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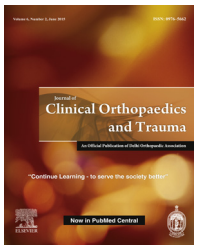

Original Article

Selective nerve root blocks vs. caudal epidural injection for single level prolapsed lumbar intervertebral disc – A prospective randomized study

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ABSTRACT

Background: Chronic lumbar radiculopathy has a lifetime prevalence of 5.3% in men and 3.7% in women. It usually resolves spontaneously, but up to 30% cases will have pronounced symptoms even after one year.

Aims: A prospective randomized single-blind study was conducted to compare the efficacy of caudal epidural steroid injection and selective nerve root block in management of pain and disability in cases of lumbar disc herniation.

Methods: Eighty patients with confirmed single-level lumbar disc herniation were equally divided in two groups: (a) caudal epidural and (b) selective nerve root block group, by a computer-generated random allocation method. The caudal group received three injections of steroid mixed with local anesthetics while selective nerve root block group received single injection of steroid mixed with local anesthetic agent. Patients were assessed for pain relief and reduction in disability.

Results: In SNRB group, pain reduced by more than 50% up till 6 months, while in caudal group more than 50% reduction of pain was maintained till 1 year. The reduction in ODI in SNRB group was 52.8% till 3 months, 48.6% till 6 months, and 46.7% at 1 year, while in caudal group the improvement was 59.6%, 64.6%, 65.1%, and 65.4% at corresponding follow-up periods, respectively.

Conclusions: Caudal epidural block is an easy and safe method with better pain relief and improvement in functional disability than selective nerve root block. Selective nerve root block injection is technically more demanding and has to be given by a skilled anesthetist.

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1. Introduction

Chronic lumbar radiculopathy is defined as a clinical syndrome of back and leg pain accompanied by sensory, reflex, or motor deficits in a nerve root distribution lasting for more than 12 weeks.[1–4] The lifetime prevalence of lumbar radiculopathy has been reported to be 5.3% in men and 3.7% in women.[5,6] Lumbar radiculopathy due to a prolapsed disc resolves spontaneously in 23–48% of patients, but up to 30% will still have pronounced symptoms after one year, 20% will be out of work, and 5–15% will undergo surgery.[7–10]

2. Aims

A prospective randomized single-blind study was conducted to compare the efficacy of caudal epidural steroid injection and lumbar steroid injection (selective nerve root block) in management of pain associated with prolapsed lumbar intervertebral disc in patients who were not relieved by nonsurgical treatment modalities.

3. Materials and methods

The study was conducted in tertiary care hospital from December 2013 to December 2014. Patients of lumbar disc herniation at one level with backache and radiculopathy, who failed to respond to conservative therapy for duration of 6 weeks, were included in the study. The diagnosis of lumbar disc herniation was confirmed clinically and radiologically by MRI. The exclusion criteria included patients with prior back surgery, cauda equina syndrome, back pain or radiculopathy due to other causes (facet joint pain and spinal canal stenosis), pain secondary to traumatic spinal fracture, neoplastic and vascular causes, pregnancy, and lactating mothers.

The study was cleared by the Institutional Research Committee and the Ethical Committee. Informed written consent was taken from all those included in the study. The sample size was calculated based on significant pain relief considering a 0.05 two-sided significance level, a power of 80%, and an allocation ratio of 1:1; 40 participants in each group were estimated. There were 80 cases enrolled in the study. Computer-generated random allocation was done in two groups: (a) caudal epidural and (b) selective nerve root block group.

Written and informed consent for both the procedures was obtained from all subjects. The procedures were conducted under C-arm imaging control, by an orthopedic specialist in caudal epidural injection and by an anesthesia specialist in selective nerve route block group in an operation theater. The caudal group patients received 2 ml of methyl prednisolone (80 mg) along with10 ml of lignocaine (2%) diluted in 20 ml of normal saline. A total of 3 caudal epidural injections were given at an interval of 3 weeks irrespective of previous epidural injection effect. Selective nerve root block (SNRB) was given by a single injection of 2 ml of methyl prednisolone (80 mg) mixed with 5 ml of lignocaine (2%).

3.1. *Technique for caudal epidural injection*

The entry point for caudal epidural injection is the sacral hiatus. The drug is administered to distribute the steroid cephalad in the epidural space. Patients were asked to lie down in prone position with a pillow under lower abdomen and pelvic. The needle puncture site was identified and marked on skin. After proper antiseptic dressing and draping, the proposed site of needle entry was infiltrated with local anesthetic. The procedure was performed under C-arm guidance. A 20-gauge spinal needle was introduced through sacral hiatus at about 45°. Once inside the sacral hiatus, the needle is horizontally advanced in cephalad direction using C-arm guidance into the epidural space (Fig. 1). The final position of needle was confirmed under C-arm. After removal of the stylus and aspiration to check for blood or CSF, the drug was injected.

3.2. *Technique for nerve root blocks*

The patient was placed in a prone position. After painting and draping the area and identifying the affected level using anteroposterior and lateral fluoroscopic imaging, we infiltrate the skin 5–8 cm from midline with 2 ml of local anesthetic drug and a 20-gauge needle that was inserted and advanced until it comes in contact with the dorsal superior and medial aspect of the base of the transverse process. Here, we try to elicit the paresthesia along the affected root, and once the patient confirms the paresthesia, we inject 2 ml of radio-opaque dye and see the spread of the dye along the affected root using the C-arm, both in anterior and lateral views (Fig. 2). The position of needle can also be confirmed in oblique view, where the position of the needle should be in the middle of the eye of Scotty dog. Once confirmed, the drug is slowly injected. The

Fig. 1 – Clinical and C-arm images showing needle placement for caudal epidural injection

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