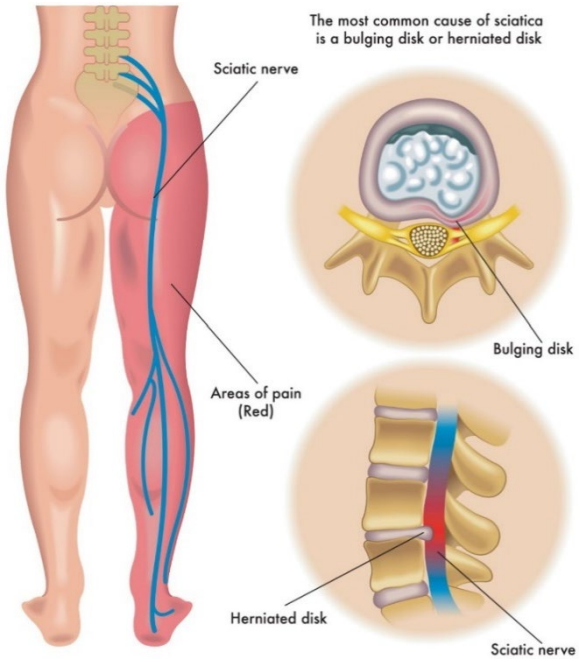
Sciatica Research Clinic

What is Sciatica?

Sciatica is a condition resulting from the irritation of the sciatic nerve, often experienced as a 'shooting pain' originating at the lower back through the hips and buttocks and travelling down one leg in a dermatomal pattern. About 85% of the time, sciatica is caused by a disc herniation.



Natural History

36% of patients with this condition improve within 2-weeks, and 73% improve within 12-weeks [1]. After 12 weeks of symptoms, improvement in symptoms is much less predictable, but still favorable; operative rates are approximately 50% for most sciatica lasting longer than 12-weeks [2]. *At present, there is no way to predict the prognosis of an individual patient.*

Indications for More Urgent Management

Some patients will require urgent surgery. The following are indications for a phone call to the on-call surgeon:

- Cauda equina syndrome – best diagnosed with:
  i. History of urinary / bowel incontinence and perineal numbness (along with sciatica)
  ii. Rectal exam, with attention to perineal numbness and weakness of anal sphincter tone
- Profound weakness (Grade ≤ 3/5 MRC)

These are indications for MR imaging. The surgeon should assist in obtaining imaging.

Best Management for Routine Sciatica

If none of the above urgent indications exist, our responsibility is to ensure optimal non-surgical management for the patient, and avoid unnecessary diagnostic imaging. **Neither MR or CT imaging is required at early stages of managing routine sciatica.**

In general, pain from sciatica is severe and we are inclined to treat with combination drug therapy (e.g. NSAIDS + muscle relaxants + Gabapentin + …).

Note that sciatica treatment (neuropathic + nociceptive pain) should be distinguished from treating acute LBP (generally nociceptive pain only).

Below, is a list of best evidence for sciatica treatment.

1. **Selective nerve root injection or epidural steroid injection**

While it may strike the reader as odd to list this invasive option first, the evidence base supports injections most clearly[3]. Selective nerve root injections are fortunately widely available in Calgary. Patients receive injections as per the clinical diagnosis (e.g an L5 root injection for L5 radiculopathy), and should experience immediate pain reduction. The response to treatment is not uniform.

2. **NSAIDS**

While NSAIDS are generally considered first-line treatment for this highly inflammatory condition, the evidence is more circumspect. A Cochrane Review [4] indicated that NSAIDS may be more effective compared to placebo, the effect size is low.

3. **Tylenol**

The evidence for Tylenol use is poor, but has a small effect size[5].

4. **GABA Agents**

Lyrica (pregabalin) has been shown to have no effect on sciatica versus placebo in a double-blinded RCT [6].

5. **Oral steroids**

Oral tapering prednisone was shown to have no effect on pain versus placebo in a double-blinded RCT, but had a very small effect on back-related disability [7].

6. **Benzodiazepines**

A double-blinded RCT showed no effect of diazepam versus placebo in a double-blinded RCT, in combination with diclofenac (an NSAID) [8].

7. **Physiotherapy / Allied Health**

Patients who are kinesiophobic (as per the Tampa Scale for Kinesiophobia) may benefit from physical therapy, as measured at 12-months after onset of pain, but not at 3-months [9,10].

8. **Low-Dose Narcotics**

Low-dose morphine may be quite effective in an emergency department setting[5] for very short-term pain relief (30 min), but may not be effective in the longer term[11]. Several studies have reported short-term effects with Tramadol or Oxycodone, in conjunction with Tylenol [12].

SUMMARY

The evidence base is poor for this very commonly painful condition. Injections are likely to help in the short-term and immediate-term, and should be considered early in the treatment algorithm. Combination therapy with Tylenol and NSAIDS should be considered in those with good renal function. A short-term course of low-dose narcotics can be considered.

How do disc herniations resolve?

The intervertebral disc is generally considered immune privileged, lacking a blood supply. Herniations induce a dramatic inflammatory response, with the innate immune system and some contribution from the adaptive immune response. The signaling molecules (cytokines) employed by the immune system are measurable in the serum. The precise mechanism of resorption remains unknown.

When is surgery required?

Patients with disabling symptoms lasting beyond 8-12 weeks are candidates for surgical intervention. If surgery is required, a discectomy is a common, less-invasive surgery performed as day-stay procedures.

Can we predict successful resorption of herniations?

Early identification of the individual's natural history would have immediate and large effects on healthcare utilization in Canada, by avoiding delays in surgical care, should it be required, and by eliminating the use of unnecessary treatments.

We hypothesize that successful resorption of intervertebral disc herniations is related to the underlying immune response of the patient. Measuring the levels of immune signaling molecules, or cytokines, may yield clues as to the presence of an active immune response. Measurement tools for such measurements have become available, and are extremely sensitive and reproducible. We hope to identify biomarkers within sciatica patients that have early stage prognostic value in predicting successful spontaneous resolution

Study Structure

To be eligible, patients will have significant sciatica, **with symptom duration of greater than 7 days and less than 28 days**, and moderate to severe intensity of pain (>6/10 as per visual analogue scale). Patients who are enrolled will receive a clinical diagnosis of sciatica (no imaging) through the RAPIDH score (90% specific, 71% sensitive).

We will measure patient-reported outcomes and perform serial biomarker analysis at 0,4 and 16 weeks after enrolment. We hope that by analyzing those who improve and comparing against those who don't, we will be able to develop and early predictive test.

Value-Add Provided by Study Participation

In addition to running this study, we feel we could help the family practice and emergency medicine community manage sciatica in our community by:

- Providing a rapid assessment of patients by a spine surgeon
- Ensuring optimal management, including injections without imaging. This is not currently an option for most diagnostic imaging care providers.
- Keeping patients out of emergency departments, and out of hospital beds for pain relief
- Decreasing out-of-pocket costs for patients, as many allied health interventions are not covered by provincial health care

If you have any questions or concerns, or if you think your patient is a good candidate for the study, please call Ish Bains (study coordinator) at 403-944-4334 or G. Swamy at 403-944-4487. Fax at 403-770-8168.

Alternatively, please email at ish.bains@albertahealthservices.ca or ganesh.swamy@ahs.ca

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