

Low back pain

Low back pain is a common presenting symptom in older patients and results in significant disability and functional decline. We look at the important causes of low back pain, the imaging techniques to diagnose the underlying pathology, and management options.

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Many elderly people have low back pain, which can be difficult to treat. It not only causes considerable distress to the patient and carer, but also has important financial implications. Low back pain is among the ten most common reasons for attending primary care.¹ In most patients the pain is self-limiting and has a benign cause.

However, it can be a presenting symptom of systemic disease such as infection or malignancy. The challenge is distinguishing the 95% of patients with simple back pain from the 5% with serious underlying systemic or neurological conditions. (box 1).

Common causes

Osteoporosis is a common cause of vertebral compression fractures in elderly people. History of trauma is present in only 30% of patients. Although many patients with compression fractures can be asymptomatic, new fractures are often painful. About 90% of all patients with back pain have non-specific low back pain. Devo and colleagues² found that the incidence of tumour or metastasis was less than 1% in these patients.

Spinal stenosis is usually caused by a bulging disc or by facet hypertrophy, and is more prevalent in older adults. The classic symptom of spinal stenosis is neurogenic claudication causing

leg pain not dissimilar to vascular claudication. Pain is characteristically exacerbated by standing; typically the patient has no pain when seated with the spine in the flexed position.³

Cauda equina syndrome is another neurological condition more common in older people. It usually results from large midline intervertebral disc herniation and is a neurosurgical emergency that warrants immediate referral. Common presenting symptoms include urinary retention, unilateral or bilateral leg pain, and sensory or motor deficit. Saddle anaesthesia (paraesthesia over the buttocks, thighs, and perianal region), and reduced anal tone occur in nearly 75% of patients.²

Spinal metastases are usually secondary to prostate cancer in older men, and are another important cause of low back pain. Finally, osteoarthritis of the spine causes considerable disability and is a leading cause of chronic low back pain in elderly people.

History and examination

Taking a history is more useful than physical examination in screening for underlying malignancy, at least in the early stages. In patients known to have history of malignancy, back

Box 1: Causes of pain

Mechanical

- Lumbar strain
- Degenerative processes of disc and facet (osteoarthritis)
- Herniated disc
- Osteoporotic compression fracture
- Spinal stenosis
- Spondylolisthesis

Malignant

- Multiple myeloma
- Metastatic carcinoma
- Spinal cord tumours
- Retroperitoneal tumours

Infections

- Osteomyelitis
- Septic discitis
- Paraspinal abscess
- Epidural abscess

Inflammatory arthritis

- Ankylosing spondylitis
- Psoriatic spondylitis
- Reiter syndrome
- Inflammatory bowel disease

Referred pain

- Aortic aneurysm
- Pyelonephritis
- Perinephric abscess
- Endometriosis
- Pelvic inflammatory disease
- Colonic or pelvic tumours

Others

- Paget's disease
- Severe anaemia

Box 2: Red flags

- Age of onset older than 60 years
- Weight loss
- Presence of neurological symptoms
- Past history of malignancy
- Long-term use of steroids
- Non-mechanical pain
- Thoracic pain
- Presence of systemic symptoms

pain should be carefully evaluated. A detailed examination with particular emphasis on the musculoskeletal and neurological systems should be done.

A rectal examination for men can provide helpful information about prostate size, consistency, and possible malignancy. Assessment of anal tone may be relevant for spinal-cord pathology. Constipation should not be ignored in older people because it may be a feature of hypercalcaemia due to occult malignancy. Nerve root problems are indicated by unilateral leg pain radiating to the foot, and are associated with paraesthesia and weakness in the area supplied by the nerve root. Over the years, there has been particular emphasis on the red flag features that may point to a sinister diagnosis (box 2).

Investigations

In elderly patients with non-mechanical back pain, sinister pathology such as metastatic disease or myeloma should always be considered. Initial tests for full blood count, C-reactive protein, creatinine, estimated glomerular filtration rate, serum protein electrophoresis, urine for Bence-Jones proteins, corrected calcium, and prostate specific antigen should be done for elderly patients with back pain. Abdominal

ultrasound is a useful initial investigation for patients in whom abdominal aortic aneurysm or intra-abdominal malignancy is suspected.

Imaging

Plain X-ray

Plain radiography is the most common imaging test because it is readily available and cheaper than other imaging methods. Anteroposterior and lateral views demonstrate alignment, the height of both the vertebral body and the disc, and allows gross assessment of bone density. However, it can give only limited information about soft-tissue structures. Non-specific low back pain is not strongly associated with abnormalities on plain spinal radiograph.⁴

In young patients with mechanical low back pain routine early X-ray examination is expensive and confers little benefit.⁵ In older patients plain X-ray is useful for detecting compression fracture, spine deformity, spondylolisthesis, and features of osteoarthritis.

CT scanning

Computed tomography uses X-rays to generate cross-sectional images of the spine. Usually, the spine is imaged by 3–5 mm thick slices parallel to the disc spaces of L3/4, L4/5, and L5/S1. It allows for direct visualisation of nerve root compression. CT is less reliable for evaluation of the intrathecal nerve root.⁶

MRI

MRI has several advantages over CT scanning for spinal imaging. It allows better visualisation of contents of spinal canal, ligaments, and discs because of better soft-tissue contrast. MRI does not use ionising radiation and is probably the most useful imaging technique for characterising spinal infections. Additionally,

MRI better delineates the extent of infection, which is critical in determining the need for surgery.

Spinal osteomyelitis is associated with involvement of two vertebral bodies and the intervening disc and is well demonstrated by MRI. Other spine pathologies such as herniated discs, spinal canal stenosis, cord compression, and nerve root impingement are reliably diagnosed with MRI. In an older patient with back and leg pain relieved by sitting, spinal stenosis should be considered. If symptoms are persistent or progressive and intolerable, MRI is the technique of choice. Current NICE guidelines⁷ suggest MRI if a diagnosis of spinal malignancy, infection, cauda equina syndrome, or inflammatory arthritis is suspected.

Bone scanning

Bone scanning involves the injection of a radioactive substance that adheres to metabolically active bone. Technetium-99m-labelled phosphate complexes are the agents of choice.⁸

Box 3: Management of acute low back pain

- Promote self management
- Encourage patients to carry on with normal activities as far as possible
- Advise patient to exercise
- Give reassurance if prognosis is favourable
- Advise to avoid bed rest
- Consider spinal manipulation

Drug treatments

- Simple analgesia (ie, paracetamol)
- Non steroidal anti-inflammatory drugs (NSAIDs)
- Opioids for severe pain
- Muscle relaxants (eg, diazepam) if muscle spasm present
- Tricyclic antidepressants if other drugs insufficient

Bone scanning is considered particularly useful for detecting occult fractures and in determining whether the fracture is new or old.⁹ Another important role is detection of bone metastases and differentiating them from degenerative changes.¹⁰

Management

NICE published guidelines on early management of persistent low back pain in May 2009.⁷ However, specific causes such as malignancy, fracture, infection, and inflammatory arthritides are not covered in this guidance. The key recommendations are summarised in box 3. Many clinical trials have evaluated conservative, complementary, and surgical treatments used in chronic low back pain. Box 4 summarises interventions for the management of chronic low back pain.

Exercise therapy is used widely for low back pain. A systematic review by Hayden and others,¹¹ looking at exercise therapy to improve outcomes in lower back pain concluded that individually designed programmes, including stretching or strengthening, that are delivered with supervision may improve pain and function in chronic non-specific low back pain.

Strong evidence shows that NSAIDs relieve pain better than placebo. However, these drugs should be used with caution in elderly patients because of the risk of gastrointestinal bleeding. Muscle relaxants have also been shown to be more effective than placebo in reducing acute back pain. Moderate evidence exists for efficacy of treatments such as spinal manipulation, behavioural treatment, and multidisciplinary treatment. Currently, no evidence shows that lumbar support with corset, massage, or acupuncture is effective in management of low back pain.¹²

One clinical trial¹³ assessed invasive procedures for low back pain that interventions such as facet joint, epidural and trigger point injections are not effective.¹³ Additionally, no clear evidence supports positive outcomes after surgery for spinal stenosis. The role of spinal fusion surgery for chronic low back pain is debatable.¹⁴ Randomised controlled trials comparing conservative treatment with fusion surgery have shown conflicting results.¹⁵⁻¹⁷

In elderly patients with proven osteoporotic vertebral fracture, the same general principles for pain control apply. Carefully assessing the risk of further fragility fractures is essential, as is consideration of secondary prevention with bisphosphonates or other agents in accordance with NICE guidelines.¹⁸ Alendronate is recommended as a treatment option for secondary prevention of osteoporotic fracture in postmenopausal women who have confirmed osteoporosis. In women aged 75 years or older, a dual energy X-ray absorptiometry scan may not be required. Risedronate and etidronate are recommended as an alternative treatment option if the patient is intolerant of alendronate. Strontium ranelate and raloxifene are recommended in secondary

Box 4: Management of chronic low back pain

- Structured exercise programme
- NSAIDs
- Muscle relaxants
- Manual therapy (spinal manipulation)
- Behavioural treatment
- Multidisciplinary treatment programmes
- Lumbar supports
- Acupuncture
- Epidural steroid injections
- Facet joint injections
- Trigger point injections
- Spinal fusion surgery
- Transcutaneous electrical nerve stimulation

prophylaxis if the patient is unable to comply with special instructions for the administration of, or are contraindicated, to bisphosphonates. Calcium and vitamin D supplements should also be considered for residents of care homes or nursing homes, who are often deficient in vitamin D, and thus more prone to fractures. Conditions such as intervertebral discitis and spinal malignancy warrant urgent neurosurgical advice and management.

Prognosis

The clinical course for acute low back pain is mostly favourable with pain and disability resolving within a few weeks.¹⁹ A small proportion (5%) of patients develop chronic back pain and related disability.²⁰ In cases of chronic low back pain, prognosis depends on the underlying cause. Presence of malignancy or neurological conditions have the worst prognosis.

Conclusions

Low back pain in an elderly patient needs careful evaluation to exclude systemic disease or malignancy. Presence of red flags should alert the attending physician to the possibility of sinister underlying pathology. Urgent biochemical tests and appropriate imaging should then be done to identify the cause of low back pain. Subsequent management is aimed at pain relief and treatment of the underlying cause.

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Key points

- Diagnostic triage aims at excluding sinister pathology and red flag signs
- Most patients with acute low back pain have favourable prognosis
- Up to 5% of elderly patients with low back pain may have underlying systemic disease or malignancy
- Secondary fracture prevention is of paramount importance in patients with osteoporotic vertebral fractures
- Patients should be advised to stay active and avoid bed rest