MEDICINE

432 Team

60 Chronic Back Pain

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Objectives

1. To recognize the most common cause of back pain
2. To identify the key features in history and examination that would direct to the right diagnosis
3. To identify the red flags
4. To discuss real cases and their complaints
5. Touch on initial management of back pain

NB!

- **Before you begin, this work includes everything that was mentioned in the lecture, however this should not be your only source. You must read from the book**
- **The slides were not provided by the doctor**

History:

1. Gender
2. Age
3. Occupation : truck driver (pain due to lifting) , microbiologist (pain due to position).Both have back pain but different mechanism
4. Risk factors
5. Co-morbids
6. Duration and nature of symptoms
7. **Red flags :VERY IMPORTANT**

- Unintentional Weight loss→tells you most probably this patient has a malignancy or infection
- Trauma
- Immunosuppression→e.g.Rheumatology patient on steroids, cyclophosphamides, transplant patient etc… all are at risk of developing Osteomyelitis and Para-spinal abscess
- Cancer
- Intravenous drug use→they can get infections anywhere (e.g. Infective Endocarditis, brain abscess (complains of headache), testicular abscess, septic arthritis, heel pain think infection etc…
- Steroid use
- Osteoporosis→because they easily fracture their bone
- Age >50
- Progression of symptoms
- Focal neurological deficit: important to give attention to , because the vertebrae harbor the spinal cord and between the vertebrae the Nerve roots come out then the nerves ; this means you must refer to neurosurgeon or neurologist

8. Effect on life (very important to ask) : some patients are used to having back pain for so long they try to adapt rather than solve ,so they quit a sport or stop carrying children etc…
9. **Past surgical and medical history:** red flags. For example, a patient known to have cancer, the back pain mean metastasis until proven otherwise.

- Low back pain is one of the commonest reasons to visit a physician in an out-patient setting, and usually are not admitted unless its serious
- Back pain costs a 100 billion dollars
- Physicians should be systemic in their approach and shouldn't do MRI for any back pain
- If a patient is coming to the ER its most likely serious with an underlying cause
- usually low back unless its psychological or rapidly progressive neurological deficit it doesn't impair the function that much
- Patients with back pain maybe seen by :
    1. Primary care (i.e. Family Medicine) → best people to manage back pain .Along with community and radiology they set the guidelines.
    2. Neurology/neurosurgery →spinal stenosis , cauda equina syndrome
    3. Orthopedic → same as neurology
    4. Rheumatologist → Ankylosing spondylitis

Approach:

1- History and examination

2- Point of decision:

A- When symptoms are there for <4 weeks , no red flags , no signs and symptoms of spinal stenosis or radiculopathy →order tests for non-specific low back pain.

B- Signs and symptoms of spinal stenosis or radiculopathy →order Acute low back pain test

C- Signs and symptoms of Red flags → admit and order set of low back pain tests.

Table 1. Adult with low back pain (acute)

- History and physical key points
    - Duration and nature of symptoms
    - Presence of red flags (trauma history, unintentional weight loss, immunosuppression, history of cancer, intravenous drug use, steroid use, osteoporosis, age > 50 y, focal neurologic deficit, progression of symptoms)
    - Symptoms of spinal stenosis, radiculopathy

Decision point (<4 weeks of symptoms) A

- No red flags, signs, or symptoms of spinal stenosis or radiculopathy
    - Go to order set for nonspecific acute low back pain
- Signs or symptoms of spinal stenosis or radiculopathy B
    - Go to order set for acute low back pain with radiculopathy or spinal stenosis
- Red flags present
    - Go to order set for acute low back pain with red flags

*in the case of (A) you don't do a lumbosacral X-ray or MRI , just give them lifestyle modification and physiotherapy and wait for 4 weeks then follow up to see if there is no improvement consider MRI

*in case its (B) you can either1- directly investigate (initial test lumbosacral X-ray and then the best modality MRI or 2- wait

Why is MRI not recommended in all patients?

- Incidental finding may mislead the diagnosis
- Cost

Non-specific Back Pain:

If back pain is non-specific, and is not associated with significant functional impairment or rapidly progressive neurologic deficits then:

1. Treatment :
   - We begin with paracetamol and muscle relaxant.
   - Can give NSAID :
     - They have an anti-inflammatory effect→must take for 2 weeks it reaches steady level in the blood to achieve the anti-inflammatory effect.
     - They also have a pain relieving effect→you take it PRN; whenever you have pain symptoms.
   - Opioid → for very severe difficult cases, but not usually advocated for, because they will take it for life.
2. Good referral and occupational therapy system→ worry about the compliance issue.

Imaging and invasive interventions are not recommended at this stage.

3. Follow-up:
   - After 4 weeks if there is improvement, educational materials are provided, and instructions on self-care are reinforced.
   - Referrals for physical therapy, occupational therapy can be suggested.
   - If no improvement, with no red flags or radiculopathy/Spinal stenosis, imaging with MRI **may be recommended.**

Radiculopathy:

- Nerve root dysfunction manifested as pain, paresthesia, reduced sensory function, when advanced weakness occurs
- Sensory fibers are affected first
- Patient may complain of burning, tingling sensation, sensation at one side is less than the other
- It's not a cause of back pain rather it's a nerve root impingement , disc herniation, facet arthropathy , and other conditions are causing the back pain i.e. the nerve root is a sequel of back pain not the one causing it. So what happens is they get the back pain then they get the symptoms of the nerve root
- Rarely occurs in an acute setting, unless for example there was an abrupt movement or position that impinges the root of the neck or flexing the back abruptly. This is usually seen in young people
- Since there is pressure on the nerve root anything that increases the intra-abdominal pressure (For example, sneezing, coughing, constipation or any straining) will exacerbate the symptoms. Same is applicable for disc prolapse.

Spinal Stenosis:

- The spine is pushed by a mass and causing pressure directly over the spinal cord within the spinal canal
- **Exclusively a disease of old age**
- May be seen in the young if its related to a tumor or a lipoma or a hematoma
- **The most common cause is osteophytes that are growing inwards**
- They are relieved when back is flexed (leaning forward) which is moving the osteophyte away from the cord or walks uphill.In opposition to lumbar disc disease where they get pain when performing these actions
- They are worse when sitting straight
- Can Co-exist with disc prolapse and degenerative disc disease
- A compressed spinal cord will cause **neurogenic claudication** that is characteristically felt as pain over the **buttock and thigh area that is quickly relived by resting and bending forward**.

How to approach patients with radiculopathy and spinal stenosis?

- EBM showed that investigating or jumping to medication is the same result

A- *go back to approach (above)

B- Psychology→ Must assess the psychological background of the patient, because if they happen to have depression their back pain is going have a bad prognosis. But if they are happy in all aspects even level of education chances of recovery is higher .This is evidence based

C- Coping (adapting)

D- **Pain service** → offered by anesthesiologists (pain specialists) outside the OR who are experts in nerve block, facet joint injections, etc… They are called for whenever the pain (due to whatever reason not only back pain (e.g. breast cancer, severe arthritis of the knee and not a candidate for surgery, neck spondylosis with severe pain)) is refractory. But this is only given when first two lines fail.

E- Consult Neurology

Red Flags:

Could be a sign for a serious underlying cause such as:

- Malignancy
- Vertebral infection
- Compression Fracture
- cauda equina syndrome
- Ankylosing spondylitis

> ***Note(s)***
>
> all the ones mentioned above can be seen in lumbo-sacral X-ray, anything that's abrupt or there for a long time will be detected , however a normal image cant role out a serious underlying condition

Para-spinal Infections:

- The most common acute cause is bacterial **(staph.aureus and E.coli)**
- Sub-acute or chronic could be anything but usually **(TB and Brucella)**
- **Brucella is the most common atypical bacteria to cause Musculoskeletal infections and most common joint involved is the sacroiliac joint** (hx. Unilateral and short period unlike sacroiliatis (i.e. Ankylosing spondylitis)where they have symptoms for years
- History usually includes **fever and back pain** , and most common area is **thoracic** not the lumbar and this may be due to the higher blood supply as it's not a direct infection(i.e. being stabbed by a needle) usually from liver abscess , UTI sepsis , Infective Endocarditis.
- When you suspect infection ask about the risk factors: current or recent infection and if you suspect an old infection ask about TB and Brucella risk factors
- Limited spine motion and very painful with severe muscle spasm (because the abscess is para-spinal and inflaming the muscles) on examination
- If spinal cord is compressed at the cauda equine, it could lead to paralysis and numbness below the level of involvement

Spondyloarthropathy(SPA):

- It's a family that includes:
  - Ankylosing spondylitis
  - Reactive arthritis
  - Enteropathic spondylitis
  - Psoriatic arthritis
  - Juvenile idiopathic arthritis

Ankylosing spondylitis:

- Back pain that is insidious in its course > than 3 months. Can be 8 , 9 , 10 years undiagnosed
- Patients are Younger than 45 years
- Early morning stiffness lasting between 5 minutes to 20 hours
- Back pain is worse is the morning and improves with activity
- **Nocturnal back pain due to inflammation** which is not seen is the people who have non-specific lumbar back pain because theirs is mechanical
- **Alternating** (inflammation) back pain unlike disc prolapse where they have it fixed at site of problem
- Respond dramatically to NSAIDS (this not necessarily true we just put it for the sake of guidelines)
- On examination:

- Restricted movement
- positive schober's test
- pressure and stretch of the sacroiliac joint (its located at the dimple of venous) induce significant pain

Note(s)

Migrating pain is when you refer to peripheral joins in the back its called alternating

Schober's test

- Firstly identify the *Dimples of Venus (2) Now in the midline, use a tape measure and pen to mark a point 10 cm superior (1), and another mark 5 cm inferior (3) to this line*
- Ask the patient to attempt to "touch their toes" *(i.e Flexing their lumbar spine).The distance between these two marks should be measured when the patient's spine is flexed maximally*
- The distance should increase to more than 21cm in a normal patient.

In lumbar spine flexion, hip flexion can compensate to a considerable extent for a loss of spinal flexion. You may want to consider performing Schober's test to objectively measure the degree of spinal flexion.

- Who are the high risk patients to develop Ankylosing spondylitis?
- People with psoriasis
- IBD
- Anyone within the SPA family is at risk

Cauda equina syndrome:

- Characteristic neurologic pattern resulting from simultaneous compression of lumbo-sacral roots below the level of **conus medullaris (L1-L2)** here there is no spinal cord only roots
- Due to compression from any reason : tumor , fracture ,abscess
- Numbness in the **peri-anal area** bladder dysfunction.
- **Medical ER** one of the few causes where you can request an MRI at night

Cases:

- Mona 28 year old lady with back pain → Multiple myeloma
- Tahini 18 year old lady with back pain→ Scoliosis
- Hessa 45 year old lady with back pain →TB
- Saleh 35 year old lady with back pain → Ankylosing spondylitis
- Aziza 60 year old lady with back pain →Metastatic Breast CA
- Helena 40 year old lady with back pain→ malingering (fabricating or exaggerating the symptoms)
- Aiha 92 year old lady with back pain→ Osteoporotic fracture
- *All these patient have the same complaint however different etiology

Summary

- When taking history of back pain, look for red flags.
- **Non-specific back pain:** imaging and invasive intervention is not recommended, treat conservatively, if there is no improvement in 4 weeks and no presence of red flags or rediculopathy/spinal stenosis MRI may be recommended.
- **Rediculopathy:** nerve root impingement resulting in back pain and exacerbated by coughing, sitting, etc… the pain travels to the buttock and down to the posterolateral aspect of leg, ankle, or foot.
- **Spinal stenosis:** narrowing of the spinal canal causing neurogenic claudication. Pain is relieved when spin is flexed (leaning forward, walking up-hill).
- Management of rediculopathy and spinal stenosis: treat conservatively as with non-specific back pain. Also check for depression. If no improvement, pain services are recommended, as well as neurology and psychiatry consult. MRI is the imaging modality here.
- Red flags indicate the presence of malignancy, vertebral compression fracture or infection, ankylosing spondylitis, or cauda equine syndrome. X-ray is the imaging modality here.
- **Para-spinal abscess**: if acute: caused by staph. aureus, E. coli.

- If subacute: caused by anything most probably TB, brucella.
- Localized back pain is the 1st symptoms noticed. Presence of fever, chills and night sweats. Primary source of infection could be bacterial endocarditis, liver abscess, IV drug use, infected catheters, UTI, and others. Paralysis occurs if there is compression of spinal cord.
- **Ankylosing spondylitis**: inflammation characterized by young age, morning stiffness, nocturnal back pain and alternating back pain. Look for symptoms suggestive of SpA (Psoriasis,IBD, and Preceding infection.

- On examination: restricted spine movement, positive Schber's test and pressure on sacroiliac joint causing pain.
- **Cauda equine syndrome:** neuromuscular and urogenital symptoms resulting from the simultaneous compression of multiple lumbosacral nerve roots. It is surgical emergency.

Questions

A 66 year-old man complains of a 1-year history of low back pain and buttock pain that worsens with walking and is relieved by sitting or bending forward. He has hypertension and takes hydrochlorothiazide but has otherwise been healthy. There is no history of back trauma, fever, or weight loss. On examination, the patient has a slightly stooped posture, pain on lumbar extension, and has a slightly wide based gait. Pedal pulses are normal and there are no femoral bruits. Examination of peripheries joints and skin is normal. What is the most likely cause of this patoient's back pain?

A) Lumbar spinal stenosis.

B) Herniated nucleus pulposus.

C) Atherosclerotic peripheral disease.

D) Facet joint arthritis.

E) Prostate cancer.

2. A 22 year-old man develops the insidious onset of low back pain improved with exercise and worsened by rest. There is no history of diarrhea, conjunctivitis, urethritis, rash, or nail changes. On examination, the patient has loss of mobility with respect to lumbar flexion and extension. He has a kyphotic posture. A plain film of the spine shows sclerosis of the sacroiliac joints. Calcification is noted in the anterior spinal ligament.

Which of the following characterizes this patient's disease process?

A) He is most likely to have acute lumbosacral back strain and requires bed rest.

B) The patient has spondyloarthropathy, most likely ankylosing spondylitis.

C) The patient is likely to die from pulmonary fibrosis and extrathoracic restrictive lung disease.

D) Rheumatoid factor is likely to be positive.

E) A colonoscopy is likely to show Crohn disease.

*Questions are from Pre Test, medicine, 13th edition. By:Roger Smalligan, Matt Chua, J. Rush Pierce and Robert S. Urban.

432 Medicine Team Leaders

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Answers:

1st Questions: A

2nd Questions: B