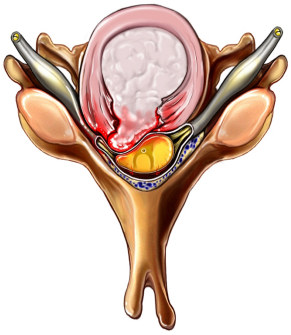
Sciatica

DR A GHAHREMAN (FRACS, MBCHB, BHB)



SYMPTOMS, SIGNS, INVESTIGATIONS AND TREATMENT

A REVIEW OF RESEARCH EVIDENCE FOR THE MANAGEMENT PATHWAY INTRODUCED BY **DR GHAHREMAN**

Sciatica, scientifically known as lumbosacral radicular pain, is defined as pain arising from the roots of the sciatic nerve (most commonly L5, S1 and L4 roots). Some of the most common causes of sciatica include disc herniation, spondylolisthesis (slippage of one vertebra over the next) and other changes related to wear and tear in the lower part of the spine.

Sciatica usually results from the effects of inflammation and compression of a nerve root. When caused by disc herniation, the prolapsed disc material exposes the nerve root to a number of highly inflammatory substances. This causes acute inflammation of the spinal nerve root. The compression exerted by the prolapsed disc material and the surrounding tissues acting on the inflamed nerve root causes pain. In the absence of inflammation, compression alone can cause conduction defects in the nerve fibres resulting in numbness or weakness, but not usually pain. An exception to this rule is foraminal disc herniation compressing the dorsal root ganglion, where the nerve's cell bodies lie. Treatment of sciatica uses this understanding of the pathways to pain generation.

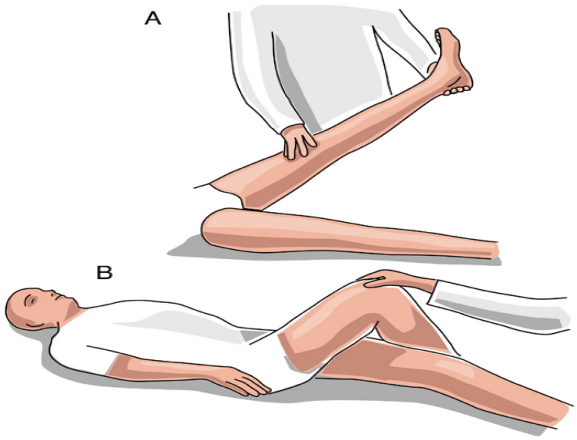
- Sciatica resulting from disc herniation resolves in the majority of patients within 3 months after onset.
- In the absence of significant weakness or other neurologic deficits, non-invasive treatment is recommended within the first 6 weeks after the onset of pain
- During the initial phase of treatment, avoiding heavy physical activities and using anti-inflammatory medications combined with simple analgesics is

Treatment Strategies:

- Non-steroidal anti-inflammatory medications (such as Ibuprofen, or Indomethacin) combined with Paracetaol constitute the main pain medications used for the treatment of sciatica. Opiates (such as Codeine, Oxycodone, and Oxycontin) are used in severe cases. Diazepam, a relaxant, may help with lower back painful muscle spasms. Both Opiates and Diazepam can cause dependency in a short period of time and their use should be limited.

- Physiotherapy is helpful in treating back pain resulting from muscle spasm, techniques for strengthening paraspinous muscles, and education regarding safe spinal techniques. These treatments are helpful in particular once the sciatica has improved or several weeks after surgery. Other physiotherapeutic techniques such as traction have not been shown to affect the course of illness.

- Transforaminal injection of steroids: Delivery of anti-inflammtory medications such as steroids has been shown to significantly benefit patients. Based on research performed by Dr Ghahreman, 54% of patients benefit from such injections. Dr Ghahreman demonstrated that patients with a predominantly inflammatory component as the cause for their pain have a much higher rate of success. Those with severe compression of the nerve root, however, tend to have a less impressive response rate to TFIS.



Specific tests performed by clinicians establish the presence of nerve root irritation signs.

Management of Acute Sciatica

CLINICAL ASSESSMENT:

Sciatica is often described as severe sharp and shooting pain radiating down a lower limb beyond the knee. It often extends to the ankle or the foot. There may be severe lower back pain accompanying the leg pain. Muscle spasm in the lower back often accompanies the leg and back pain. The pain is often accompanied by pins and needles in the distribution of the nerve affected. Numbness may also be experienced. The presence of weakness is an alarming feature, because its progression may lead to longterm disability. If significant or progressive, weakness is considered as an indication for urgent surgery. Clinicians use specific clinical tests to establish the presence of root irritation and assess the neurologic deficits.

Investigations:

In cases of typical sciatica affecting one limb alone, and in the absence of the so called “red flags”, no further investigations are required in the first 4 weeks after the onset of the pain. The presence of pain involving both lower limbs, neurologic symptoms of pins and needles, numbness and/or weakess affecting both legs or any difficulty controlling bowel or bladder function, immediate CT or MRI scans are indicated. The

latter clinical features warn the clinician about the possibility of cauda equine syndrome. This syndrome constitutes an important emergency requiring immediate surgical treatment to reduce the risk of permanent neurologic disability. Other red flags include back pain interfering with sleep, fever, weight loss, loss of appetite, presence of a history of diabetes, abuse of intravenous drugs and a history of previous cancer.

Investigations commonly used include lumbosacral X-rays, CT and/or MRI.

Immediate Management:

Pain killers take the edge off but do not alter the course of illness. Non-steroidal anti-inflammtory drugs are helpful. Simple analgesics such as Paracetamol, sometimes combined with mild opiates such as codeine. In cases of severe lumbar muscle spasm, anti-spasm medications can be

Physiotherapy plays an important role following lumbar decompressive surgery. Formal physiotherapy should start approximately 6 weeks following surgery. Home-based exercise and supervised programmes have similar efficacy. The aims of physiotherapy include:

1. Reducing the incidence of post-operative lower back pain by
    a. Reducing muscle spasm
    b. Strengthening core – paraspinous muscles
2. Educating patients regarding safe techniques for their back aiming to minimize the risk of recurrent disc herniation

The next section presents a cochrane review on the role of physiotherapy following surgical decompression.

Invasive Therapies:

Transforaminal injection of steroids: is the only injection therapy shown to have efficacy superior to sham injections. The initial response rate is 54% based on Dr Ghahreman's multicentric randomized trial (10% with placebo treatments). 50% of initial responders maintain their response to injection therapy by one year. The injection delivers a large quantity of anti-inflammatory steroids immediately adjacent to the affected nerve root, hence avoiding the general bodily side effects of steroids. Dr Ghahreman's research has shed some light on patient characteristics that make patients more sensitive to the effects of injection. So some patients, with specific MRI findings, have a better response rate to this injection therapy than others. This issue needs to be addressed on an individual basis by your neurosurgeon.

Emergency surgery is indicated in cases of cauda equine syndrome and/or significant or progressive weakness. Surgery is also indicated in cases of intractable pain or pain refractory to other treatments. Generally surgery is offered in cases where the pain has failed to settle with time (through natural history of the condition) and where transforaminal injection of steroids have failed to achieve a favourble response. The type of the operation is dependent upon the cause of the sciatica and individual characteristics. Often a microdiscecomy is performed for cases of acute disc herniation. An operation of about 60 minutes duration, with an average of 1-2 days of hospital stay.

Cochrane review :

The ROLE OF PHYSIOTHERAPY EXERCISES ON POST_OPERATIVE MANAGEMENT

While 60% to 90% of patients will improve after surgery, some will continue to have symptoms. It is estimated that 3% to 12% of patients who have disc surgery will develop another prolapsed disc and most of these patients will have surgery again.

Active treatment programs, such as physiotherapy, in which the patient is an active participant, and advice to return to normal activities, including work, as soon as possible after surgery are common approaches.

This updated review evaluated the effectiveness of various active treatment programs for patients who had lumbar disc surgery for the first time. The review authors included 14 randomised controlled trials with 1927 participants between the ages of 18 and 65 years. Most commonly, treatment started four to six weeks after surgery, but this ranged from two days to 12 months. There was also considerable variation in the content, duration and intensity of the treatments. Most of the treatments were only assessed in one trial and their results are presented in the full review.

For programs that started four to six to six weeks after surgery, the review authors were able to pool the results for three comparisons:

- Patients who participated in exercise programs reported a slightly less short-term pain and disability than those who received no treatment.
- Patients who participated in high intensity programs reported slightly less short-term pain and disability than those in low intensity programs.
- Those in supervised exercise programs reported little or no difference in pain and disability than those in home exercise programs.

None of the included studies reported that active programs increased the rate of repeated surgery, nor did the evidence suggest that patients should restrict their activities after lumbar disc surgery. However, limitations in the methods of half of the trials suggest the results should be read with caution.

The evidence does not tell us whether all patients should be treated after surgery or only those who still have symptoms four to six weeks later.