

# Epidural Steroids for Back Pain

The common causes of low back pain include radiculitis/ radiculopathy from herniated disc or spinal/foraminal stenosis, facet syndrome, and internal disc disruption. Epidural injection of steroids is an invasive treatment for radicular pain unresponsive to conventional therapy.

## ANESTHETIC CONSIDERATIONS:

1. Evidence is equivocal about benefit
2. Potential for serious complications (hematoma and abscess of epidural space)
3. Potential for subarachnoid injection (arachnoiditis from steroid)

## ANESTHETIC GOALS:

1. Understand the risks and benefits of the procedure and make sure the patient has a clear understanding as well
2. Select your patient population carefully and only after failure of conservative treatment

## PATHOPHYSIOLOGY

- Radicular symptoms of pain, paresthesias, and numbness in a typical dermatomal distribution in the presence of objective signs of weakness, diminished reflexes, and positive straight-leg raise are secondary to pathology or dysfunction of the sensory spinal nerve roots and dorsal root ganglia
- Three theories on origin of pain:
  - Mechanical compression of nerve root by herniated disc
  - Spill of inflammatory mediators from the disc (gaining popularity as theory)
  - Ingrowth of new nerves into the healing annulus
- Most episodes of acute back pain resolve on their own in 4 to 6 weeks
- Therapeutic intervention is often not necessary
- Epidural steroid injections (ESIs) may be useful to treat some forms of low back pain because of their anti-inflammatory effect, related to inhibition of phospholipase A<sub>2</sub> activity
- Steroids have a local anesthetic and antinociceptive effect:
  - The local application of methylprednisolone blocks transmission of C fibers but not the A $\beta$  fibers

## HISTORY AND PHYSICAL

- Low back pain and radicular symptoms (pain, paresthesias, numbness, and weakness) in the distribution of the involved nerve root
  - Radicular pain typically travels along a narrow band and has a sharp, shooting, and lancinating quality
  - Gait disturbances, loss of sensation, reduced muscle strength, and diminished reflexes involve the appropriate affected dermatomal distribution
- History taking must encompass the bio-psycho-social model of the patient
- Screening neurologic examination including reflexes, sensation and power are needed
- **Classic Signs of Radiculopathy**
  - Sharp, sudden, shooting pain (worse on exertion)
  - Low back source; pain into the extremity below the knee
  - Cervical spine source: pain into the upper extremity
  - Increased pain with coughing, sneezing, or straining
  - Onset associated with heavy lifting while in an awkward position
  - Repetitive spinal motions can be causative in fatigued, anxious, poorly conditioned individuals
  - Rule out other causes of low back pain, with or without radicular pain, including spinal metastasis, vertebral body fractures, infections, abdominal aortic aneurysm, and chronic pancreatic lesions

## INVESTIGATIONS

- CBC, PTT, INR
- Often lumbar X-rays/MRI are completed

## TREATMENT

- Injection of steroid diluted in local anesthetic is accomplished in the operating room
- The following steroids are recommended for ESIs: (1) methylprednisolone, triamcinolone, or betamethasone for interlaminar injections; (2) betamethasone (preferably) or triamcinolone for lumbar transforaminal injections; and (3) dexamethasone for cervical transforaminal injections
- It is advisable that fluoroscopy be used in epidural steroid injections to assure insertion of the needle at the affected vertebral level and document and follow the flow of the contrast medium (and the drug)
- Ensure that the epidural is at the same level as the radiculopathy
- Reduced doses and improved results if the injection is close to the level of pathology
  - Historically high volume, high dose, high force caudal injections
- Injection is safe for patients concurrently taking NSAIDs
- Ideal candidate is a young patient with no comorbidities, this rarely is the patient presenting to clinic
- A transforaminal approach can be employed to deposit steroid in the anterolateral epidural space where the herniated disc is located, through the intervertebral foramina, and distally along the nerve root
- The transforaminal approach has a better rationale than the interlaminar approach, and studies that compared the two approaches show better efficacy with the transforaminal approach
- Reassessment should be carried out 2 to 3 weeks after the initial injection
- The use of multiple epidural steroid injections in a patient, with a short interval between injections, is not advised
  - If there is no response to an initial injection, it can be repeated once as some patients require a second injection before they respond
  - If there is partial response, up to three injections can be performed

## OUTCOMES

- Published success rates vary between 18 and 90%
- Three prospective, randomized, and controlled studies have demonstrated short-term efficacy of epidural steroid injections for treatment of lumbar spine radiculopathy and two studies have not

- A sixth study demonstrated less leg pain and sensory deficit with ESI, but the incidence of surgery was the same between the steroid and the control groups
- For cervical ESIs, the few studies that have been done are mostly descriptive and their results were the same as in lumbar ESIs, that is, transient relief (<3 months) from the injections
- Patients with radiculopathy and corresponding dermatomal sensory change who have not responded to conservative therapy in 4 to 6 weeks seem most likely to benefit
- The transient relief provided by ESIs may minimize the need for potent anti-inflammatory medications or opioids and reduce the incidence of drug-related side effects
- ESIs should be a component, and not the sole modality, of the conservative management of radicular pain

#### **COMPLICATIONS**

- Transient non-positional headaches that resolve in 24hrs 4.8%
- Postprocedure back pain at injection site 4.8% (transient)
- Facial flushing 1.6%
- Increased radicular symptoms 1.6%
- Epidural abscess (rare) almost always in diabetics
- Complications related to the technique include needle trauma, vasospasm, and infection
- Glucocorticoids reduce the hypoglycemic effect of insulin and interfere with blood glucose control in patients with diabetes mellitus; they can also suppress plasma cortisol levels and the ability to secrete cortisol in response to synthetic corticotropin

#### **REFERENCES**

- Barash P. 1510-1512
- Miller Chpt. 58