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# Back pain in a cancer patient: a case study

## Keywords

therapy, palliative; neoplasm metastasis; radiotherapy

## Case

A man aged 78 years presented to his general practitioner with new-onset low back pain. The patient had metastatic prostate cancer, which was diagnosed 2 years ago, and a solitary asymptomatic bone metastasis in the right pubic bone. To date, he had been managed with androgen deprivation therapy (goserelin) alone. His performance status was good and his prostate-specific antigen (PSA) level stable. His past medical history included hyperlipidaemia and atrial fibrillation. He was on atorvastatin and warfarin. He had no known allergies, was a non-smoker and did not drink alcohol.

He reported a 6-week history of constant, burning pain in the lower lumbar region, which was worse at night and was 7/10 in severity on the Numeric Pain Rating Scale. He had no relief with regular paracetamol or ibuprofen. He had not had lower limb weakness, numbness, lower urinary tract symptoms or weight loss.

## Question 1

What physical examination would you perform?

## Question 2

What are the differential diagnoses?

## Question 3

What important oncological emergency must be excluded on history and physical examination?

## Question 4

What investigations would you order?

## Question 5

What would you prescribe for pain?

## Answer 1

General inspection for cachexia, anaemia and gait assessment should be performed, as well as neurological examination of the upper and lower limbs. Examine the lower back for bony tenderness.

## Answer 2

The differential diagnoses include:

- osteoarthritis
- musculoskeletal strain
- osteoporotic crush fracture.

Given the history, a new bone metastasis should be considered.

## Answer 3

Malignant spinal cord compression (MSCC) and cauda equina syndrome should be excluded. Symptoms may include worsening back pain, weakness in the lower limbs, altered sensation and bladder or bowel incontinence. MSCC is an emergency and warrants urgent referral to a radiation oncologist within 12–24 hours to prevent irreversible progression to paraplegia.<sup>1</sup> Referral can be made directly to the radiation oncologist via immediate phone contact (treatment centres can be searched online at <http://targetingcancer.com.au/treatment-centres/>).

## Answer 4

Imaging of the spine and skeleton is warranted, including computed tomography (CT) of the lumbosacral spine. Magnetic resonance imaging (MRI) of the entire spine is warranted if MSCC is suspected. A whole body bone scan is useful to assess for other sites of bone disease. Repeat PSA to assess for hormone refractory disease, renal function, electrolytes, corrected calcium and haemoglobin.

## Answer 5

The principles of the World Health Organization analgesic ladder should be applied.<sup>2</sup> Given that this patient's pain is not responding to paracetamol or a non-steroidal anti-inflammatory agent, a short-

acting opioid should be added in combination with these and, once titrated, a slow-release opioid can be trialled, always in conjunction with an aperient. Importantly, long-term addiction to opioids is very rare in cancer patients.<sup>2</sup> Dexamethasone also provides analgesia and reduces oedema. The patient should be counselled about the side effects of these drugs and reviewed after 48 hours.

### Case continued

Upper and lower limb neurological examination was normal and there was no evidence of ataxia. A CT scan of the lumbosacral spine and pelvis showed a new destructive osteoblastic bone metastasis involving the vertebral body of L4. There was no involvement of the spinal canal, no nerve root compression and no evidence of pathological fracture.

### Question 6

What is the diagnosis?

### Question 7

After trial of oxycodone for one week, the patient reports that the pain persists. What options does he have now?

### Question 8

What are the practicalities in the delivery of radiotherapy for bone metastases?

### Question 9

What can the patient expect in terms of pain relief, time to pain relief and durability of pain relief?

### Question 10

What are the expected side effects and how are they managed?

### Answer 6

The diagnosis is new symptomatic bone metastasis involving the vertebral body of L4.

### Answer 7

The patient should be referred to a radiation oncologist for consideration of radiotherapy for symptomatic relief. Radiotherapy is a well-established treatment, effective in reducing pain related to painful bony metastases and decreasing the need for analgesia. Most patients respond and durable response rates are common.<sup>3</sup> Referral

for neurosurgical opinion is made by the radiation oncologist in some cases, particularly when spinal stability is a concern.

### Answer 8

Patients require an initial treatment-planning session and then return for therapy. Radiotherapy is delivered using a linear accelerator, which generates megavoltage X-rays that are accurately aimed and delivered to the intended target. Radiotherapy is not painful and treatment sessions often only last several minutes. Palliative courses of radiotherapy for bone metastases are generally delivered over a short period of time, ranging from a single treatment or fraction up to a maximum of 5–10 fractions, minimising patient inconvenience.<sup>4</sup> Stereotactic radiotherapy, a specialised form of highly conformal ablative radiotherapy, may be recommended in highly selected cases.

### Answer 9

Radiotherapy is the most effective treatment for cancer-related bone pain. Up to 80% of all patients treated with radiotherapy will have significant or total reduction in pain, which is often long-lasting.<sup>3</sup> If pain recurs, treatment can also be repeated.

### Answer 10

Palliative radiotherapy is extremely well tolerated and there is minimal or no toxicity in most patients. Depending on the site treated, patients may experience a transient flare of pain, mild nausea,

fatigue and skin erythema. Side effects are usually self-limiting and actively managed by the treating radiation oncologist.<sup>5</sup>

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