

An unusual presentation of Cauda Equina Syndrome

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Introduction

Low back pain is extremely common. However, severe low back pain can be a symptom of a serious condition that is not well known and is one of the orthopaedic pitfalls, which potentially can result in significant morbidity. Its occurrence is approximately 4/10000 of patients with lower back pain^{1,3}.

Cauda Equina Syndrome (CES) - is a medical emergency and immediate referral for investigation and treatment is required to prevent permanent neurological damage. It is caused by compression of the nerve roots caudal to the level of spinal cord termination - causing a combination of low back pain, unilateral or more usually bilateral sciatica, perineal sensory disturbances, bladder and bowel dysfunction, and variable lower extremity motor and sensory loss. CES is not related to gender or race. It occurs primarily in adults, although trauma-related CES can affect people of all ages. CES most commonly results from a massive herniated disc in the lumbar region. A single excessive strain or injury may cause a herniated disc. However disc material degenerates naturally with age, and the ligaments that hold it in place begin to weaken. As this degeneration progresses, a relatively minor strain or twisting movement can cause a disc to rupture².

The following are other potential causes of CES^{3,4,5}:

1. Spinal lesions and tumours
2. Spinal infections or inflammation
3. Lumbar spinal stenosis
4. Violent Injuries to the lower back (gunshots, falls, RTA's)
5. Birth abnormalities

6. Spinal arteriovenous malformations (AVMs)
7. Spinal haemorrhages (subarachnoid, subdural, epidural)
8. Postoperative lumbar spine surgery complications
9. Spinal anaesthesia

It can also occur in a very small percentage of patients that have undergone surgery for lumbar herniated disc⁶.

Case Report:

A previously healthy 35 year old male office worker presented to the Emergency Department complaining of lower back pain and left sided sciatica. Two years earlier he had left sided sciatica for a few weeks that was treated conservatively and successfully by his General Practitioner with NSAIDS and painkillers. This time he presented with similar sciatica symptoms of twelve weeks duration. On the morning of the day of admission, the patient lifted something and felt an increase in his back pain. He was treated by his GP with codeine, diclofenac and paracetamol for twelve weeks. The patient had not noticed any improvement and became increasingly worried.

On examination, the patient was found to have reduced ankle jerk on the left, tenderness of the back of the left thigh, limited straight leg raising (SLR) on the left due to increased pain after 40 degrees, and tenderness in his back. Rectal examination revealed no masses or blood, the prostate was normal and sphincter tone was thought to be reduced. The patient was referred to the orthopaedic team on-call as: "Back pain and left sided sciatica".

The orthopaedic assessment showed the following:

- 1) Absent left ankle jerk
- 2) Reduced SLR on the left to 30-40 degrees secondary to increased pain in the back of left thigh
- 3) Normal sensation both lower limbs
- 4) No saddle anaesthesia
- 5) Pain over L3-L4 on palpation
- 6) No bowel or urinary symptoms
- 7) No reported sexual dysfunction
- 8) Rectal examination was repeated showing reduced anal tone but normal perianal sensation.

In summary - the patient had a history of back pain, reduced anal tone, unilateral sciatica and absent ankle jerk, with no relief from conservative treatment for twelve weeks. We suspected CES.

Urgent MRI of the lumbosacral spine was performed within one hour, which clearly showed CES (figures 1 & 2). The patient was referred to the Neuro-Surgery Department in James Cook University Hospital, and had operative decompression later the same day.

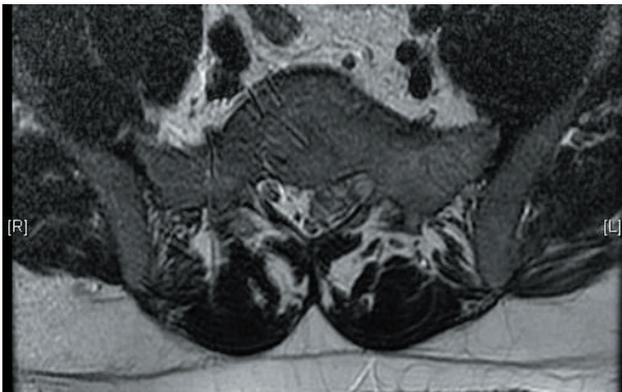


Figure 1

T2W axial MR scan through the upper sacrum showing herniated disc material displacing the adjacent left S1 nerve root and cauda equina.



Figure 2

T1W sagittal MR scan showing prolapsed disc material at L5/S1 extending inferiorly almost to S1/S2

Discussion

Cauda equina syndrome mimics other conditions. Its symptoms may vary in intensity and evolve slowly over time. It is accompanied by a range of symptoms, the severity of which depend on the degree of compression and the precise nerve roots that are involved. Apart from herniated disc, other conditions with similar symptoms to CES include peripheral nerve disorders, conus medullaris syndrome, spinal cord compression, and irritation or compression of the nerves after they exit the spinal column and travel through the pelvis, a condition known as lumbosacral plexopathy. Faced with a patient with back pain, we should be aware of the following “red flag” symptoms that may indicate CES³:

- 1) Severe low back pain
- 2) Motor weakness, sensory loss, or pain in one or (more commonly) both legs
- 3) Saddle anaesthesia (unable to feel anything in the body areas that sit on a saddle)
- 4) Recent onset of bladder dysfunction (such as urinary retention or incontinence)
- 5) Recent onset of bowel incontinence
- 6) Sensory abnormalities in the bladder or rectum
- 7) Recent onset of sexual dysfunction
- 8) A loss of reflexes in the extremities

Conclusion

Due to the rarity of CES (4/10000 with lower back pain) it is difficult to diagnose this serious pathology if it is not suspected. In this case not all the symptoms of the CES were present. The patient had normal perianal sensation, but reduced anal tone and normal sensation in the lower limbs, but an absent ankle jerk on the left. He was young, without any cancer or metastasis. Also, he only had unilateral sciatica, with a history of twelve weeks' duration. He had been constipated for several weeks, but not incontinent, and it was not clear if the constipation was perhaps a side effect of codeine which he had been taking regularly. His was not a textbook presentation.

A definite diagnosis of CES depends on the availability of an urgent MRI or CT scan. The consequences of a missed CES are disastrous for the patient in terms of future disability, loss of independent living and employment prospects. If this condition is suspected, an urgent scan is needed even if this means transfer to another hospital.

In conclusion – not every case of CES is classical, and it does occur in young patients. CES symptoms don't all have to be present to suspect it. If there is even one "red flag" symptom – it is better to suspect and investigate it further.

Reference

1. Small SA, Perron AD, Brady WJ Orthopaedic pitfalls: Cauda Equina Syndrome. *American Journal of Emergency Medicine* 2005, **23**,2,159-163
2. Shapiro S; Medical realities of cauda equina syndrome secondary to lumbar disc herniation. *Spine*. 2000 Feb 1;**25**(3):348-51; discussion 352.
3. Lavy C, James A, Wilson-MacDonald J, et al; Cauda Equina Syndrome. *BMJ*. 2009;**338**:b936. doi: 10.1136/bmj.b936.
4. Lenehan B, Sullivan P, Street J, et al; Epidural abscess causing Cauda Equina Syndrome. *Ir J Med Sci*. 2005 **174**(3):88-91.
5. Oppenheim JS, Spitzer DE, Segal DH; Nonvascular complications following spinal manipulation. *Spine J*. 2005 **5**(6):660-6; discussion 666-7.
6. Ahn UM, Ahn NU, Buchowski JM, et al; Cauda Equina Syndrome secondary to lumbar disc herniation: a meta-analysis of surgical outcomes. *Spine*. 2000 Jun 15;**25**(12):1515-22.