Cauda equina compression in metastatic prostate cancer

Raheel Shakoor Siddiqui, Manikandar Srinivas Cheruvu, Hamza Ansari, Marck van Liefland

BACKGROUND

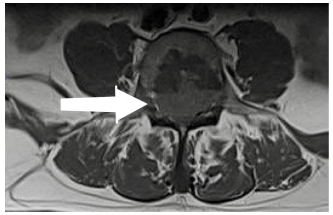
Sciatica is pain along the dermatomal pattern and distribution of the sciatic nerve and may be unilateral or bilateral. The incidence of having sciatica in a lifetime is between 13% and 40%. This differs from **cauda equina syndrome** (CES), which is a **clinical emergency** consisting of compression of the cauda equina with a **constellation of motor and sensory neurological deficits** respective to the level of pathology. It is a rare condition that has an incidence of **1 in 33 000 to 1 in 100 000 of the population of which only 19% of presenting cases are confirmed CES**. It has a significant impact on quality of life (QoL) as a result of morbidity. CES may present as acute lower back pain (LBP) with altered bowel and/or bladder control anal motor and sensory deficits with or without lower limb neurological compromise. There is considerable variation in both the frequency and severity of symptoms that predisposes a more challenging diagnosis. Given the drastic complications mainly affecting the QoL of the patient, there is potential for medicolegal implications. Assessment and management of CES involves a **multidisciplinary team (MDT) approach** including physicians from primary care, emergency department, orthopaedics, spinal surgeons and pain experts. **Urgent surgical decompression** of the spinal canal is treatment of choice for confirmed CES. **Red flag symptoms** of CES include new LBP, bilateral sciatica, saddle anaesthesia, bowel, bladder or sexual dysfunction. This would warrant the application of a streamlined pathway of referral from admission to discussion with a spinal unit for further investigation to determine the underlying cause including urgent MRI of the spine. The aetiology of CES and sciatica can be classified into common and uncommon. CES can be categorised into incomplete (CES-I) or complete (CES-R). CES-I presents with LBP and symptoms of urinary difficulty and saddle or genital anaesthesia, which can be unilateral or partial or complete. CES-R presents with LBP, painless urinary retention and overflow incontinence. There is also extensive or complete saddle or genital anaesthesia in CES-R. This case is interesting as the initial and only presenting complaint was of intermittent sciatica with no red flag symptoms. However, MRI of the lumbosacral spine showed a pathological spinal canal stenosis with compression of the cauda equina.

CASE PRESENTATION

A **67-year-old man** presented to his general practitioner with intermittent episodes of unilateral left-sided sciatica over a 2-month period. The patient denied any change in bowel habit, urinary retention or incontinence symptoms and did not present with any constitutive symptoms of malignancy. Following assessment by his GP, he was referred for MRI of the lumbosacral spine. His routine outpatient scan evidenced concerning pathology such that he was immediately transferred to the emergency department and referred onwards to the on-call Trauma & Orthopaedics team as is the protocol at our hospital. On examination, the patient was comfortable both at rest and while mobilising independently. There were **no red flag symptoms of CES**, an unremarkable neurological motor and sensory examination in the upper and lower limbs bilaterally, normal gait, no spinal tenderness and an unremarkable digital rectal examination concluded good anal tone, good sphincter control with no saddle, perianal or genital anaesthesia. A prevoid bladder scan showed approximately 311 mL, but postvoid bladder scan was not performed as patient had normal flow sensation and no difficulty in voiding urine. Review of MRI presented a large space occupying lesion at the level of lumbar 4 (L4) arising from the posterior aspect of the vertebral body with severe canal stenosis and the lesion displacing the cauda equina. The patient's medical history consists of hypertension controlled on amlodipine. He is a non-smoker, non-drinker and is independent with activities of daily living with no positive family history of malignancy. This clinical history would not warrant imaging of the spine as per National Institute for Health and Care Excellence (NICE) guidelines. However, **MRI showed significant compression of the cauda equina**, which one would typically associate with severe symptoms of CES.

INVESTIGATIONS

This patient had an elevated prostate-specific antigen (PSA) of 97µg/L; therefore, the urology team proceeded with a transrectal ultrasound-guided prostate biopsy of which histology report confirmed adenocarcinoma of the prostate, Gleason score 4+4 on the left prostate gland. Staging: T3, N0, M1b (tumour 3, node 0, metastasis 1b). In addition, he had staging CT of the thorax, abdomen and pelvis to further investigate for malignancy. Spinal views of the CT confirmed the space occupying lesion. This also showed a solitary 6mm size right middle lobe lung nodule and hypodense area in the liver. These findings were discussed in the uro-oncology MDT; it was determined that these findings were insignificant, and there was no evidence of metastases to other areas of spine. He also had a nuclear medicine whole body bone scan that reported increased activity within the L4 vertebral body keeping with known metastatic deposit.





TREATMENT

A **diagnosis of prostate adenocarcinoma with spinal metastasis** was concluded from the MDT assessment. Following comprehensive discussion and counselling with the patient, the decision was made to **pursue palliative non-operative treatment**. The patient was placed on oral bicalutamide, a non-steroidal antiandrogen 50 mg once a day for 28 days and monthly goserelin subcutaneous injections, a gonadotropin-releasing hormone (GnRH) agonist treatment for metastatic prostate malignancy. Acute oncology services commenced oral dexamethasone for inflammation and oedema control around spinal metastasis however gradually tapered this regime after 1month of treatment. He received palliative radiotherapy of 20 grays (gy), which was delivered in five sessions over five consecutive days to the lumbar 3–sacral 1 vertebral bodies. The patient experienced a resolution of episodes of sciatica after palliative radiotherapy, and the following stage of treatment would include chemotherapy with docetaxel (synthetic taxane). PSA had reduced to 7.3µg/L after 2 months of antiandrogen and GnRH treatment. Given the global pandemic of SARS-CoV-2 (ie, COVID-19) and risk of immunocompromise following chemotherapy, the decision was made to defer treatment. Following discussion with the patient and his family, it was decided that he would continue with the bicalutamide and GnRH injection treatment with PSA monitoring. Follow-up was arranged for 3 months to discuss treatment options depending on the COVID-19 situation.

Learning points

► Compression of the cauda equina may not always present with red flag symptoms.
► It is never too early to investigate for cauda equina syndrome (CES) as patients presenting with red flag symptoms may already have irreversible CES.
► Urgent MRI scanning is essential in early diagnosis, treatment and prognosis in patients with compression of the cauda equina.
► As of yet, there is no validated quantitative measuring score or tool that can help assessing physicians determine the urgency in MRI of the spine to confirm CES.
► As per current National Institute for Health and Care Excellence guidelines, unilateral sciatica does not warrant an MRI of the spine unless in a specialist centre.

Affiliations: Department of Trauma & Orthopaedic Surgery, Royal Shrewsbury Hospital, The Shrewsbury & Telford Hospital NHS Trust, Shrewsbury, UK.
Department of Trauma & Orthopaedic Surgery, Robert Jones & Agnes Hunt Orthopaedic Hospital NHS Foundation Trust, Oswestry, UK