Bone disease

Myeloma Nurse Guide

The Myeloma Nurse Guide Series has been developed to enhance nurse knowledge, inform practice and support nurses in the delivery of high quality treatment and care to myeloma patients and families. The information has been reviewed by myeloma nurse and medical experts and should be used in conjunction with local and national policies, protocols and guidelines.

What is myeloma bone disease?

Myeloma bone disease is a common and debilitating complication of myeloma and occurs when myeloma cells disrupt normal bone remodelling, so bones are broken down (resorbed) faster than they are rebuilt. This leads to thinner, weaker bones and areas of bone loss called lytic lesions, which do not heal. Commonly affected bones are the spine, ribs, sternum, pelvis, skull, femora and humeri, where there is active haematopoiesis. Around 70% of myeloma patients have bone disease at diagnosis.

Bone resorption causes calcium to be released from the bone into the blood, which can lead to hypercalcaemia. Around 30% of patients have hypercalcaemia at diagnosis.

Clinical features

Clinical consequences of bone disease include: bone pain (commonly in the back and/or ribs), pathological fractures, vertebral collapse, and spinal cord compression.

Severe hypercalcaemia and spinal cord compression are **medical emergencies** and require immediate treatment. Imaging and management of patients with suspected spinal cord compression follows specific guidance and pathway. Clinical features of these conditions include:

Hypercalcaemia

- Loss of appetite
- Nausea
- Constipation
- Excessive thirst/urination
- Confusion
- Fatigue, drowsiness

Spinal cord compression

- Severe back pain that may be progressive and unremitting and aggravated by straining/coughing
- Localised spine tenderness
- Pain when lying down
- Numbness, tingling and shooting pains caused by compressed nerves (radiculopathy)
- Limb weakness or difficulty walking
- Loss of sensation, bladder or bowel control

Assessment and monitoring

Assessment of bone disease and imaging are part of the diagnostic work-up and ongoing disease monitoring.

Assessment features	Rationale
Blood tests: calcium, Vitamin D, parathyroid hormone (PTH) and alkaline phosphatase	To check for hypercalcaemia, and investigate cause
Baseline and regular assessment of pain	To be aware of worsening bone disease, potential fractures To assess the effectiveness of pain relief interventions
Record and monitor height regularly	To check for loss of height, which can indicate vertebral disease
Assess patients' ability to perform activities of daily living	To assess mobility and functional needs

Imaging	Rationale
Whole body (WB) imaging techniques: WB MRI, WB DWI (diffuse weighted imaging), MRI and WB low-dose CT	To assess soft tissue disease, particularly vertebral disease, and bone marrow infiltration by plasma cells Monitor treatment response and plan radiotherapy or surgery
Fluoro-deoxy-glucose positron emission tomography with CT (FDG PET/CT)	To investigate non-secretory or asymptomatic disease and response to treatment
Plain X-ray or skeletal survey (set of X-rays of spine, ribs, skull, pelvis, femora and humeri)	To identify fractures and bones at risk of fracture **N.B.** There needs to be at least 30% bone loss to detect lytic lesions on X-ray

Whole-body imaging techniques are now recommended over X-rays for assessing bone disease at diagnosis.

Prevention and treatment

A range of approaches are used to treat and manage myeloma bone disease. They include:

- Myeloma treatment to reduce disease activity and prevent further bone damage
- Pain control interventions – to relieve pain, increase mobility and improve quality of life
- Bisphosphonates – to reduce or prevent further bone deterioration and treat hypercalcaemia
- Radiotherapy – to treat myeloma and locally painful and unstable lytic lesions. Single or multiple fractions may be used.
- Surgery – to treat fractures and stabilise bones at risk of fracture. Injection of cement into the vertebral body (percutaneous vertebroplasty or balloon kyphoplasty) may be offered to relieve pain associated with vertebral collapse.

Nursing management points

Assessment and monitoring

- Prepare patients for imaging procedures by explaining the procedure and offering analgesia if required beforehand
- Support patients who are anxious about exposure to radiation when having scans or X-rays and explain the risks and benefits
- Prepare patients for MRI scans by ensuring no metal implants. Warn about noise of machine

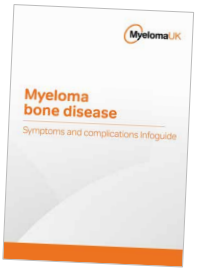
Prevention and treatment

- Advise patients to take analgesia as prescribed
- Ensure patients are prescribed breakthrough pain relief, laxatives and anti-emetics if on opiate analgesia
- Avoid use of non-steroidal anti-inflammatory drugs (NSAIDS)
- Liaise with palliative care or pain teams for patients with pain that is difficult to manage, or who have complex symptom control needs
- Refer to and coordinate with physiotherapists and occupational therapists to promote mobility and strength and support independence
- Assist patients with spinal bracing as required, ensuring correct positioning
- Nurse patients with suspected spinal cord compression flat with neutral spine alignment until a diagnosis is made and the spine stabilised
- Understand what is involved in vertebroplasty/kyphoplasty treatment, to inform and support patients going through these procedures

Self-care strategies for patients

- Walking can promote general bone health as it is a weight-bearing exercise
- Reduce risk of accidents or falls, e.g. avoid contact sports, check for trip hazards, use mobility aids
- Care for skin when on radiotherapy treatment by patting dry and avoiding creams, deodorants and perfumed toiletries to treated area
- Explore non-pharmacological pain interventions, such as relaxation techniques, hot/cold packs, transcutaneous electrical nerve stimulation (TENS)

Patient information key points



- Provide information to help patients understand myeloma bone disease and how it is treated and prevented
- Explain how to recognise and report symptoms of bone disease and hypercalcaemia
- Educate on preventative measures to reduce the risk of skeletal-related events

References

A list of key references is available on Myeloma Academy:
academy.myeloma.org.uk/myeloma-nurse-guide-references

MyelomaUK

Myeloma★Academy

For further nurse guides and other educational resources on myeloma and related conditions:
academy.myeloma.org.uk

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