CASE REPORT

Transient cauda equina syndrome: a subtle but sinister sign

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SUMMARY

A 54-year-old man presented with symptoms of cauda equina syndrome, which spontaneously resolved. Initial MRI did not show any compression of the cauda equine; however, an unusual pattern of epidural fat lead to further investigation and ultimately the diagnosis.

BACKGROUND

This case report illustrates an unusual presentation (transient cauda equina syndrome) of an important neurosurgical emergency, namely, spinal epidural abscess secondary to bacterial endocarditis. It contains a number of important lessons. First it discusses the rare presentation of transient cauda equina syndrome and emphasises the importance of prompt diagnosis and management of cauda equina syndrome even when clinical signs are subtle. Second it introduces the reader to spinal epidural lipomatosis and the role of additional imaging that may be required in the presence of this condition to detect significant pathology. Third, it reminds the reader of the uncommon but established link between bacterial endocarditis and spinal epidural abscesses.

CASE PRESENTATION

A 54-year-old man presented to his local hospital with a 10-day history of back pain and a 48 h history of saddle anaesthesia and difficulty passing urine. He was catheterised in the emergency department and was found to have a residual bladder volume of 800 ml. His medical history included a homograft aortic valve replacement and mitral valve repair for bacterial endocarditis 4 years previously. Cauda equina syndrome was suspected and he was transferred to the neurosurgical centre. Upon arrival, clinical examination revealed a clinically well patient whose symptoms, apart from mild back pain, had completely resolved. Blood tests showed a raised C reactive protein (CRP) (153 mg/l), but were otherwise normal.

INVESTIGATIONS

An MRI scan of the entire spine revealed lumbar epidural lipomatosis with some heterogeneity to the signal returned by the dorsal epidural fat but no significant neural compression to account for the symptoms (figure 1). Given the heterogeneity, a fat-suppressed postgadolinium scan was performed which demonstrated enhancement centred on the left L4/5 facet joint consistent with septic arthritis and inflammatory phlegmon extending within the epidural and perivertebral soft tissues.

Figure 1 T2-weighted sagittal image shows the prominent dorsal lumbar epidural fat with some signal heterogeneity.

There was minor liquefaction within this tissue (figure 2). Blood cultures subsequently revealed a *Streptococcus constellatus* bacteraemia.

Figure 2 T1-weighted fat suppressed postgadolinium axial image shows enhancement centred on the left L4/5 facet joint (A) with extension to the perivertebral and epidural (B) soft tissues.

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Given the patient's history of cardiac disease, an echocardiogram was performed. The initial transthoracic echocardiogram did not find any evidence of vegetation on the valves. However, a subsequent transesophageal echocardiogram found that although well seated, the Bioprosthetic Aortic Valve drained into a large cavity at the aortomitral continuity. This cavity was likely to represent an abscess cavity. There was a small friable mass within the cavity which was thought to represent a vegetation. These findings were confirmed with a postcontrast CT (figure 3).

DIFFERENTIAL DIAGNOSIS

Cauda equina syndrome is usually due a large central lumbar disc prolapse. Rare causes include tumours and epidural abscesses.

TREATMENT

The epidural abscess was successfully treated with 6 weeks of intravenous antibiotics. Once he completed this, he underwent an aortic root repair to get the valve damaged by the endocarditis treated.

OUTCOME AND FOLLOW-UP

The patient made a good recovery and remained neurologically intact.

DISCUSSION

Cauda equina syndrome is classically characterised by bilateral sciatica, saddle anaesthesia and bladder, bowel or sexual dysfunction.¹ The condition has a disproportionately high medico-legal profile due to its debilitating consequences and its propensity to be misdiagnosed and treatment being delayed.^{2 3} The majority of cases are caused by a prolapsed intervertebral disc. Other causes include trauma, tumours, infection and iatrogenic causes such as epidural haematoma following spinal anaesthesia. Cauda equina syndrome is difficult to diagnose when all the classical signs are not present and a low threshold for MRI scanning is required if the diagnosis is suspected from the history and examination. While there is ongoing debate about the timing of decompressive surgery, it is generally accepted that surgery within 24 h of onset of symptoms results in a better neurological outcome.⁴ An urgent MRI scan is therefore mandatory in patients suspected of having being diagnosed with the

syndrome. Recovery from cauda equina syndrome is variable and difficult to predict.²

Transient cauda equina syndrome is an unusual presentation and is believed to occur due to temporary and reversible compression of the cauda equina. It has been described with narrow spinal canals, following epidural injections and with internal vertebral venous plexus engorgement. Spinal epidural lipomatosis is a condition characterised by excessive deposition of adipose tissue within the spinal canal and may be idiopathic or associated with obesity, steroid use or endocrinopathies including Cushing's disease and hypothyroidism.⁵ Although gross spinal epidural lipomatosis has been reported to cause cauda equina syndrome requiring surgical decompression, transient cauda equina syndrome has not been reported in association with spinal epidural lipomatosis. In this case the inflammatory response (due to infection) within the epidural fat may have led to fluctuations in the calibre of the spinal canal, leading to the transient symptoms. Conventional MRI sequences can identify most compressive lesions of the cauda equina and assurance may be gained if no compression is seen and there has been symptomatic resolution. In this case, the heterogeneous signal within the epidural fat prompted further imaging with a fat-suppressed contrast-enhanced scan, which proved vital in establishing the underlying diagnosis. The use of fat suppression allows greater differentiation between the contrast-enhancing areas and surrounding lipid-bearing tissues. This is of particular value in patients with significant epidural lipomatosis, in whom the imaging abnormalities may be subtle and easily missed.⁶ This case highlights the unusual presentation of transient cauda equina syndrome as the only initial evidence of an underlying devastating disease, namely bacterial endocarditis. Vigilance is therefore warranted in patients presenting with transient cauda equina syndrome and additional imaging may be required, especially in the presence of relevant risk factors such as previous cardiac surgery.

Figure 3 Coronal postcontrast CT of the aorta, shows well-seated aortic valve draining into a large cavity at the aortomitral continuity (arrow).

Learning points

- ▶ Cauda equina syndrome—however transient—is an important condition which always merits prompt investigation.
- ▶ Spinal epidural lipomatosis is an uncommon finding. When present, additional imaging sequences such as fat-suppressed postcontrast MR may be required to pick up significant pathology.
- ▶ Bacterial endocarditis has a number of remote sequelae which should always be borne in mind, including central nervous system abscesses.

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