Chapter 11

Spinal pain

Influenza, common cold and low back pain account for most of the time reported as sick leave especially within the industrialised western societies.

Unlike influenza, low back tends to effect patients over a long period of their working lives, recurring from every few weeks to every few years, causing great discomfort, change of lifestyle and loss of income to the sufferer and loss of productivity for the employer and the country. The vast majority of back pain does not require medical or surgical intervention and provided red flags have been screened out, the patient will benefit from integrated therapeutic and rehabilitative approaches. Common treatment and management modalities include the manipulative therapies – osteopathy, chiropractic, physiotherapy – massage, exercises, stretches, hot-cold contrast bathing, supplementation and herbal approaches that aim to improve overall constitutional health and address symptomatic relapses.

The most common form of spinal pain is that which arises from dysfunctional muscles often predisposed by poor spinal mechanics or inappropriate use of the spine during work or sports activities. These benign spinal pains are often loosely referred as Lumbago, Chronic low back pain, Acute low back pain and Postural backache.

When presented with a patient complaining with spinal pain, especially if the patient is one you have not seen before, you will need to extend your investigations beyond the presenting complaint. Spinal pain, although it is often expressed in the muscular system, in most cases it is triggered by another underlying mechanism. In the spine it often involves the apophyseal facet joints, the spinal ligaments and intervertebral discs. When neurological symptoms are present with back pain, the most frequently implicated mechanism is nerve root compression by a bulging or prolapsed intervertebral disc.

As stated above nerve root lesions should produce a radiating pattern that conforms to the corresponding dermatome. In rare but more serious neurological manifestations, it may involve compression of the spinal cord if below the L1 spinal level compression of the cauda equina. Cord compression can arise from a massive disc prolapse which instead of protruding posterolaterally it protrudes posteriorly then against the spinal cord.
This scenario, depending on the spinal level, can cause compression of the long tracts, the central nerves of the cauda equina or occlude the blood supply to the spinal cord. If the lesion is in the cervical spine it may affect the upper limbs bilaterally and possibly also the lower limbs. If the spinal cord lesion is in the thoracic or lumbar spine then both legs might be affected as well as the muscles controlling the anal and bladder sphincters. In these situations urgent hospital referral is mandatory with an accompanying letter stating your suspicions of “cord compression / cervical myelopathy, cauda equina syndrome” whichever term is appropriate. Spinal compression can also be a progressive event with spinal stenosis especially seen in the elderly.

Another mechanism of cord compression might be spondylolysthesis which can be either acute/traumatic or slow progressive. Various space occupying lesions within the spinal canal such as benign and malignant tumours can also result in cord compression depending on the their location. The latter situation normally presents with slow, progressive and unremitting signs and symptoms.

When the blood supply to the spinal cord is compromised the patient presents with neurological claudication. If lumbar region is affected the patient reports bilateral leg aches, aggravated extended spinal postures and relief by flexing forward. Typically a patient may say that after walking for a certain distance their leg aches become progressively worse, they then need to stop and stoop forward for a few moments. This allows blood to flow into the spinal cord which alleviates their aches or muscle cramps and they begin to walk again. Neurological claudication needs surgical intervention.

In contrast, vascular claudication, a result of compromised blood flow to the muscles, will not be influenced by changes in spinal postures. A patient with vascular claudication may display evidence of poor tissue perfusion and trophic changes most evident in the skin around the ankles and the health of the toes and their nails. In addition the peripheral pulses may be diminished or absent. In neurological claudication the peripheral pulses may or may not be affected, depending on the age and overall health of the patient.

Case history and evaluation of spinal pain:

Attention must be paid in the case history to ascertaining whether the spinal or lower back pain is of musculoskeletal or systemic origin. Specific attention should be focused on such aspects as:

- Onset – traumatic, insidious, gradual or sudden?
- Location – localised or widespread? Any radiations of pain elsewhere?
- Progression – getting worse, remaining the same or easing?
- Frequency – constant or intermittent? Any daily pattern?
- History – previous episodes or similar symptoms, traumas or fractures to the spine or familial history of spinal disorders.
- Character of symptoms – is it deep, boring, sharp, or uncomfortable, achy or superficial?
- Aggravating and relieving factors – is it movement related?
- Any systemic symptoms – weight loss, fever, night pain or sweats, constant unremitting or worsening pain, bilateral leg symptoms, incontinence, urinary frequency, loss of bladder/bowel/sexual function, change in bowel habit, blood in stools or urine.

Evaluation:

- Observation – symmetry, bony alignment, deformity, colour and texture of skin.
- Palpation – soft tissue tonicity, local tenderness, skin temperature and quality.
- Passive and Active movements – flexion, extension, side-bending, rotation. Note ease and range of movement achieved, any pain reproduced and where.
- Muscular power tests – test for wasting, weakness and muscular fibres directly.

Clinic based tests:

- Reflexes – upper and lower extremity (biceps, triceps, brachialis, patellar, ankle).
- Babinski's / plantar test.
- Straight Leg Raise Test – to test for radiculopathy or myelopathy.

- For suspect neurological lesions affecting a peripheral nerve or a nerve root the test the patient with light touch and pain (pin prick)
- Vibration testing is a useful evaluating technique is you suspect peripheral neuropathy such in a diabetic patient or in B12 defficiency.
- Two-point discrimination, graphaesthesia, stereognosis, proprioception and temperature should be considered if you suspect the lesion might lie within the spinal cord thus affecting specific afferent tracts.

Common pathologies of the regional spine

Conditions of the Cervical spine:

- Cervical myelopathy
- Cervical radiculopathy
- Thoracic outlet syndrome
- Cervical rib
- Spondylosis
- Spondylarthrosis
- Multiple sclerosis
- Fracture or whiplash
- Torticollis
- Rheumatoid arthritis

Conditions of the Thoracic spine:

- Spondylosis
- Fracture (vertebrae or rib)
- Ankylosing spondylitis
- Scheurmann's Disease
- Costovertebral joint strain
- Osteoporosis
- Visceral referral

Conditions of the Lumbar spine:

- Spondylosis
- Spondytlarthrosis
- Lubmar radiculopathy
- Lumbar myelopathy
- Spondylolisthesis
- Spinal stenosis and Cauda equina syndrome.
- Fracture
- Ankylosing spondylitis
- Rheumatoid arthritis

Other conditions affecting the spine:

- Multiple sclerosis
- Hemivertebra
- Spina Bifida
- Osteoporosis
- Tumors of the spinal column and spinal cord.
- Sacroiliitis
- Scoliosis
- Discitis

The following two case histories have been provided with model answers. These have been taken from past exams papers, with student permission, as they have been considered to be of high quality. They are by no means perfect or model answers but they provide a good illustration as to how differential diagnosis should be approached. The answers are found in the appendices.

Case Study – A

A 55 year old woman attending a multi-disciplinary clinic presented with a three week history of left arm pain and pins and needles in her left hand. On further questioning she said that the symptoms started insidiously over a course of several days. She also said that she has been getting persistent aches and pains affecting both shoulders and the whole area around her upper thoracic spine, shoulders and neck 'have not been right' for some time. Other symptoms were recurrent headaches and 'discomfort around her left chest area. The symptoms were particularly bad in the morning and sometimes she even woke up from the pain. Her appetite has deteriorated a little, although she hasn't noticed any weight loss. She complained of low energy level and being more susceptible to feeling the cold. She worked for 20 years in a dress-making factory and she took early retirement due to poor health.

On examination her height was 1.55m, weight 75kg, and her face appeared slightly pale. Close examination of the hands revealed finger clubbing and her left 4^{th} and 5^{th} fingers were slightly clawed.

Past medical history: Hysterectomy 5 years ago: Car crash 10 years ago, when she fractured her left clavicle.

Medications: Some years ago she took a course of prednisolone tablets, and recently her GP prescribed her diclofenac and Simvastatin.

Family history: Her mother suffered from what she described as an 'inflammatory joint disease'.

Q1. With the information that has been provided above construct a discussion of your differential diagnosis, providing reasons both for and against each possibility.

40 marks

Q2. In order to narrow down your differential diagnosis, what tests would you consider, the rationale for these tests and in what order. Consider tests that can be done within your own clinical setting, those which can be ordered by her GP and also further diagnostic investigations by consultants.

30 marks

Q3. Provide a short discussion on the patient's previous and current medications.
Why do you think these were prescribed and what are the implications on her current condition?

15 marks

Q3. Can you refine your differential diagnosis list above? Provide a further discussion for the three most likely possibilities. **15 marks**