted image nicely demonstrates the pseudoaneurysm.

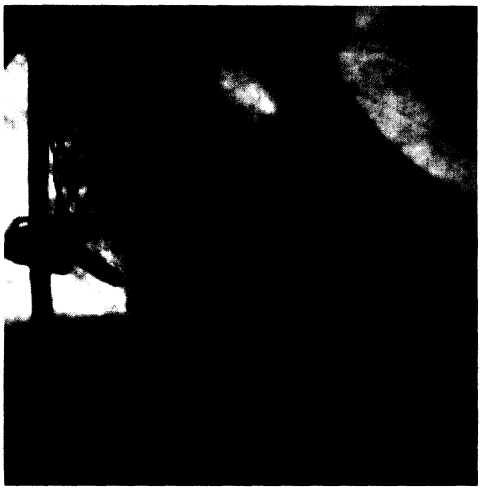

Figure 2. Angiographic appearance of the pseudoaneurysm.

Figure 3. Follow-up CT angiography obtained 4 months after the surgical operation. **A.** Axial scan. Recurrent pseudoaneurysm, originating from the posterior wall of the aorta, located at the same level as the previous aneurysm. **B.** Sagittal reformatted image shows the saccular aneurysm with broad communication with the native lumen.

into an adjacent organ, depending on its site of origin. The usual symptoms of a tuberculous aneurysm, dependent on localization, are commonly, pain, pulsatile mass, shock, or hemoptysis.

In the past, the radiographic diagnosis of tuberculous aortic aneurysm had rested on aortography. Since the first report of its use by Harris et al[5] in 1978, CT examination performed with intravenous (IV) contrast agent has proved to be a useful means of detection of the aneurysm. CT angiography better delineates the morphology of the aneurysm. Magnetic resonance imaging (MRI) is a useful investigative procedure,[8] and MR angiography by use of IV Gd-DTPA injection via infusion pump is an efficient method of demonstrating the aneurysms. However, we did not use MR angiography for our patient because of the possible occurrence of artifacts from metallic hardware for posterior spinal fusion. CT angiography also was degraded by these artifacts that reduced the image quality. In our case, a saccular centrally enhancing pseudoaneurysm demonstrated by CT at the level of previous surgical operation for tuberculous spondylitis pointed toward the correct etiology.

Because early recognition and perioperative antituberculous therapy combined with prompt surgical intervention is the only efficient treatment, no patients had survived before the innovations in modern imaging techniques, antituberculous drugs, and vascular grafts became available. It is not known whether an asymptomatic patient requires surgery. However, it is appropriate to operate on an expanding lesion as in this case.

The patients need periodic follow-up for possible tuberculous reactivation after the surgical treatment. Theoretically, a new aneurysm near to the resection site or a new aneurysm near to the patch closure may occur. To the best of our knowledge, this is the first reported case with a postoperative recurrence of tuberculous pseudoaneurysm.

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