SHORT REPORT

Endovascular Abdominal Aortic Aneurysm Repair Complicated by Spondylodiscitis

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Abstract  Objective: We report the first case of spondylodiscitis following endovascular aneurysm repair (EVAR), without graft infection.
Case report: Three weeks following elective EVAR, a 78 year old man re-presented with confusion, anorexia, fever and back pain. Escherichia coli bacteraemia was identified on blood cultures. Computer tomography angiogram and radio-labelled white cell scan excluded graft infection. Positron emission tomography revealed spondylodiscitis at T10/T11. He was treated with 6 weeks of intravenous antibiotics. At 12 months follow-up the patient was asymptomatic.
Conclusion: We report spondylodiscitis as a complication of EVAR in the absence of graft infection.

Introduction
Spondylodiscitis has been reported twice previously following endovascular repair (EVAR) of an abdominal aortic aneurysm (AAA).1,2 However, it has always been associated with aortic stent-graft infection. We document the first case of post-EVAR spondylodiscitis without evidence of infection of the endoprosthesis.

Case Report
A 78 year old man with a family history of ruptured AAA and a background of chronic kidney disease with a single left kidney following right nephrectomy for renal cell carcinoma (RCC), ischaemic heart disease with previous coronary artery bypass surgery, chronic atrial fibrillation and controlled hypertension underwent elective EVAR for
a 5.6 cm, asymptomatic AAA incidentally identified during follow up for his RCC.

Pre-operative embolisation of the inferior mesenteric artery (IMA) was performed one day prior to surgery due to the large calibre of this vessel (5 mm) to reduce the risk of post-procedural type II endoleak. EVAR was performed under epidural anaesthesia, inserted at the L3/L4 intravertebral disk. A urinary catheter was inserted prior to groin incision. Antibiotic prophylaxis consisted of 1.2 g of intravenous (IV) co-amoxiclav at induction and two post-operative doses. A Talent™ (Medtronic, Inc Minneapolis,) bifurcated device was deployed with a CP stent (NuMed Hopkinton, NY), placed across the proximal neck due to an initial type 1 endoleak. The patient made an uncomplicated recovery and was discharged home on post-operative day five.

He presented three weeks later with confusion, anorexia, fever and lumbar back pain. On examination he was pyrexial at 38°C with a C-reactive protein of 212 mg/l and white cell count of 6 × 10⁹/l, however, no obvious source of sepsis was apparent; urine dipstix and culture were unremarkable, chest radiograph was normal. Arterial blood gas analysis revealed a compensated metabolic acidosis. A clinical diagnosis of sepsis of indeterminate course was made. Empirical treatment with IV piperacillin/tazobactam was commenced. Computerised tomographic angiography (CTA) was unremarkable; there was no evidence of air, infiltrate or fluid collection around the endoprosthesis to suggest graft infection. Blood cultures grew Escherichia coli (E. coli) sensitive to amoxicillin; IV antibiotic therapy was adjusted accordingly. The patient had a sustained bacteraemia and despite five days of tailored antibiotic therapy, remained pyrexial. IV gentamicin was added to treatment and his pyrexia settled. Repeat CTA, radio-labelled white blood cell scan and trans-thoracic echocardiogram were unremarkable. Positron emission tomography (PET) revealed increased 2-deoxy-2-[¹⁸F]fluoro-D-glucose (FDG) activity, centred over the T10/T11 inter-vertebral disc, suggesting spinal infection (Fig. 1A). Magnetic resonance imaging (MRI) of the spine confirmed discitis at T10/T11 and signs of early infection at L4/L5 (Fig. 1B) a diagnosis of spondylodiscitis was made and the patient was reviewed by a spinal surgeon, who recommended conservative treatment.

IV antibiotic therapy was continued for six weeks, following which the patient made an excellent recovery. Serum markers of infection remained normal and repeat MRI spine at two months demonstrated an improving picture at the T10/T11 disc. At 12 months follow up post-treatment the patient remained well without back pain or chronic lower limb neurological deficit. On routine CTA follow up the graft did not demonstrate any features of late infection.

Discussion

Spondylodiscitis is a rare complication following aortic surgery. In both previously reported cases¹ ² spondylodiscitis was associated with aortic stent graft infection. This is not
apparent this case, where spondylodiscitis appeared to occur independently in the post-EVAR setting. We suggest the aetiology of the spondylodiscitis was related to a bacteraemia from an adjunctive procedure to facilitate EVAR. Preoperative CTA did not reveal evidence of pre-existing spinal disease. E. coli was identified from blood culture and is a reported causative organism in spondylodiscitis, although *staphylococcus aureus* is more common. Consequently, urinary tract infection (UTI) is a plausible primary source of infection. Catheterisation of the epidural space was another potential source of infection, however, multi-level vertebral osteomyelitis is more likely to represent haematogenous seeding rather than direct inoculation which would more usually produce a spinal abscess. An intravascular source through peripheral venous cannulation or during EVAR or IMA embolisation is a third possibility. It must, however, be noted that many cases of spondylodiscitis are idiopathic.

Treatment of severe spondylodiscitis involves a prolonged course (usually 6 weeks) of directed intravenous antimicrobial therapy. It is therefore critical to identify the responsible pathogen at the outset. If medical management fails, surgical intervention may be required to drain spinal or paraspinal collections.

In summary, spondylodiscitis is an important clinical entity that may follow EVAR either in conjunction with or independent of aortic graft infection. Spinal infection may have severe sequelae and therefore the cornerstone of successful management is a high index of suspicion in patients presenting with back pain following EVAR.

**Conflict of Interest**

None.

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None.

**References**