Clinical Medicine 2012, Vol 12, No 5: 444–5

A 28-year-old female with persistent back pain and urinary frequency

Abarna Ratnarajah and Kevin O'Kane

Case presentation

A 28-year-old woman presented with acute-on-chronic lumbar back pain. That morning, she had awoken with the pain but had managed to go to work. At 8.30am she described the room spinning, but was unaware of any chest pain or palpitations. She collapsed with loss of consciousness for a few seconds and was incontinent. There was no tongue biting, headache or postictal confusion. Symptoms of back pain at rest and urinary frequency had been persistent for five months and had been attributed to recurrent urinary tract infections. She also complained of dysuria and had recently completed courses of ciprofloxacin and nitrofurantoin. Her medical history featured pyelonephritis (two and a half years previously) and a laparoscopic cholecystectomy. Her medications included prophylactic nitrofurantoin, diazepam and naproxen. A previous renal ultrasound scan had been normal.

On admission, the patient's temperature was 36.8ºC, blood pressure was 128/77 mmHg, pulse was 84 bpm and cardiovascular, respiratory and abdominal examination were unremarkable. Rectal examination revealed normal anal tone and no saddle anaesthesia. Her cranial nerves were intact. Her power was reduced at the right hip flexor to 3+/5. Otherwise her peripheral nervous system examination was normal with intact sensation to all dermatomes. Straight leg raising was, however, diminished to 10 degrees in the left leg and 40 degrees in the right leg. Gait was normal.

The results of initial blood tests were all within normal limits: haemoglobin count (Hb) was 14.2, creatinine concentration was 48 μmol/l, white cell count (WCC) was 11.1, neutrophil count was 8.3 and C-reactive protein (CRP) was <5 mg/l.

Urine dipstick was positive for protein 1+, leucocytes 3+ and nitrites 1+.

What are the differential diagnosis and the most likely diagnosis?

This patient had a positive straight leg raise test and therefore a herniated disc was suspected. Red flag pathologies including infection, fracture and cancer must always be excluded.[1] Spinal abscess was considered but a fever or raised CRP would be typically expected if this were the case, although WCC has been reported as normal in up to 40% of people with such abscesses.[2] The patient had no history of immunosuppression or intravenous drug use. As she was young and had no history of steroid use or trauma, fracture was deemed unlikely. Referred pain from a visceral organ was a possibility. Given the history of urinary symptoms and positive urinary dipstick, pyelonephritis was an alternative in this case. Endometriosis can also present with back pain.

What is the initial management?

A mid-stream urine specimen (MSU) was collected, and a repeat renal ultrasound performed to look for any structural abnormalities was reported as normal. On closer questioning, the patient reported that she had had two episodes of urinary incontinence in her sleep on separate occasions, but no faecal incontinence. An urgent magnetic resonance imaging (MRI) scan of the spine was requested to exclude cauda equina. The initial report was of 'a very large syrinx involving the majority of the cord and extending from C4 to the conus at L1/2'. The neurosurgeons on call were contacted and they requested urgent catheterisation and a computed tomography (CT) brain scan to rule out intracranial pathology.

Case progression

On the post-take ward round, the patient complained of intermittent tingling of her right foot. Her CT brain scan was normal; notably, there was no Chiari malformation. The MRI scan of the spine was reviewed by the neuroradiologists, who saw an abnormal area of enhancement at T6 that they suspected could be a cord lesion. The patient was transferred to the neurosurgery department where she underwent a T5–T7 laminectomy and resection of the intramedullary tumour.

Final diagnosis

The ultimate diagnosis was a T6 spinal cord tumour with associated syringomyelia of C4–L2. Histopathology confirmed the tumour to be a pilocytic astrocytoma. The presenting collapse was thought to be vasovagal in origin, secondary to pain.

After surgery, the patient had some residual reduced sensation in the right leg but is able to walk and is receiving ongoing physiotherapy. Repeat imaging shows a discontinuous syrinx from C4–L2 that has reduced in size. There is also a pseudomeningocele measuring approximately 8 cm by 2.5 cm. Close clinical monitoring and imaging follow-up will take place over the next five years.

Abarna Ratnarajah, ST5 in acute medicine; **Kevin O'Kane,** consultant in acute medicine

Department of Acute Medicine, Guys and St Thomas' Hospital Trust, London

© Royal College of Physicians, 2012. All rights reserved.

Key learning points

- When assessing back pain exclude the red flags of infection, cancer and fracture.
- Malignancy of the spine forms part of the differential of unremitting unexplained back pain.
- Cauda equina is an emergency and must be excluded if there is any bowel or bladder dysfunction, saddle anaesthesia or neurological compromise or weakness.
- Be sure to select the correct section of the spine for imaging.

Table 1. Red Flags suggesting spinal cancer[6]

A history of cancer
Unexplained weight loss
Pain does not respond to care
Night pain
Pain at rest
Pain at multiple sites
Aged over 50 years
Urinary retention

Discussion

Lower back pain has a lifetime prevalence of 85%, meaning that all physicians are likely to encounter patients who have this problem, but it is the presenting feature in an estimated 90% of patients with spinal malignancy.[2] Early detection and surgical removal is desirable as progression of spinal tumours can lead to irreversible myelopathy and radiculopathy, but despite the availability of non-invasive investigation, such as MRI, delays in diagnosis still occur.

Although we traditionally list 'red flag' symptoms that might suggest spinal malignancy (Table 1), the symptoms of such tumours can in fact be non-specific and, without neurological deficits can potentially contribute to late diagnosis. Persistent neck pain and numbness has been reported as the predominant symptom in those with cervical tumours. Back pain is the predominant feature in those with thoracic and lumbar spinal tumours.[3] The pain is described as persistent, progressive and sometimes intensifying at night such that it can awaken the patient from their sleep;[1] it characteristically does not remit. Malignancy must be considered in anyone with this type of pain. Further sources of delayed diagnosis include patients who are sometimes slow to seek medical advice and failure to select the correct section of the spine for initial imaging.[3]

Intramedullary spinal cord astrocytomata are rare and seldom affect those under 60 years of age. The cervical spine, followed by the thoracic spine, is most commonly affected and there is an association with neurofibromatosis Type I. Presentation varies but is usually progressive over months or years. Pain and motor dysfunction have been reported as the most common presenting features. Other symptoms include sensory disturbance and bowel or bladder dysfunction, though these are usually late signs except in those with tumours of the conus medullaris. MRI is the imaging modality of choice and will show widening of the spinal cord, but it cannot be used to differentiate astrocytomata from ependymomata. CT-myelography is an alternative for cases in which MRI is contraindicated. Macroscopic resection aims to restore neurological function and to obtain a tissue diagnosis.[4]

Prognosis is good for those with pilocytic astrocytomas, with survival rates of 100% at five years and 95.8% at 10 years when both adults and children are considered. Tumour recurrence and malignant transformation has been seen in a subset of adults.[5]

References

1 Braddon RL. Perils and pointers in the evaluation and management of back pain. *Semin Neurol* 1998;18:197–210.
2 Siemionow K, McLain RF. When back pain is not benign. A concise guide to differential diagnosis. *Postgrad Med* 2006;119:62–9.
3 Kato M, Nakamura H, Terai H *et al.* Why does delay exist in the diagnosis of intradural spinal cord tumours despite the availability of MRI. *J Clin Neurosci* 2008;15:880–5.
4 Houten JK, Cooper PR. Spinal cord astrocytomas: presentation management and outcome. *J Neurooncol* 2000;47:219–24.
5 Ellis AJ, Waziri A, Balmaceda C *et al.* Rapid recurrence and malignant transformation of pilocytic astrocytoma in adult patients. *J Neurooncol* 2009;95:337–82.
6 Dagenais S, Tricco AC, Haldeman S. Synthesis of recommendations of the assessment and management of low back pain from recent clinical practice guidelines. *Spine J* 2010;10:514–29.

Address for correspondence: Abarna Ratnarajah, Department of Acute Medicine, Guy's and St Thomas' NHS Foundation Trust, Guy's Hospital, Great Maze Pond, London SE1 9RT.
Email: abarna.ratnarajah@nhs.net

© Royal College of Physicians, 2012. All rights reserved.