CASE REPORT

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Syphilitic aneurysm of descending thoracic aorta causing vertebral body erosion and spastic paraparesis

Abstract  Bone erosion from a syphilitic aortic aneurysm is uncommon, having been reported in only a few cases. Vertebral body erosion by a syphilitic aortic aneurysm is rarely associated with neurological deficits. We report a case of a syphilitic aneurysm of the descending thoracic aorta with associated vertebral body erosion and spinal cord compression causing spastic paraparesis.

Key words  Bone compression – Aortic aneurysm – Syphilitic aneurysm – Spinal cord compression

Cardiovascular syphilis was common at the beginning of the twentieth century, but is now considered a rare entity. Aortic aneurysms occur in up to 40 % of patients with syphilitic aortitis, but produce clinically apparent manifestations in only 5–10 % [1]. Bone erosion from a syphilitic aortic aneurysm is uncommon, with few reported cases of vertebral body or sternal erosion [2, 3, 4, 5, 6]. We report a case of a syphilitic aneurysm of the descending thoracic aorta with associated vertebral body erosion and spinal cord compression causing spastic paraparesis.

Case report

A 44-year-old man presented to the emergency room with a 6-month history of worsening bilateral lower extremity weakness causing increasing difficulty in ambulation. Past medical history was significant only for hypertension. Physical examination revealed 4/5 motor strength in both hips. The motor and sensory exam were otherwise normal. Patellar reflexes were 3+ and ankle clonus was noted bilaterally. Babinski signs were upgoing bilaterally. Laboratory values included ESR 31 mm/h, rapid plasma reagin reactive at 1:4 and a reactive fluorescent treponemal antibody absorption test.

A chest radiograph (Fig. 1) demonstrated a large mediastinal mass with associated erosion of the T5–T7 vertebral bodies. A CT scan of the chest (Fig. 2) revealed a 7 cm × 10 cm sacular aneurysm of the proximal descending thoracic aorta with a large amount of mural thrombus and associated extensive erosion of the T5–T7 vertebral bodies and posterior elements of the left fifth to seventh ribs. A 5-cm fusiform aneurysm of the ascending thoracic aorta was also noted. MRI of the thoracic spine (Fig. 3) showed extension of the descending thoracic aortic aneurysm through the left T4–5, T5–6, and T6–7 neural foramina into the epidural space with displacement and compression of the spinal cord, most prominently at T5. A thoracic aortogram (Fig. 4) revealed aortic insufficiency and involvement of the right brachiocephalic artery from the fusiform aneurysm of the ascending thoracic aorta.

Penicillin therapy was initiated for the treatment of cardiovascular syphilis. The syphilitic aneurysm of the descending thoracic aorta with associated vertebral body erosion and spinal cord compression was felt to be the underlying cause of the patient’s spastic paraparesis. The patient refused surgical repair of the thoracic aortic aneurysms and was discharged home after completing 14 days of penicillin therapy. The patient’s symptoms remain unchanged at 15 months follow-up.

Fig. 1  Frontal chest radiograph shows a large mediastinal mass inseparable from the thoracic aorta causing destruction of the T5–T7 thoracic vertebrae
Cardiovascular manifestations of untreated syphilis generally occur 10–20 years following the primary infection with *Treponema pallidum* [1]. Following the initial infection, organisms are spread hematogenously and lodge in the vasa vasorum. Inflammatory changes occur in the adventitia which lead to an endarteritis with eventual adventitial scarring and medial necrosis [1]. Asymptomatic aortitis is the most common form of cardiovascular involvement, occurring in up to 70–80% of patients. Symptomatic forms of cardiovascular involvement occur in 10–15% of patients and include aortic insufficiency, coronary ostial stenosis, and aortic aneurysm [1].

Aortic aneurysms occur in up to 40% of patients with syphilitic aortitis, but produce clinically apparent manifestations in only 5–10% [1, 2]. Syphilitic aortic aneurysms are typically saccular, but fusiform aneurysms also occur. Of all syphilitic aneurysms, approximately 50% occur in the ascending aorta, 30–40% in the aortic arch, and 10–15% in the descending thoracic aorta. Less than 5% of syphilitic aneurysms in the descending thoracic aorta originate below the sixth vertebral body. Multiple aneurysms may occur in 4–7% of patients with syphilitic aortitis [1].

Bone erosion from syphilitic aneurysm is uncommon, having been reported in only several cases [2, 3, 4, 5, 6]. An autopsy study by Heggtveit revealed only 2 cases of vertebral body erosion in 51 syphilitic aneurysms [2]. Leung et al. reported five cases of vertebral body erosion in patients with syphilitic aneurysms [3]. In this series, erosion was found to involve two and five vertebral bodies, all between the level of T3 and L1. While all five of these patients had associated pain, only one patient presented with spinal cord compression. There are several other case reports of vertebral body erosion from syphilitic aneurysms, but none of these patients had associated spinal cord compression [4, 5, 6]. Bone erosion by syphilitic aneurysms is not limited only to vertebral bodies: there have been several reported cases of sternal erosion by a syphilitic aneurysm of the ascending thoracic aorta [7].

**Discussion**

![Fig. 2](image1) Contrast-enhanced chest CT scan shows 7 cm × 10 cm saccular aneurysm of the proximal thoracic aorta with extensive mural thrombus and associated erosion of the fifth thoracic vertebrae and posterior elements of the left fifth rib. A 5-cm fusiform aneurysm of the ascending thoracic aorta is also present.

![Fig. 3](image2) Axial T1 weighted image of the thoracic spine, at the same level as Fig. 2, shows the saccular aneurysm of the descending thoracic aorta and associated T5 vertebral body erosion. The aneurysm extends through the left neural foramina into the epidural space and displaces the spinal cord to the right.

![Fig. 4](image3) Thoracic aortogram, left anterior oblique projection, shows a fusiform aneurysm of the ascending thoracic aorta with involvement of the proximal brachiocephalic artery and the saccular aneurysm of the proximal descending thoracic aorta.