Interventional Procedures for Spine Pain
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Learning objectives
- Be able to identify those patients most likely to benefit from interventional modalities
- Understand the differences between the various procedures used to diagnose and treat LBP
- Recognize limitations to each procedure
- Develop strategies to maximize treatment outcomes

Epidemiology
- Major medical problem: > 5 million people affected
- Major economic problem: > $25 billion per year
- FBSS:
  - 200,000 patients undergo back surgery every year
  - 20-40% persistent pain or recurrent pain:
    - Erroneous diagnosis: Radiculitis
    - Column instability: Recurrent herniation
    - Erroneous location: Arachoiditis
    - Epidural fibrosis

Lumbar Spine Anatomy
- Facet joint
- Zygapophyseal joint
- Synovial

Lumbar Spine Anatomy
- Bone / Vertebrae
- Disc
- Annulus
- Nucleus Pulposus
- Muscles / Ligaments
- Spinal Nerve Roots

LBP
- Sacroiliac Joint
- Tight, Synovial
- Ligaments
- “SI Dysfunction”

Interventional Pain Procedures
- INTERVENTIONAL MODALITIES TO IDENTIFY AND INTERRUPT PAIN PATHWAYS
- NERVE STIMULATION
- NERVE ABLATION
- DORSAL COLUMN STIMULATION
- SELECTIVE EPIDURAL INJECTION
- SELECTIVE NERVE ROOT ISOLATION
- PERCUTANEOUS DECOMPRESSION
Common Procedures

- Selective nerve root blocks
- Joint injections
- Ganglion injections
- Local anesthetic infusions
- Implantable intrathecal pumps
- Spinal Cord Stimulation
- Radiofrequency Neurolysis

Trigger Point Injections

- Most basic intervention known to help with myofascial pain syndrome
- Different types of medications and/or combination of different pharmacologic agents: local anesthetics +/- steroids +/- opioids, botulinum toxin

Epidural Steroid Injection

- The Epidural Injection or catheter is a versatile technique than can be utilized for types of acute or chronic pain.
- They are most well known for labor and delivery
- They can also be utilized to deposit anti-inflammatory medication around the spinal nerves

Interventional Failures

- While interventional treatments may provide excellent relief there is a subset of patients that will require pharmacological management

Anatomy

- Contains fatty tissue, venous plexus, lymphatics and dural projections of spinal nerve roots

Epidural Steroid Injection

- Epidural steroid injections are used for a number of chronic pain states.
- They are most effective for bulging or herniated disks, and nerve root irritation
Local anesthetic blockade of the joint or innervating nerves helps make the diagnosis.

Intrarticular or periarticular steroid injections may provide prolonged relief.

Cryo or radiofrequency denervation of the medial branch nerves is an option if local anesthetic gives good but temporary relief.

Facet Joint blockade AP view shows broader contrast appearance at Lt L 5/S 1 facet joint.
INTRADISKAL PROCEDURES

- PERCUTANEOUS DISK DECOMPRESSION: LASER, NUCLEOPLASTY
- THERMAL ANNULAR DISRUPTIONS (IDET)

Dorsal Column Stimulation or Spinal Cord Stimulation

Electrodes placed within the epidural space can alleviate pain in a wide variety of locations. They substitute pain with a more pleasant vibration.
Intrathecal Pumps

- New advances in pump technology have led to design applications which have resulted in smaller pump sizes.
- However pump capacity has increased.
- Increasing patient comfort and allowing for less frequent need for refilling in certain cases.
- Proximal end is in the CSF.
- Allows for smaller doses.
- Catheter is tunneled under the skin.
- Distal ends attached to the pump, which is subcutaneous.
- No external pump.
- Rescues are not given via the pump, usually, oral.
- Refilled approximately every 4-6 weeks.

Conclusion

- Proper diagnoses is required for appropriate intervention to provide optimal relief.
- From simple trigger point injections to a highly complex spinal cord stimulation are very effective if chosen properly.
- Low back pain treatment is multifocal, can be managed, but very difficult to treat and cure.

References


  Pain Physician 2013, 16:S49-S283