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Evaluating the patient with low back pain

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FIGURE 1
A prolapsed L5/S1 disc indenting the lower lumbar roots

What are the possible underlying causes?

How should patients be investigated?

Which patients should be referred?

LOW BACK PAIN IS A MAJOR CAUSE OF MORBIDITY WORLDWIDE.[1] IN THE UK, IT IS THE MOST common cause of disability in young adults.

The main cause of working days lost in 2013 was musculoskeletal conditions, such as back and neck pain, accounting for 31 million days lost.[2]

Every year, 6-9% of adults in the UK consult their GP about back pain.[3] While in most cases the symptoms are secondary to mechanical factors and self-limiting, GPs need to be aware of potentially sinister causes, or underlying systemic diseases. These include infection, malignancy, rheumatological and neurological disorders.

In order to help with classification, acute low back pain is usually defined as an episode lasting less than six weeks, subacute low back pain as lasting 6-12 weeks, and chronic low back pain as persisting for more than 12 weeks.

'Non-mechanical pain may be a marker for malignancy'

HISTORY AND EXAMINATION

In most patients with acute low back pain, a thorough history and examination is usually sufficient to make a diagnosis although the differential is wide, see table 1, p22. The main purpose is to exclude an alternative diagnosis, such as pain arising from the hip or trochanteric bursa and to categorise patients as having either: serious spinal pathology, nerve root/radicular pain or non-specific back pain.

The history should evaluate the duration of symptoms, previous episodes and the nature and severity of the current episode.

Risk factors for spinal infections such as diabetes, immunosuppression and intravenous drug use should be assessed. In patients with previous malignancy, the possibility of bony metastases should always be considered. Non-mechanical pain does not improve with bed rest and may be a marker for possible malignancy or inflammatory pain.

Red flag symptoms, see table 2, p22, should raise concerns regarding a possible sinister cause such as malignancy or myeloma and more than one red flag mandates urgent further investigation. However, individual red »

flags have a low positive predictive value in primary care when used alone. Additionally, only a few are supported by a clear evidence base, for example a history of malignancy is associated with a 7% increase in spinal malignant disease.[4]

The red flags with the strongest association with fracture are older age, prolonged use of corticosteroid drugs, severe trauma and presence of a contusion or abrasion. The probability of spinal fracture is higher if more than one red flag is present. The red flag with the highest probability of spinal malignancy is a previous history of malignancy.

Psychosocial yellow flags increase the likelihood of chronicity and should also be explored, see table 3, below.[5]

The examination should be focused on elucidating a cause of the back pain and excluding any potentially sinister causes. Midline tenderness, for example, is often present in septic discitis. In mechanical lumbar back pain, one may observe tenderness and spasm of the paraspinal muscles, but this can also occur in patients with a psoas abscess. The musculoskeletal and neurological systems need to be assessed, looking specifically for any neural compromise. However, significant pathology can exist in the absence of hard clinical signs due to innervation from several levels.

Table 1

Differential diagnosis

Mechanical pain
Facet joint osteoarthritis
Osteoporotic compression fracture
Spinal stenosis
Spondylolisthesis
Degenerative disc disease
Lumbar muscle strain

Neoplastic
Multiple myeloma
Bony metastases
Spinal cord or retroperitoneal tumours

Infection
Vertebral osteomyelitis
Discitis
Paraspinal abscess
Psoas abscess

Inflammation
Ankylosing spondylitis
Psoriatic arthritis
Enteropathic arthritis
Reactive arthritis
Undifferentiated spondyloarthropathy

Inflammatory back pain
Inflammatory back pain is often missed, particularly in the early stages. The primary features are pain arising in patients under the age of 40 years, thoracolumbar or sacroiliac pain and alternating buttock pain.

‘Inflammatory back pain is often missed particularly in the early stages’

Early morning stiffness and stiffness after rest (the gelling phenomenon) is a hallmark of inflammatory back pain.[6] There may also be peripheral joint involvement with evidence of inflammatory arthritis as well as extra-articular manifestations such as iritis, psoriasis and colitis.

Any history of preceding bowel infection or sexually transmitted infection as part of a reactive spondyloarthropathy should be explored. There may be a family history of ankylosing spondylitis or psoriasis. Objectively, a reduction in movement of the lumbar spine may be seen but is a late feature of disease.

Schober’s test is positive if there is less than a 5 cm increase between two points 5 cm below and 10 cm above the dimples of Venus at the L5 level on lumbar spine flexion. Sacroiliitis may be picked up by sacroiliac joint stress tests but these are non-specific.[7]

It is worth noting that in the early stages of inflammatory back pain examination may be normal.

Table 2

Red flags

- Age of onset > 50 years or < 20 years
- Night pain disturbing sleep
- Previous history of malignancy
- Thoracic back pain
- Systemic symptoms (weight loss, fevers and night sweats)
- Neurological symptoms, especially sphincter disturbance
- Non-mechanical pain (i.e. no relief with bed rest)
- Drug abuse, immunosuppression and HIV infection

Table 3

Yellow flags

- A belief that back pain is harmful or potentially severely disabling
- Fear of pain and subsequent avoidance of activity or movement
- Tendency to low mood and withdrawal from social interaction
- Expectation of passive treatments rather than a belief that active participation will help

Mechanical back pain
Mechanical back pain is extremely common and typically worse at the end of the day or after a period of movement. There is no associated morning stiffness. The pain arises from facet joint osteoarthritis, lumbar paraspinal muscle spasm and degenerative disc disease. There is often a history of previous similar episodes.

‘Passive straight leg raise helps identify increased spinal root tension’

Vertebral fractures
Spinal fractures cause severe localised pain of sudden onset and can be associated with minor trauma in the case of osteoporosis, such as twisting movements of the back or stepping off a kerb. Major trauma such as a fall from a height or road traffic accident in younger patients may also lead to vertebral fracture.

Lumbar disc herniation
Acute disc prolapse is often preceded by a history of trauma such as heavy lifting. The most common discs to prolapse are L4/5 and L5/S1 (see figure 1, p21) and result in sciatica. There is usually a history of low back pain of acute onset with concurrent severe pain radiating to the leg.[7] Passive straight leg raise helps identify increased spinal root tension.

Spinal cord compression and cauda equina syndrome
Sphincter disturbance leading to loss of bladder or bowel control should always be explored as it is a sign of spinal cord compression (or cauda equina syndrome with lesions lower than the L1-2 level). There may also be saddle anaesthesia in the sacrum and reduced anal tone on rectal examination.[8] Both spinal cord compression and cauda equina syndrome are neurosurgical emergencies and need urgent referral for further investigation and possible intervention.

key points

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In the UK, low back pain is the most common cause of disability in young adults and every year 6-9% of adults consult their GP about back pain. A thorough history and examination is required to exclude an alternative diagnosis, such as pain arising from the hip or trochanteric bursa and to categorise patients as having either: serious spinal pathology, nerve root/radicular pain or non-specific back pain.

Inflammatory back pain is often missed, particularly in the early stages when examination may be normal. The primary features are pain arising in patients under the age of 40, thoracolumbar or sacroiliac pain and alternating buttock pain. Stiffness in the early morning and after rest is a hallmark of inflammatory back pain. There may also be peripheral joint involvement with evidence of inflammatory arthritis as well as extra-articular manifestations such as iritis, psoriasis and colitis.

Mechanical back pain is extremely common and typically worse at the end of the day or after a period of movement. There is no associated morning stiffness. The pain arises from facet joint osteoarthritis, lumbar paraspinal muscle spasm and degenerative disc disease.

Sphincter disturbance leading to loss of bladder or bowel control should also be explored as it is a sign of spinal cord compression or cauda equina syndrome. There may also be saddle anaesthesia in the sacrum and reduced anal tone on rectal examination. Both spinal cord compression and cauda equina syndrome are neurosurgical emergencies and need urgent referral for further investigation and possible intervention.

The majority of patients with low back pain can be managed in primary care as the pain will usually be self-limiting. Patients with suspected inflammatory back pain should be referred to rheumatology as soon as possible in order to institute early management and prevent long-term deformity and disability. Patients with suspected serious spinal pathology should be referred urgently for further investigation.

Red flag symptoms should raise concerns regarding a possible sinister cause such as malignancy and more than one red flag mandates urgent further investigation. However, individual red flags have a low positive predictive value in primary care when used alone.

INVESTIGATIONS

Investigations should be reserved for patients in whom a systemic or serious cause of low back pain is suspected. Blood tests may include full blood count, ESR, C-reactive protein, serum protein electrophoresis, urine for Bence-Jones protein, corrected calcium and prostate specific antigen.

In patients with suspected inflammatory back pain, an HLA B27 test can be helpful in stratifying risk, especially in young men with prolonged early morning stiffness but should not be performed routinely.

In primary care HLA B27 should be checked in patients aged under 45 with fewer than two of the following symptoms suggesting inflammatory back pain: bilateral buttock pain, pain which improves on movement and psoriasis. Suspected inflammatory back pain should be referred without HLA testing in patients if at least two of these symptoms are present.[9]

Plain radiography

This is the most common imaging requested as it is widely available and cheap compared with other imaging methods. However, in younger patients with mechanical or non-specific low back pain, routine radiographs do not provide any further benefit over clinical evaluation and are not cost effective.[8] While information regarding soft tissue structures is limited, in older patients plain radiographs are more helpful.

Anteroposterior and lateral views provide information on alignment, vertebral body and intervening disc height. Plain X-rays may demonstrate compression fractures of the spine, scoliosis, spondylolisthesis and evidence of osteoarthritis (including facet joints) as well as providing a crude estimation of bone density.[10]

MRI

MRI is currently recommended for patients with red flags and for evaluation of possible radiculopathy.[11] It has advantages in terms of better visualisation of the spinal canal, ligaments, discs and other soft tissues and provides a more complete evaluation for all potential sources of back pain.

It is also useful for identifying spinal infections such as discitis or osteomyelitis as well as infections such as paraspinal or psoas abscess. It is the investigation of choice in patients with suspected inflammatory back pain and in these patients an MRI of the spine and sacroiliac joints should be performed to detect bone marrow oedema.

Other imaging modalities

In some cases, CT scanning may be performed but its use is mainly limited to visualising the bones and nerve roots, and may be used to guide nerve root injections.[12]

Nuclear medicine bone scanning may be used in a secondary care setting to detect occult fractures, investigate whether a fracture is new or old and to detect bone metastases and differentiate these from degenerative changes.[13]

'MRI is recommended for patients with red flags'

REFERRAL

The majority of patients with low back pain can be managed in primary care as the pain will usually be self-limiting. However, it may take three months or longer to resolve.

Patients with suspected inflammatory back pain should be referred to rheumatology as soon as possible in order to institute early management and prevent long-term deformity and disability.

Patients with more than one red flag symptom should be referred urgently for further investigation.

MANAGEMENT

Management of back pain depends on the underlying cause. In the primary care setting, treatment of acute low »

Table 4

Possible treatment options for chronic low back pain

- Exercise
- NSAIDs/paracetamol
- Opioids
- Tricyclic antidepressants (low dose)
- Neuropathic agents: gabapentin/pregabalin (for radiculopathy)
- Muscle relaxants
- Manual therapy
- Behavioural therapy (CBT, acceptance and commitment therapy)
- Multidisciplinary treatment programmes
- Acupuncture
- Epidural injections of steroid and local anaesthetic
- Trigger point injection
- Spinal fusion surgery
- Transcutaneous electrical nerve stimulation

back pain should aim to:

- Provide adequate information and reassurance that low back pain is usually not a serious disease and most patients recover, although this may take weeks to months
- Provide adequate symptomatic relief
- Encourage patients to stay active and return to normal activities as soon as possible. Complete bed rest should be avoided as this can be a factor in promoting chronicity.

The NICE clinical knowledge summaries on the management of acute and chronic low back pain were updated in April 2015.[11] In chronic low back pain the main aim of intervention is to modify the patient's underlying fears and beliefs regarding pain and improve their coping mechanisms and physical ability.[14]

A wide range of therapies exist that can be utilised by patients suffering from low back pain, see table 4, p23.

Pharmacological therapies are commonly used for symptomatic relief. These include paracetamol, NSAIDs and opioids. In chronic low back pain, low doses of tricyclic antidepressants are often helpful and are recommended in the NICE guidelines. However, there is no clear evidence that antidepressants are more effective than placebo and they are not recommended by SIGN.[15] It is of course important to recognise and treat depression and optimise antidepressant treatment in patients with moderate depression.[15]

Patients with radicular pain can benefit from treatments used for neuropathic pain such as gabapentin or pregabalin.

Muscle relaxants and benzodiazepines may also be used for a short defined period to enable early return to activity. Secondary prevention with alendronate or risedronate should be instituted in patients with osteoporotic vertebral fractures.

Non-pharmacological treatment is also a critical element of back pain management. Complete bed rest should be discouraged and instead, patients advised to continue normal activities as this leads to faster symptomatic recovery.

Back pain is often best managed using a multidisciplinary approach. This may incorporate medical treatment with psychotherapy, physiotherapy, relaxation techniques, patient education or vocational therapies to provide a holistic approach and has been shown to have better long-term outcomes.[15] Physical therapy is useful especially back strengthening exercises.[16] In chronic low back pain, this may be incorporated into a multidisciplinary programme. Some secondary care units offer back pain programmes to help patients deal with their pain. CBT focuses on patients' reactions to pain and coping strategies and can be helpful in long-term management.

CONCLUSION

Low back pain in primary care needs careful and thorough evaluation to distinguish patients with serious causes, such as systemic disease or malignancy, from the vast majority of back pain which is self-limiting.

Red flag symptoms will alert GPs to patients who require further investigation and onward referral. Long-term management is aimed at symptomatic relief, patient education and treatment of any underlying causes.

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Useful information

Arthritis Research UK
Provides patient information leaflets on back pain which include simple exercises that patients can do at home
www.arthritisresearchuk.org

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