Nephroquiz
(Section Editor: A. Meyrier)

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Back pain in a haemodialysis patient with severe atherosclerosis

Case

A 75-year-old diabetic and hypertensive haemodialysis patient was referred to our clinic in 2006. He suffered from severe atherosclerosis, including coronary artery disease (myocardial infarction 1982, 1984 and 1998, coronary artery bypass graft 1998) and peripheral artery disease leading to several peripheral amputations. Renal replacement therapy was started in 2003. Because of his difficult vascular situation, dialysis was performed over the last 3 years via various tunnelled central vein catheters. The catheters were changed at least twice because of infections and S. aureus bacteraemia (April 2005 and February 2006). On admission, he was dialysed using a tunnelled subclavian catheter. In 2004, a femoro-popliteal bypass was performed on the left leg; subsequently an abscess developed in the left groin and amputation of the left thigh was performed 2 months later. The left groin remained chronically infected until surgical revision in 2005.

One month before the current admission, the patient was admitted to a peripheral hospital because of right-sided thoracic pain. After excluding an acute myocardial infarction, a CT scan was performed and an aortic dissection of the descending aorta was suspected with a thrombus adherent to the aortic wall. In addition, a pulmonary embolus was seen in segments 1 and 2 of the left lung.

Initially, the patient was admitted to cardiac surgery. Another CT scan showed an ulcer of the descending aorta. An endoluminal aortic stent (Evita 70 ST 3330 F15-00) was placed without complications and the patient was transferred to the nephrology division.

The patient complained of back pain radiating to the right hemi-thorax and reported that the pain had been present for weeks. The thoracic part of the vertebral column was painful on exertion and when tapped. The lung and abdomen were normal on physical examination; there was no dyspnœ or fever. Blood tests revealed anaemia (haemoglobin 9.4 g/dl) and an elevated CRP (6.78 mg/dl, normal <0.5 mg/dl).

Chest X-ray demonstrated pulmonary infiltration of the right middle lobe. A thoracic CT scan confirmed a pulmonary embolus of the left segments 1 and 2, a 45mm aortic aneurysm, an intact aortic stent without leakage but atypical thickening of the para-aortic tissue. An X-ray of the vertebral column showed degenerative changes and osteoporosis, no fractures.

Questions

(i) What is the cause of the aortic ulcer?
(ii) What kind of imaging would you propose to go further into the diagnostic workup?
Magnetic resonance imaging (MRI) of the spine was performed and revealed typical signs of spondylodiscitis within the vertebrae 2, 3, 7, 8, the interposed discs and the vertebral disc 8/9 (Figure 1A). Furthermore, the transverse cross section showed involvement of the thoracic aorta at the stented level (Figure 1B).

Since blood cultures were repeatedly negative, empirical antibiotic therapy was started with gentamicin, vancomycin and imipenem. Neurological deficits were absent and surgical vertebral fusion was performed 4 days after revealing the diagnosis. The aortic stent was left in place. After vertebral fusion, pain medications could be tapered. Two weeks later, a control CT scan showed a reduction of the inflammatory process between the vertebral disc 7/8 and the thoracic aorta at the stented level (Figure 1B).

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**Comment**

Aortic ulcers are not uncommon and are usually due to atherosclerosis. On the other hand, spondylodiscitis is not exceptional in haemodialysis patients. There are several case reports and case series of spondylodiscitis in the literature [1–3]. However, to our knowledge there is only one report of spondylodiscitis presenting as an aortic ulcer, but in a patient without renal failure [4]. Many reported cases in haemodialysis patients were related to permanent catheters. Eight of the 10 patients reported by Kovalik et al. [1] had permanent haemodialysis catheters. It is a matter of debate whether the aortic ulcer in the present case was the primary focus which progressed to the spine or vice versa. The fact that several vertebrae were affected and not only those in close proximity to the

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**Fig. 1.** (A) Sagittal T2-weighted image revealing mixed increased-decreased signal abnormality within the second, third, seventh and eighth vertebrae (arrows), consistent with longer lasting spondylitis, including presentation of sclerosis beside mere bone marrow oedema and hyperintensities within the interposed vertebral discs and disc 8/9 due to discitis. (B) The transverse T2-weighted image proves the path of inflammation between the vertebral disc 7/8 and the thoracic aorta (A) by the appearance of a hyperintense connection in between both structures (arrows).
aortic ulcer suggests that the spondylodiscitis was the primary focus and progressed to the aorta.

The CT scans provided the first key to the diagnosis of spondylodiscitis, but MRI is the most sensitive diagnostic tool, especially in cases with spondylodiscitis confined to vertebrae and discs. Hermann compared different diagnostic procedures and concluded that MRI is superior to conventional radiological tests and to CT in detecting infections of the spine [5]. Destructive spondyloarthropathy secondary to dialysis-related amyloidosis often mimics spondylodiscitis on MRI [6]. However, destructive spondyloarthropathy often affects the cervical spine, shows less signal enhancement of the intervertebral discs in T2-weighted MR-images and is accompanied by less systemic inflammation.

The incidence of catheter-related bacteraemia is high and varies between 2 and 6 episodes per 1000 catheter-days. Every effort should be undertaken to create an AV-fistula and to use catheters only until maturation of the fistula is completed. The present case suggests that infection from spondylodiscitis may progress to the aorta, that diagnosis of spondylodiscitis requires more than plain vertrebral X-rays and that it should not be mistaken for dialysis amyloidosis.

Conflict of interest statement. None declared.

References


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