Spinal cord compression—do we miss it?

We present here an interesting case of a woman who presented with features of stroke but later emerged to have metastatic spine disease as the cause of her symptoms. The learning point to take from this case report is to maintain a broadly open mind to the possibility of other diseases (malignancy in particular), as these can clearly present in disguise.

Dr Kiran Chandan* General Practice Specialist Trainee, KSS Deeney, Conquest Hospital, Hastings
Dr MJH Rahmani Consultant Physician in Healthcare for the Elderly, Stroke Lead and Foundation Programme Director, Conquest Hospital, Hastings
email* kiran.chandan@esht.nhs.uk

An 84-year-old lady was referred to our stroke clinic in March 2007 with a history of gradual-onset dizziness and unsteadiness on her feet since Christmas 2006. She had also noticed weakness in her right upper limb, without further deterioration since the time of onset, until seen in the clinic. There was no history of bowel or bladder complaints, nausea, vomiting or diplopia. She was a non-smoker and drank alcohol very occasionally. When seen, she was taking aspirin, simvastatin and telmisartan for vascular protection. On examination, she had difficulty with balance, with residual right-sided weakness and a right, up-going plantar response. The clinical impression was that of a cerebrovascular event with residual right-sided weakness and unsteadiness. A computed tomography (CT) brain scan and carotid Doppler were requested and a referral made to the community stroke rehabilitation team.

The case was followed-up in May 2007, when she presented with continued weakness of the right arm. Her blood tests were normal, including calcium levels and liver and renal function. She was seen by the community stroke rehabilitation team, who noted an 11% reduction in body weight over the three months since March. Her appetite was also poor and she appeared depressed. Her CT scan and carotid Doppler came back normal. She said that she felt as if “blood is running very fast across both my right hand and leg, like a heat wave”, and also that her legs felt “very hot”. In view of her worsening neurology and new sensory symptoms, a brain magnetic resonance imaging (MRI) scan was requested.

She was seen in the clinic again in June 2007, by which time she had become more ataxic, lost the sense of feeling and developed a constant fear of falls. She did not report urinary or bowel incontinence. On examination, she showed powers of 2/5 on the right leg (both proximally and distally), 3/5 in the right elbow flexion and 4/5 in the elbow extension, but normal power in the right hand and wrist and the entire left side. Her right-sided biceps and brachioradialis reflex were absent and triceps exaggerated, suggesting inversion of the supinator jerk. She had normal reflexes on the left side but exaggerated knee jerks with an up-going planter response. She was also found to have bilateral ankle clonus.

An X-ray of the cervical spine revealed soft tissue swelling on the right side of the cervical spine (Figure 1). The MRI showed an extensive, enhancing soft tissue mass on the right side of the cervical spine that was compromising the C5, C6 and C7 nerve roots on the right, and displacing the cervical cord on the left (Figures 2 and 3). The appearance was suggestive of metastasis. She was also found to have multifactor canal stenosis at C2/C3 and the lumbar spine.

The orthopaedic team biopsied the lesion, which showed features consistent with metastatic carcinoma. The immunohistochemical profile was in favour of possible primary renal cell carcinoma. A CT scan of the chest, abdomen and pelvis was normal with no renal mass. The bone scan showed metastatic disease in the
cervical region only. By this time, she had become very frail and poorly, and it was decided to offer her palliative treatment. She died peacefully on 22 August 2007.

Discussion

The thing that most caught our attention in this case was the presentation of symptoms and signs of a stroke, and how, later on, the symptomatology shifted to that of something more than a vascular phenomenon. The red herring in this case was the right-sided weakness, with initial up-going plantar response only on the right side (suggestive of a stroke), which then gradually worsened with bilateral signs. She did not have any urinary or bowel symptoms on her first or second visit to us, but developed double incontinence as an inpatient. This shows that sphincter disturbance, if it occurs early, can indeed help in differentiating the spinal disease as the cause of the neurological symptoms.

Another aspect that was noteworthy in this patient was the absence of symptoms and signs above the neck. She had a normal conscious level, no speech or language difficulties, normal facial strength and no difficulties in visual fields. An indicator of spinal disease, which remains an important distinguishing feature in this, is the more often preserved neck flexion in the spinal disease.
Spinal metastasis is common in patients with cancer. The spine is the third most common site where cancer cells metastasize, following the lung and the liver. Approximately 60–70% of patients with systemic cancer will have spinal metastasis; fortunately, only 10% of these patients are symptomatic. Approximately 94–98% of these patients present with epidural and/or vertebral involvement.¹

About 70% of symptomatic lesions are found in the thoracic spinal region, particularly at the T4–T7 level. Of the remainder, 20% are found in the lumbar region and 10% in the cervical spine. More than 50% of patients with spinal metastasis have several levels of involvement. Isolated epidural involvement accounts for less than 10% of cases; it is particularly common in lymphoma and renal cell carcinoma.¹

Primary sources for spinal metastatic disease include the following tumours.²
- Lung—31%
- Breast—24%
- GI tract—9%
- Prostate—8%
- Lymphoma—6%
- Melanoma—4%
- Unknown—2%
- Kidney—1%
- Others, including multiple myeloma—13%

**Diagnosis**

One should have a low threshold for suspecting spinal cord metastasis. The signs and symptoms include motor, sensory and autonomic disturbances. The red flag signs are listed below:¹
- Back pain. This can feel like a band across the chest or abdomen, and can sometimes radiate to the lower back, into the buttocks or legs
- Numbness or ‘pins and needles’ over the toes or buttocks. These can help diagnose the level of lesion. On presentation of the first signs, an urgent MRI spine should be done
- Unsteadiness on the feet, and difficulty walking
- Problems passing urine (difficulty in control of urine or passing very little urine)
- Constipation or problems controlling your bowel.

**Procedures**

Plain radiography is used to show erosion of the pedicles or the vertebral body in cases of spinal cord metastasis. Radiologic findings become apparent only when bone destruction reaches 30–50%.³ MRI is the imaging modality of choice. The sagittal image can be used for rapid screening of the surrounding soft tissues. Contrast-enhanced, fat-suppressed images help to differentiate metastasis from degenerative bone marrow. Diffusion-weighted images distinguish metastasis from osteoporotic bone. Osteoporotic fractures are hypointense, and metastases are hyperintense. Bone scans are positive in 60% of patients, but they are not specific for spinal cord metastasis.

**Treatment**

Treatment should be started as soon as possible after diagnosis. This is to prevent permanent damage to the spinal cord, which...
Steroids are very good at reducing pressure and swelling around the cord, and can quickly relieve common symptoms such as bone pain. Immediate treatment is with high-dose dexamethasone. Steroids relieve pain within 24–48 hours in approximately 64% of patients, whilst 57% report improvement in motor function. In most patients, steroids should be continued until radiotherapy is completed. Bone pain may be related to root irritation and/or meningeal irritation secondary to cancer infiltration. Non-steroidal anti-inflammatory drugs (NSAIDs) are also commonly used to manage bone pain. Use of spinal orthotics and physiotherapy are useful adjuvant therapies.

Radiotherapy and now surgical radical resection (spondylectomy) are the preferred treatments to control local disease. Only a small number of patients would benefit from operation on their spine for spinal cord compression due to the tumour. Bisphosphonates can be considered for pain relief in extreme cases, when steroids and surgery are unsuccessful.

**Prognosis**

Median survival of patients with spinal metastatic disease is 10 months. Cord compression is often a preterminal event; median survival at that stage is about 3 months. The most important prognostic indicator for spinal metastases is initial functional ability. The ability to ambulate at presentation is a favourable prognostic sign. Loss of sphincter control is a poor prognostic feature and mostly irreversible. Other problems associated with spinal metastasis include pain related to pathologic fractures, hypocalcaemia and psychological problems.

**Conclusion**

This is one of those cases that has lots of points to take away. Patients who present with neurological features of stroke, such as unilateral signs and symptoms of weakness or sensory symptoms, should be assessed for other causes, particularly in the elderly population. This lady initially presented with features of stroke, but later lost weight and developed bilateral signs. Weight loss was clearly not defining as it could have been due to depression; however, the development of bilateral signs was clearly not in favour of a stroke.

**References**