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PRACTICE

EASILY MISSED?

Metastatic spinal cord compression

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This is one of a series of occasional articles highlighting conditions that may be more common than many doctors realise or may be missed at first presentation. The series advisers are Anthony Harnden, university lecturer in general practice, Department of Primary Health Care, University of Oxford, and Richard Lehman, general practitioner, Banbury. To suggest a topic for this series, please email us at easilymissed@bmj.com.

Metastatic spinal cord compression is defined radiographically as an epidural metastatic lesion causing true displacement of the spinal cord from its normal position in the spinal canal.[1] It is an important source of morbidity (including paralysis and bowel and bladder disorders) in patients with systemic cancer.

Why is metastatic spinal cord compression missed?

Low back pain is one of the most common complaints in primary care, with most cases being benign, self limiting, and not needing a specific diagnosis. The challenge in primary care is therefore to identify those cases where low back pain is caused by a serious spinal disease, such as malignancy. Low back pain may be the first presentation of malignancy, and about 23% of patients with spinal metastases are thought to have had no previous diagnosis of cancer.[4]

In a prospective observational study of 319 patients with metastatic cord compression, a median of two months passed from the onset of pain as reported to their primary care providers until the diagnosis of metastatic cord compression.[5] Therefore, new onset back or neck pain in a patient with known cancer must be considered to be spinal metastatic disease until proved otherwise.

Why does it matter?

Although the rate of clinical progression is variable, patients with motor dysfunction inevitably progress to complete paralysis in the absence of intervention.[6] Almost half of patients cannot walk by the time of diagnosis.[7] However, neurological status at the time of diagnosis, particularly motor function, has been shown to correlate with prognosis from metastatic cord compression,[8] thus reinforcing the concept that diagnosis before the development of a neurological deficit is of paramount importance. Furthermore, treatment before paralysis is clinically and cost effective.[9]

How is it diagnosed?

Clinical features

All segments of the spine can be affected by metastatic cord compression, but the thoracic spine is the most commonly affected site (about 70% of cases), followed by the lumbar spine (20%), cervical spine, and sacrum.[6] As thoracic pain is less common in the general population than pain originating from the mobile cervical and lumbar regions, pain in the thorax should increase suspicion of the likelihood of cancer.[10]

Indeed pain is the most common presenting symptom of spinal metastases, occurring in 83-95% of cases.[7] Three classic pain syndromes affect patients with spinal metastases: *(a)* local pain, with pain at rest (resulting from periosteal stretching from tumour growth and/or local inflammatory processes); *(b)* mechanical pain, with pain on movement and improved by rest (owing to instability); and *(c)* radicular pain (owing to irritation of a nerve root).[7] Patients will often present with a combination of these, and they may have both myelopathic (with long tract signs such as upper motor neurone signs) and radicular abnormalities. They may have lower extremity weakness and hyper-reflexia below the level of compression (hyporeflexia if the cauda equina is compressed).

Sensory changes such as paraesthesia or anaesthesia typically occur in correlation with motor weakness. Patients may therefore complain of sensory abnormalities in the same dermatomal distribution as their motor dysfunction, and patients with myelopathy may describe a sensory change across the chest or abdomen. Patients may also have some degree of dysfunction of the bladder, bowel, and sexual organs as a result of metastatic cord compression. Of these autonomic findings (present in 40-64% of patients with metastatic cord compression),[11] bladder dysfunction is the most common and often correlates with the degree of motor dysfunction.[10] Sensory and autonomic symptoms

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Case scenario

A 58 year old woman presents to her general practitioner with a two month history of middle to low back pain. She has a history of breast carcinoma, diagnosed eight years previously and which was treated with a mastectomy and chemotherapy. She also describes pins and needles in both legs for the past three days. On examination, she has tenderness over the area of the T11 and T12 vertebrae and reduced power distally (T4 and T5) but intact bowel and bladder function. She is referred urgently to the metastatic cord compression coordinator, who organises magnetic resonance imaging, which shows cord compression by a mass at the T11 and T12 levels, thought to be caused by metastases.

How common is metastatic spinal cord compression?

- Skeletal system metastases are the third most common metastases, after those of the pulmonary and hepatic systems[2]
- Within the skeletal system, the spinal column is the most common site of metastases[2]
- Metastatic cord compression is estimated to occur in 5-10% of patients with cancer (most commonly those with breast, prostate, and lung cancers) and in about 40% of patients who have pre-existing, non-spinal bone metastases[3]
- Symptomatic metastatic spinal disease is expected to become more prevalent as survival rates for many common cancers improve

and signs present late in these patients, and clinicians must therefore have a low suspicion threshold if patients with known malignancy have back pain. In the United Kingdom the guidelines from the National Institute for Health and Clinical Excellence (NICE) recommend education of patients at risk of developing metastatic spinal cord compression so that they know what symptoms to look out for.[12]

Investigations

A general practitioner who suspects a patient of having metastatic spinal cord compression must immediately contact a specialist spine or oncology team for consideration of urgent imaging and further management. The NICE guidelines recommend that centres treating patients with this condition have a coordinator who advises clinicians, coordinates care, and organises urgent magnetic resonance imaging (fig 1 and fig 2).[12] Such imaging remains the optimal imaging modality for assessing spinal metastatic disease (sensitivity 44-100%, specificity 90-93%).[13 14]

How is it managed?

Metastatic spinal cord compression is an oncological emergency and, once it has been radiologically confirmed, definitive treatment should ideally start within 24 hours of diagnosis. Patients may have considerable pain and should receive analgesia in accordance with the World Health Organization's "pain ladder" (http://who.int/cancer/palliative/painladder/en/). NICE guidelines showed, on the basis of a systematic review of low quality randomised controlled trials and observational studies, that corticosteroids (dexamethasone 16 mg daily with gastric protection) may result in rapid improvement of neurological function.[12 15 16]

Primary treatment depends on a patient's performance status, prognosis, preference, and tumour histological type. In very frail, terminally ill patients, active treatment may not be appropriate. Most patients are not suitable for surgery and should receive urgent external beam radiotherapy, although systematic reviews give no clear consensus on the best radiotherapy dose and fractionation.[17] Patients with paraplegia are unlikely to regain any function, and treatment is mainly intended to help with pain.

On the basis of a systematic review from the NICE guidelines of moderate to low quality evidence from retrospective studies,[18-21] one prospective non-comparative study,[22] one randomised controlled study,[23] and an indirect comparative meta-analysis,[24] surgery may provide better patient outcomes (including pain relief, a better chance of neurological recovery, and maintenance of ambulation) than radiotherapy in carefully selected patients.[12] NICE therefore recommends surgery (decompression and stabilisation) plus radiotherapy for patients who are fit enough for surgery, have a prognosis of at least three months, and have:

- Spinal cord compression and have not had paraplegia for more than 48 hours, or
- An unstable spine, or
- Deteriorating neurological function, or
- Pain despite previous radiotherapy.[12]

Chemotherapy may occasionally be used as a primary treatment for metastatic cord compression that results from chemosensitive disease such as small cell lung cancer and lymphomas. Whatever treatment a patient receives, ongoing multidisciplinary care is crucial, attending to the patient's medical, social, and psychological needs. Although rehabilitation is important for some patients, palliative care is crucial, as only about a fifth of patients with metastatic cord compression will survive for more than one year.[12]

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Key points

- New onset back or neck pain in a patient with known cancer must be considered to be spinal metastatic disease until proved otherwise
- If metastatic cord compression is suspected, urgent specialist referral is critical as early diagnosis and treatment improves quality of life and functional outcome, such as the prevention of paraplegia
- Magnetic resonance imaging is the optimal imaging modality for assessing spinal metastatic disease
- Initial treatment includes corticosteroid use, with urgent definitive treatment comprising surgery or radiotherapy

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Figures

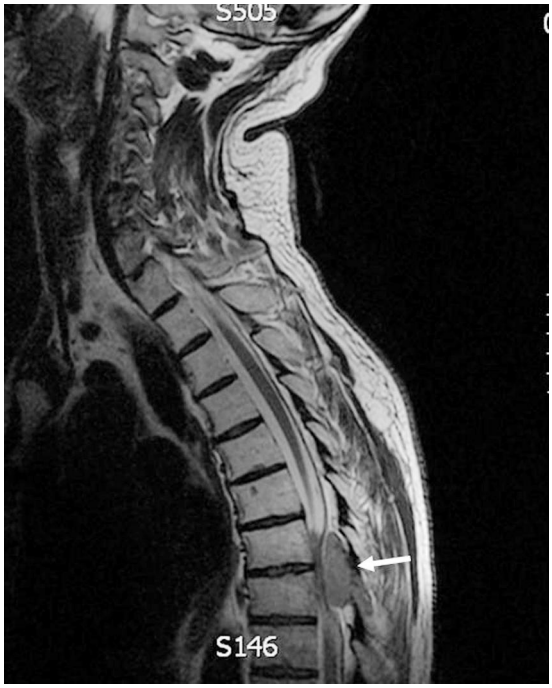

Fig 1 T2 weighted sagittal magnetic resonance scan showing metastatic spinal cord compression by a mass at T7-T8 (arrow)

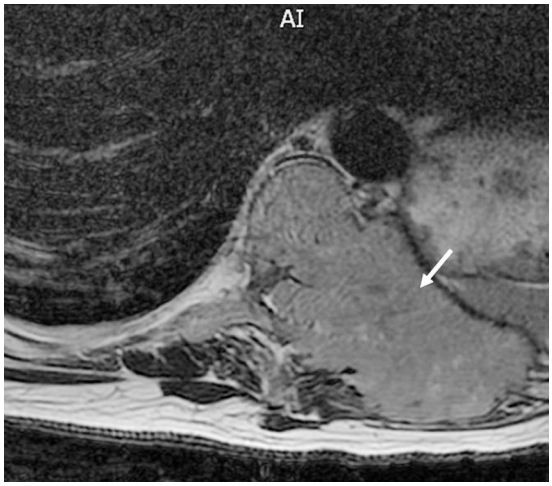

Fig 2 Axial magnetic resonance scan at the T7-T8 level showing extensive tumour infiltration (arrow) with almost complete compression of the spinal cord