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## BACK PAIN: MANAGEMENT & CONTROVERSIES

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Back pain is the second most frequent chronic pain problem, just after headache, as a reason for patients to seek medical help. Suffering from back pain ranges from transient discomfort to frank incapacitation. Approximately 80% of the adult population will suffer from pain related to the lower back during their lifetime. The Agency for Health Care Policy (AHCPR) document states that 90% of patients with acute back pain are better in about one month (spontaneous recovery), but more than half who recover from a first episode of acute pain will have another episode within a few years.

The management of lower back pain has improved significantly over the past few years but can still be a source of frustration for both the physician and the patient. Current treatment protocols are a result of experience and training since dependable "evidence based" treatment guidelines are not yet available. Back pain can continue even after the original cause is gone because<sup>2</sup> the patient becomes physically deconditioned. Pain provokes changes in behavior because of neural memory.

### CAUSES OF BACK PAIN

Bones : Fracture, Osteoporosis, Tumors, Metabolic bone disease, infection , spondylolisthesis

Muscles: Sprain, strain, imbalance of action, trigger points, fibromyalgia

Discs: Torsion injury, compression injury, degradation, herniation.

Zygapophyseal joint: Osteoarthritis, capsular tear & or avulsion, fracture of articular process.

Ligaments: No evidence for ligamentous pain, except in combination eg. With annulus fibrosus pathology

Others: Duramater infection, inflammation, tethering, Sacro-iliac joint pain, Visceral pain (referred), Failed back surgery syndrome.

### DIAGNOSIS

It is difficult to diagnose the exact cause of back pain. 85% of patients of back pain cannot be given a definitive diagnosis because of poor association among symptoms, pathological findings & imaging results. Lab investigations often do not contribute greatly to patients' diagnosis.<sup>3</sup>

Plain X-rays are easy to obtain but may be of limited value, and rarely provide information that changes the approach to (acute) back pain. CT Scan combined with myelography can identify the exact level of pathology. MRI provides the ultimate in contrast between the tissue of perispinal area. These imaging techniques may however give false positive finding in up to 30% of people without symptoms.

Clinical evaluation must be systemic & meticulous. It must unbundle the various problems, so that treatment can be directed rationally at the cause and help the clinician to determine which patient requires aggressive intervention. Changes in DTRs, positive straight leg raising & crossed SLR, alteration in motor & sensory finding etc., are

suggestive of some definitive pathology.

One must not assume that because lab tests are negative, the patient has no real or symptomatic pain, or that it is only a representation of psychological pathology. Equally, an abnormality on a lab test is not necessarily the source of the patient's pain.

## **MANAGEMENT**

Goals of managing back pain are - To achieve maximum reduction in the frequency & or intensity of pain, to help the patient to cope with residual pain, and to restore the patients functional ability.

### **BED REST**

This is usually the first line of treatment, especially if there is incapacitating back or leg pain. The purpose is to decrease intradiscal pressure and decrease impingement on the affected nerve root. The patient should position himself so as to minimize pain. Prolonged bed rest (more than 4-7 days) is rarely indicated <sup>4</sup>. Prolonged bed rest may contribute to muscle atrophy, cardiovascular deconditioning, bone mineral loss & reinforcement of illness behavior. Longer period of rest may required in patients who have neurological deficit.

In a controlled study the clinical outcome for acute back pain patients with no neurological deficit was no different in those treated with 2 days or with 7 days of bed rest, rather the 2-day patients missed 45% fewer days of work.<sup>4</sup>

### **MEDICATION**

Analgesics should be used as necessary to control the pain of an acute attack. Usually NSAIDs are sufficient in treating an acute attack. It is usually better to have analgesics according to schedule rather than on demand basis. Muscle relaxants, antidepressants, gabapentin, phenytoin etc are being used for muscle spasms and may be needed on a short-term basis, though the AHCPR guideline states that there is no demonstrable benefit and 30% of patients experience drug related drowsiness. In acute back pain opiates appears no more effective than safer analgesics and up to 35% patients using opioids may exhibit poor tolerance of side effects.

### **PHYSICAL THERAPY**

An important part of pain management is to encourage the patient's cooperation with efforts to restore physical capacity for work and recreational activities. <sup>5,6</sup>

In patients who are recovering from an attack of low back pain or who have a history of chronic or recurrent pain, a program of regular exercises, reduction of excess weight, and modification of activities should be initiated. Pelvic traction is of doubtful value except to enforce bed rest.<sup>7</sup> There is no evidence that traction, shoe lifts, corsets, back

belt, massage, TNS, ultrasound, diathermy, biofeedback are of any benefit in acute back pain, but some include these modalities in the list of treatment for chronic back pain <sup>5</sup>.

### **INJECTIONS**

There are four basic injections used in treatment of back pain:

1. Trigger Point Injections
2. Epidural steroid Injection
3. Joint Injections

## 4. Therapeutic Spine Injections

The indication for any block must be determined at every re-evaluation of patient.

Indications for invasive therapy are pain with acute, sub-acute, or chronic symptoms attributed to disc herniation, pain related to postural changes (strain/sprain), post surgical back pain, patient with myofascial pain syndrome or zygapophysial arthropathy, and tumor cell invasion of nerve root.

### TRIGGER POINT INJECTION

Trigger point injection is probably most common pain-relieving block. Local anaesthetics with or without soluble or depot steroids, saline or neurolytic substances have been reported as injectate.

The issue of how many trigger point injections should be done at any given appointment, or over the course of time, have not been answered.

### EPIDURAL STERIOD INJECTION

ESI is time honored, having been performed for at least 40 years. What has changed over the years is the understanding as to why steroids are an appropriate drug in selected patients with back pain. Epidural injections are traditionally used for radiculopathy associated with extrinsic disc disease .

Steroids placed in epidural space are believed to work by several mechanisms. They suppress both early & late inflammatory changes in nerve root. They inhibits transmission in normal nociceptive C fibers <sup>8</sup>.

Injection of steroids and local anaesthetics or saline has been controversial with the success rate ranging from 23% to 84%. <sup>9</sup>. Several studies have indicated a role for epidural steroid in low back pain while other have cast doubt on its efficacy. <sup>9</sup>.

Again it is a point of discussion that how much volume should be injected (people have used 5 to 40 ml), what should be the exact site of placement (at the level of pathology, or it can be a distant site like caudal epidural). Winnie et al published data urging the placement of drugs at level of pathology, rather than using high volume injectate.<sup>0</sup> In his study 80% of patients with sciatica improved when given depomedron with 4-6 ml of local

anaesthetic at the level of pathology.

Today the best summary of literature is that most studies demonstrate improvement in low back pain injected with epidural steroids. However it is difficult to predict the effect of an ESI in an individual patient. Since low back pain is an intermittent process, decrease of inflammation, even if temporary, may greatly improve the patient's symptoms and allow a decrease in analgesics use and a more rapid return to work.

### ZYGAPOPHYSEAL JOINT INJECTIONS

The facet joint has extensive innervation of synovial lining by small C-type fibres. The degree to which facet joint contribute to back pain is still not determined.

The diagnosis of lumbar facet or zygapophyseal joint syndrome depends on clinical presentation with pain on extension of back or lateral loading and with prolonged standing & sitting. Its diagnosis also relies on the response to local anaesthetic injections into the joint or onto the medial branch of dorsal ramus innervating the suspected joint.

Injection of local anesthetics with or without steroids in zygapophyseal joint has diagnostic as well as therapeutic value. If pain is relieved, then the patient can be considered for therapeutic radio frequency lesioning.

The success associated with facet joint injection has varied widely. The rate of effectiveness of lumber intra-articular facet joint injection of local anaesthetic and steroid has been cited as between 16% and 69%. These different results occur for a variety of reasons, including the technical adequacy, selection of correct facet joint, or the number of joints denervated, total volume of medication used, and most importantly, the patient selection.

### **THERAPEUTIC SPINAL INJECTION OF NEUROLYTIC AGENTS**

Spinal injection of neurolytics e.g. Alcohol, Phenol, Glycerole etc is being used for epidural or intrathecal injection particularly in patients of terminal cancer. Patients of advanced malignancy, suffering from incapacitating back pain due to metastasis, require destructive procedures for pain management as a palliative care.

These types of procedures are done in advanced pain clinics and require the clinician's expertise and are always done under image control.

### **SURGERY**

AHCPR guidelines suggest the use of surgery only in patients with serious pathology or nerve root dysfunction, obviously due to a herniated disc. More than 300,000 laminectomies are performed annually in USA and unfortunately 15-45% of the patients experience persistent pain.<sup>5</sup> Only 12% of patients with herniated disc require surgery. The most common cause of an unsatisfactory surgical outcome is poor patient selection. In a controlled study of 126 patients with uncertain indications for surgical treatment, those treated by laminectomy showed significantly better results at 1 year and insignificant differences from conservatively treated patients at 4 and 10 years after the operation. It is logical to try epidural steroid injection in the surgical candidate before subjecting him to an invasive procedure that in the long run may not be necessary.

Although surgery per se is not considered a conservative therapy in the contemporary practice of pain medicine, many clinicians are applying percutaneous therapeutic techniques in appropriate patients. Components of this growing field are epidural stimulation (by placement of electrodes in the epidural space), and Infusion pump implantation for administration of perispinal opioids.

### **Radiofrequency Nerve Lesioning**

In the management of chronic pain, the value of permanent nerve blocks has long been recognized. Three methods of nerve destruction are generally accepted:

- Injection of neurolytic substances
- Cryoanalgesia
- Radiofrequency lesioning

Radiofrequency is a more refined technique based on the thermocoagulation of selected nerves using an electrode capable of accurate temperature generation. Advantages of radio frequency lesioning :

- Lesion size can be accurately controlled

- Recovery is rapid and usually uneventful.
- The nerve lesion is usually long lasting.
- Nerve lesion heals without neuroma formation.
- The rate of side effects and complications is low.
- When pain recurs, nerve lesion can be repeated as necessary.

**Facet joint pain:** This mechanical aspect of back pain is usually not amenable to surgical intervention and is difficult to manage conservatively. RF lesioning of the medial branch of posterior primary ramus effectively denervates the facet joint and provides long-term, good-quality pain relief in selected patients. Facet rhizotomy has a success rate of 60-70 percent. A successful RF facet rhizotomy usually gives pain relief for more than a year.

**Discogenic pain:** Intrinsic disc mediated pain (IDP) in the lumbar spine is a common yet difficult entity to diagnose and treat<sup>2</sup>. Its prevalence in chronic low back pain is 39% while spontaneous improvement is less than desired. Pain originating from intervertebral discs is another common source of low back pain. Surgery is rarely indicated if the disc is not herniated and impinging on the nerve root. A disc appearing normal or only bulging in radiological studies may be a significant source of pain due to internal derangement.

After identifying the painful disc with provocative discogram and pain suppression tests, RF lesioning may be used to partially denervate the disc either by lesioning of the rami communicants or by intradiscal denervation techniques.

Many questions still remain unanswered regarding radiofrequency lesioning of the lumbar discs including, optimal needle positions, needle and tip size, burn parameters, pathoanatomy of the treatment, and efficacy of this procedure that will only be answered through future research.

## PSYCHOLOGY

Pain is always a combination of somatic & non-physical input & hence chronic pain will not respond to even the best treatment program if stress, abuse or other sources of psychological conflicts are not considered.

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