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SHORT REPORT

Endovascular Repair of an Iliac Artery Tuberculous Pseudoaneurysm

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Abstract A 63-year-old male presented with recurrent pyrexia, low back pain, and night sweats followed by knee pain and the inability to walk. Computed tomography revealed disintegration of the 4th and 5th lumbar vertebrae, and a laparotomy revealed a large aneurysm. A Medtronic aortic-united-iliac, PTFE-covered stent sealed the orifice of the aneurysm and combined with antituberculous treatment, relieved the patient of primary symptoms.

Introduction

Abdominal aortic aneurysm is increasingly common and is the 14th cause of death in the United States.[1] Endovascular aneurysm repair (EVAR) is a less-invasive technology that may reduce hospitalization, morbidity, and mortality.[2,3] Although tuberculous aneurysm is a rare entity,[4] it may be a prime candidate for EVAR due to the fragile nature of patients with this disease. EVAR for aortic aneurysm combined with antituberculous therapy may be the preferred choice for these patients. We present successful EVAR of a tuberculous pseudoaneurysm.

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Case report

A 63-year-old man was admitted to the Xuzhou People's Hospital November 12, 2006 complaining of recurrent fever, low back pain, and night sweats. Prior antibiotic therapy was unsuccessful. Chest X-ray and tuberculin skin test were negative. On March 20, 2007, the patient developed knee pain and became inambulate. Lumbar computed tomography (CT) performed on April 4, 2007 demonstrated disintegration of the 4th and 5th lumbar vertebrae, with para-vertebral abscess formation (Fig. 1A). A presumptive diagnosis of tuberculous spondylodiscitis was made.

An emergency laparotomy was performed in the Xuzhou community hospital to drain the abscess, but the operation was halted when a large aneurysm was found in the lower quadrant of the abdominal cavity. Computer tomography angiography (CTA) on April 9 revealed an iliac artery aneurysm (Fig. 1B). An antituberculous regimen of rifamicin, isoniazid, pyrazinamide, and ethambutol for 4

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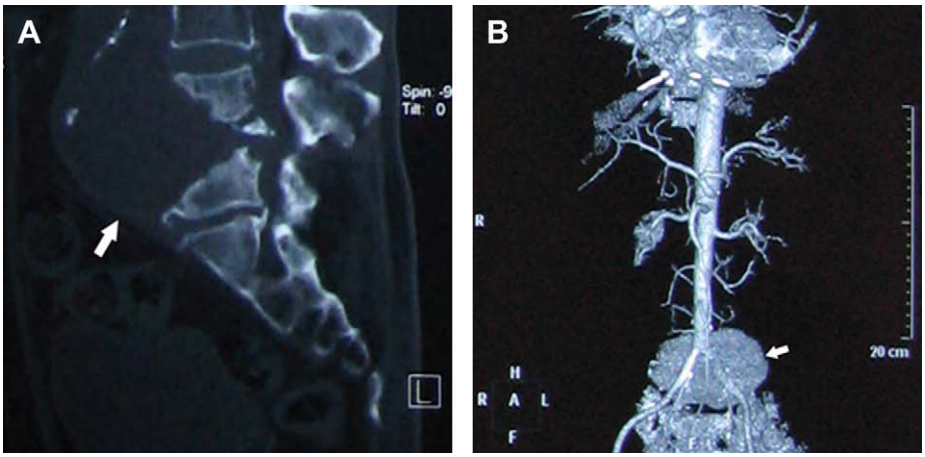

Figure 1 (A) Lumbar CT showed the disintegrated 4th and 5th lumbar vertebrae with an adjacent para-vertebraal abscess (white arrow). (B) CTA revealed an iliac artery pseudoaneurysm of $10 \times 9 \times 6.5\ cm^3$ (white arrow).

months, followed by rifampicin and isoniazed for 2 months was administered.

On November 21, 2007, physical examination revealed a palpable, pulsatile mass ($20 \times 10 \times 10\ cm^3$) located in the left lower quadrant of the abdomen. Pulse was absent in the left femoral artery and dorsalis pedis artery. Magnetic resonance angiography (MRA) on November 23 confirmed disintegrated 4th and 5th lumbar vertebrae and a large left iliac artery pseudoaneurysm.

The patient was referred to our hospital (Changhai Teaching Hospital) on December 3, 2007 (much of the information regarding his prior treatment was from his memory). On December 5, digital subtraction angiography (DSA) indicated the normal structure of the abdominal-iliac bifurcation had disappeared, leaving a large aneurysm that appeared to be connected to the disintegrated vertebrae instead of to the left iliac artery. The shape of the aneurysm was irregular and measured $15 \times 8 \times 8\ cm^3$, with the left iliac artery completely detached from its orifice. The patient's Hgb was 91 g/L.

A Medtronic aortic-united-iliac, polytetrafluoroethylene (PTFE)-covered stent was deployed to seal the orifice of the aneurysm, with eighteen coils filling the aneurysm. Before deploying the stent, a Coude's catheter was placed into the aneurysm. After the stent was released, an endoleak was noted so the coils were deployed through the catheter to seal the left iliac artery. Angiography immediately before stenting is presented in Fig. 2A, and post-operatively (Fig. 2B) demonstrated a successfully-deployed stent without endoleak. The patient's post-operative course was uneventful. Follow-up CT, 7 days postop, showed the stent to be well-positioned and the aneurysm to be diminished (Fig. 3). The antituberculous regimen was continued and he was discharged 10 days after surgery. By follow-up at 12 months, he had gained weight and most of his previous discomforts had disappeared. However, he was still bedridden because the vertebral fractures had not been repaired. CT showed that the aneurysm had greatly regressed and there was no evidence of endoleak.

Discussion

Spinal TB is an extremely rare disease that most frequently involves the vertebral bodies of the thoracolumbar spine and is characterized by symptoms that are slowly progressive and nonspecific.[5] Because symptoms are unspecific and spinal TB is a rare cause of spinal cord compression, the diagnosis was not confirmed in our patient until laparotomy

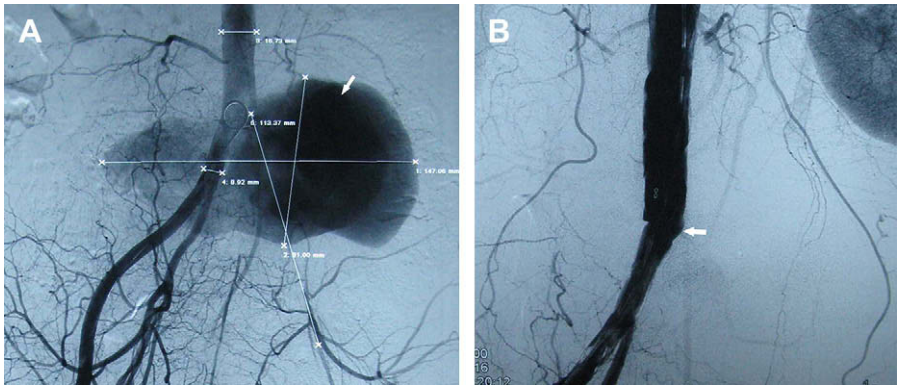

Figure 2 Angiography immediately before (A) and after (B) stenting.

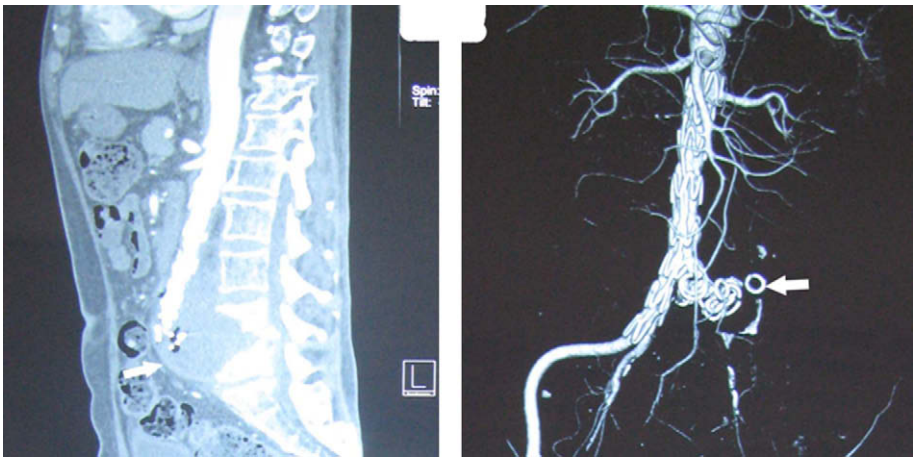

Figure 3 CTA 7 days after EVAR demonstrating a successfully sealed orifice of the aneurysm (white arrow in right figure), and the aneurysm had thrombogenesis (white arrow in left figure).

was performed in the community hospital 6 months after the first symptom occurred. In this case, it is unfortunate that treatment of the aneurysm was delayed, as prompt treatment is necessary due to the risk of rupture. It is likely that the expertise to repair the aneurysm was not available at the community hospital where it was diagnosed, and the patient may have not wanted definitive treatment at that time.

Because of the patient's debilitated state, we believe the risks of open aneurysm repair were unacceptably high. In our review of the literature, we found sporadic reports using a combination of endovascular intervention and anti-tuberculous therapy. After discussing the case with other physicians and the patient and his family, the decision was made to attempt a minimally invasive intervention.

Before the operation, we considered performing a femoral-femoral bypass, however, it was unlikely there would be significant benefit to the patient before the vertebral bodies were repaired. Additionally, the patient's left leg was fastened in a fixed position which made it challenging to perform the revascularization. Also, as was shown in the DSA, collateral circulation had well been established.

In summary, in our patient a stent was the only choice due to the connection of the aneurysm and the vertebral cavity. EVAR may offer benefits, especially in critically ill patients. With the development of the drug-soaked/coated graft and the homograft/allograft integrated into the stent, EVAR may play an important role in the therapy of tuberculous aneurysms.

Conflict of Interest

None declared.

Funding sources

None declared.

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