Degenerative lumbar spine disease

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Background

Degenerative lumbar spine disease (DLSD) is a type of spinal disease that affects people without a neurological component. Imaging evidence of DLSD is present in 12 to 35 percent of the population, with the highest incidence in those over the age of 70. The symptoms, however, do not necessarily occur in all patients. In symptomatic patients, a significant percentage of the patients have a herniated central lumbar disc or a spondylolisthesis.

In terms of etiology, in most patients, degenerative lumbar spinal disease is a common cause of low back pain. Other causes include a congenital defect, infection, inflammation and rarer conditions such as ankylosing spondylitis.

Diagnosis of degenerative lumbar spine disease

The primary symptom of DLSD is axial back pain. This pain can range from 12 to 35 percent of the population. The pain is most commonly due to chronic degenerative disease, but can also be due to acute central lumbar canal stenosis, usually due to a large herniated disc, or to acute disc herniation with a cauda equina syndrome. The red flag signs are: severe pain, radiating pain, hemiparesis, and bladder and bowel dysfunction.

Central lumbar canal stenosis typically presents with chronic pain and symptoms of multi-nerve root dysfunction, termed spinal claudication. Thus patients complain of back and progressive leg pain, numbness and heaviness on walking with symptoms resolving at rest or on forward flexion. Intermittent claudication due to vascular insufficiency in the legs is an important differential diagnosis. Acute central lumbar canal stenosis, usually due to a large herniated disc, may present with symptoms similar to those described above.

In terms of investigations, imaging techniques are the most useful. Plain X-rays, especially performed in flexion and extension, will help to identify any spinal instability that may be present. The imaging modality of choice, however, is the MRI scan. This clearly demonstrates the neural elements and defines any areas of bony, ligamentous or disc degeneration and compression (see Figure 1). CT scans are useful in some cases where MRI is contraindicated, and can help to differentiate between disc herniation and spinal canal stenosis. Electrodiagnostic evaluation, such as nerve conduction studies, is useful in determining the level of relevant pathology, especially in patients with clinical or imaging differences.

Management of degenerative lumbar spine disease

Management of DLSD requires a multi-disciplinary team approach comprising of, at the least, neurosurgeons/spinal surgeons, a neuroradiologist, pain specialists and physiotherapists. This is important to provide patients with the most effective treatment for their particular symptoms. Although patients with DLSD represent the biggest group of patients seen in general neurosurgical clinic, only a small proportion will ever need surgery.

In patients presenting with acute or chronic isolated back pain, without neural compression or spinal instability, conservative measures are likely to settle the pain in the majority. Such measures include weight reduction, structured exercise programmes, analgesics such as paracetamol, non-steroidal anti-inflammatory drugs or opioids; physiotherapy; spinal manipulation by qualified osteopaths or chiropractors; and acupuncture. In patients with chronic pain (more than one year), epidural injections, transcutaneous electrical nerve stimulation (TENS) and combined physical and psychological rehabilitation programmes may be of additional benefit. The role of surgery in such patients remains controversial. Spinal fusion may benefit selected patients. When instability (degenerative spondylolisthesis) complicates back pain, spinal fusion may achieve good pain control. Percutaneous spinal instrumentation systems now available, allow minimally invasive surgery with more rapid recovery and a shorter hospital stay.
In patients with DLSD and radicular pain, conservative measures are usually sufficient to improve the symptom in six to eight weeks. If severe pain persists beyond this time, or a motor neurological defect, such as a foot drop, is present, serious consideration should be given to surgery. The timing of surgery is particularly important if neurological recovery is to be achieved. The aim of surgery is to decompress the neural elements and the most common operations performed are lumbar laminectomy and lumbar microdiscectomy. The recent development of endoscopic microdiscectomy technique allows day-case local anaesthetic surgery with the additional benefit of excellent cosmetic results. Spinal cord stimulation remains an effective treatment for patients with severe pain especially if pain persists despite decompressive surgery.

Prognosis of degenerative lumbar spine disease

The prognosis of patients with DLSD depends on the underlying diagnosis, delivery of prompt treatment and psycho-socio-economic factors. Well motivated patients with a good social support network are more likely to recover well and resume work. Despite all the treatment available, some 10 percent of patients become chronically disabled, especially with back pain. In others, conservative and surgical measures are effective in improving the symptoms. Spinal claudication and radicular pain respond well to surgery with up to 90 percent pain relief. When motor weakness is present or in patients with cauda equina syndrome, the timing of surgery is crucial in determining any neurological recovery with the best results seen in patients operated within 48 hours of presentation. The prognosis for recovery of sensory deficits such as numbness and paraesthesia is less predictable.

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