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Mycotic Thoracic Aortic Aneurysm Producing Vertebral Body Destruction and Paraplegia: Case Report

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Summary

In the surgical treatment of an aortic aneurysm, disruption of the blood supply to the spinal cord, resulting in paraplegia and anaesthesia below the level of involvement, is a dreaded complication. Occasionally, when an aortic aneurysm compresses a major vessel that supplies the anterior spinal artery, spinal cord ischaemia and paraplegia can occur before surgery. In the case presented here, however, pre-operative paraplegia appears to have resulted from direct spinal destruction by an infected aortic aneurysm that was originally diagnosed as a spinal abscess. The patient underwent operative repair, but her aorta was so friable that the sutures would not hold. Despite repeat surgery, her condition rapidly proved fatal. This case shows that, in patients with a suspected spinal abscess, computer tomographic scanning and angiography should be performed to confirm the diagnosis and to rule out other pathological conditions. An accurate pre-operative diagnosis will permit adequate operative planning and prevent catastrophic results.
Key words: *Mycotic aortic aneurysm; Anterior spinal artery syndrome; Paraplegia; Spinal cord ischaemia*

Infected thoracic aortic aneurysms are comparatively rare and are often fatal. Surgical treatment of such aneurysms can be complicated by disruption of the blood supply to the spinal cord (anterior spinal artery syndrome), or possibly by direct destruction of the spinal cord by infection, causing paraplegia below the level of involvement. In the following unusual case, paraplegia occurred before surgery and was due to an unsuspected infected aortic aneurysm that was initially diagnosed as a spinal abscess.

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Case report

A 62-year-old woman was admitted for evaluation of a 24-hour history of paraplegia. The patient was a non-diabetic, non-hypertensive cigarette smoker. Approximately 10 months earlier, while being treated on an outpatient basis for back pain, she had been told that she had 'a spot on her lung'. During the year before the current admission, she had experienced a 20-pound weight loss, migratory polyarthritis, and intermittent vomiting. She had had night sweats for several weeks but denied having fever, or melena.

On admission, the temperature was 95.4°F, the haematocrit 34.2%, and the leukocyte count 22.2/cu mm. Blood cultures were positive for staphylococcus organisms. X-rays revealed evidence of bone destruction of the T9 vertebra. Below this level there was a complete paraplegia.

A spinal abscess was diagnosed, and the patient underwent surgery by a posterior approach, to drain the lesion (tobramycin, nafcillin, and chloramphenicol were given intra-operatively); but when the paraspinal area was entered to drain the abscess, there was a vigorous gush of blood. A 6 cm mycotic descending thoracic aortic aneurysm involving the spinal cord was discovered. The infection extended to the vertebral body of the T9 and the paravertebral space. The aneurysm was totally resected, and the aorta was repaired with a 20 mm woven Dacron interposition graft. Intraoperative Gram staining was not performed, but cultures of the aneurysmal wall revealed staphylococcal organisms. Several hours after surgery, bright red blood began to escape through the chest drains, and the wound was reopened. The aorta was found to be torn at the site of the proximal graft anastomosis. The graft was resected, and regrafting was performed 5 cm more proximally. Bleeding continued because the aorta was very friable and sutures would not easily hold. Multiple bleeding sites appeared in other areas, and massive pulmonary haemorrhage (disseminated intravascular coagulation) ensued. Once control was finally obtained, the incision was closed, and the patient was sent to the intensive care unit, where she continued to bleed from multiple sites; despite transfusions and every other possible effort, she became hypotensive and died on the night after surgery.

Discussion

The incidence of paraplegia after aneurysmectomy of the descending aorta is estimated to be about 5% (Pasternak, 1972). In rare cases, however, when an aortic aneurysm impinges upon a major vessel that supplies the anterior spinal artery, spinal cord ischaemia leading to paraplegia can occur before surgery (Conti *et al.*, 1982; Miller *et al.*, 1979; Smith, 1976; Bolton and Blumgart, 1972). Such ischaemia has been associated with acute dissecting aortic aneurysms, ruptured atherosclerotic aneurysms, traumatic aortic disruption, and direct spinal destruction by infection. In the case presented here, pre-operative paraplegia resulted either from (1) compression of the spinal cord by a mycotic aneurysm or (2) (most likely) the infective process itself, which caused necrosis of the spinal tissue.

Owing to the possibility of rupture and sepsis, mycotic aortic aneurysms have a particularly grave prognosis, and until recently, have been regarded as inevitably lethal. Diagnosis of these lesions, which has been described elsewhere (Brown *et al.*, 1984; Patel and Johnston, 1977; Davies *et al.*, 1978; Anderson *et al.*, 1974) can be difficult, since the aneurysm is not often palpable and causes no pain.

Successful treatment of mycotic aortic aneurysms is based on correct early diagnosis, the use of specific high dose systemic antibiotics, and appropriate surgical repair. Currently, aortic ligation and extra-anatomic bypass is con-

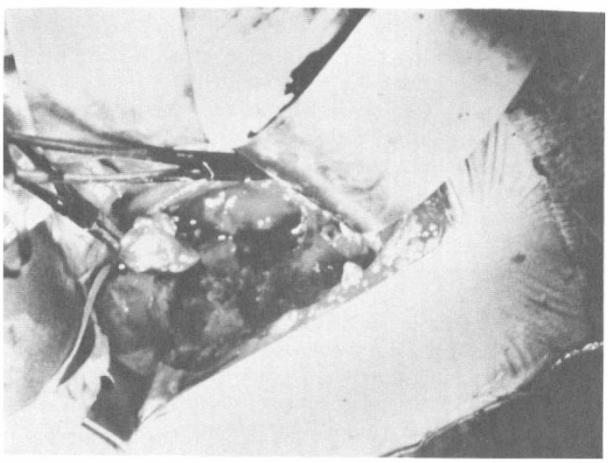

Figure 1 View of the infected clot and the destroyed vertebral bodies.

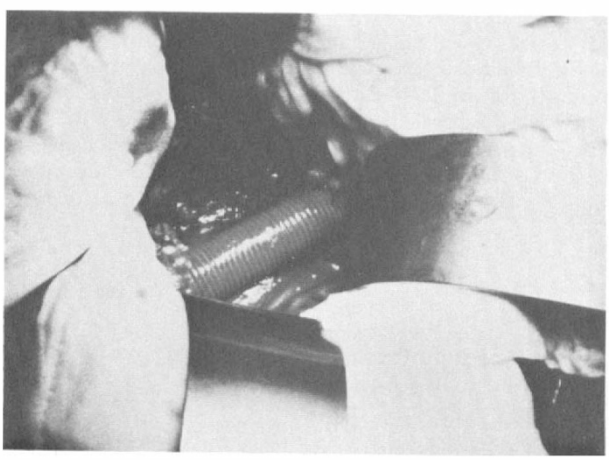

Figure 2 Completion of graft replacement: the aortic occlusive clamps have been removed, and adequate hemostasis has been obtained.

sidered to be the treatment of choice. In situ grafting is advisable only when the lesion is well circumscribed, allowing complete resection of all infected tissue. In the case described here, the posterior approach was based on the initial diagnosis of a spinal abscess, and the aneurysm was not discovered until after the paraspinal space had been entered. Because neither the patient's prone position nor the incision was appropriate for aortic ligation and extra-anatomic bypass, it was necessary to open the chest to control the bleeding, resect the aneurysm, and interpose a Dacron graft. Had this case been diagnosed properly, the patient could have undergone planned elective aortic surgery with extra-anatomic bypass and would have had a fairly good chance of survival, although her paraplegia would most likely have been permanent.

As this patient shows, the possibility of a mycotic aortic aneurysm should be considered in patients who appear to have a spinal abscess. These patients should undergo preoperative computer tomographic scanning and angiography to exclude aortic involvement.

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