

STUDY OF EPIDURAL STEROIDS INJECTIONS FOR THE TREATMENT OF CHRONIC LOW BACKACHE

Kamala G R¹, Hanumantharaya G H²

¹Department of Anaesthesiology, District Hospital, Chitradurga, Karnataka, India

²Department of Orthopaedics, District Hospital, Chitradurga, Karnataka, India

Corresponding Author:

Dr. Hanumantharaya GH

Abstract: Low Back Pain (LBP) is the leading cause of disability in adults. Aetiology of low back pain is usually multi factorial.¹The aim of this study is to assess the effectiveness of epidural steroid injection in low back pain. **Materials and methods:** This is prospective study of 54 patients conducted at Department of Anaesthesiology, District Hospital, Chitradurga over a period of 12 months from January 2023 to December 2023. Injection methyl prednisolone 80 mg with 2ml of 0.5% bupivacaine was diluted in 6ml of normal saline and injected into the lumbar epidural space in selected group of patients. Visual Analogue Score (VAS) was used for evaluation during follow up. **Results:** In our study 54 patients received epidural steroid injection. The mean age of patients was 44.5 years. Disc prolapse was involved at L4-L5 in 24 patients (44.44 %). Single level disc prolapse was seen in 42 patients (77.77 %). Degeneration of spine was associated in 12 patients. During follow up functional status and pain response of patients was improved significantly. **Keywords:** Epidural steroids, efficacy, low backache.

INTRODUCTION: Low back pain is a common cause of limitation of physical activity in adults.² Low back pain is a common problem in the general population, affecting both sex of all age groups and socioeconomic classes. Aetiology is usually multifactorial and treatment of low back pain is a challenging task. The treatments modalities includes conservative management, epidural steroid injection and surgery.^{1,2}

Epidural steroid injection (ESI) is widely used nonsurgical treatment for chronic low backache. It relieves pain, improve function, and reduce the necessity of surgical intervention. In intervertebral disc herniation, cells from the degenerated disc fragments produce numerous inflammatory mediators including TNF and other inflammatory cytokines. All these neurotoxic substances may penetrate within the intraneural capillaries causing axonal ischemia, which is responsible for nerve root pain. Cause of pain in spinal canal stenosis is compression of the nerve root vasculature and irritation of dorsal root ganglia. Epidural steroids inhibit PLA2 enzyme and production of inflammatory mediators. It inhibits neural transmission in nociceptive C fibers.³ Epidural steroid injection administration routes include transforaminal, interlaminar, and caudal approaches. Interlaminar approach is most commonly used for steroid administration.⁴ The purpose of the present study was to assess the effectiveness of epidural steroid injection in patients with chronic low backache.

MATERIALS AND METHODS: This is a prospective study of 54 patients conducted at Department of Anaesthesiology, District Hospital, Chitradurga, and Karnataka over a period of 12 months from January 2023 to December 2023. Patients with failure of conservative

management, age between 18 to 70 years, significant SLRT (40 to 70), patients willing to participate in the study were included in to the study. Patients with progressive motor deficit, compression fractures, cauda-equina syndrome, previous lumbar spine surgeries, patients with history of allergy to steroids, patients with coagulopathy, systemic infection or infection at the injection site, patients not willing to participate in the study and pregnant patients were excluded from the study.

A detailed history was taken and examination findings were recorded according to proforma. Routine laboratory investigations were done. MRI scan of lumbar spine results are recorded in patients proforma. The ESI was given by trained anaesthesiologist in operation theatre. Patients were connected to the multipara monitor for monitoring ECG, heart rate, non-invasive blood pressure (NIBP), and pulse oximetry.

With proper aseptic precaution and under antibiotic cover patient was shifted to OT. The skin above and below the laminar interspace to be injected is aseptically prepared with isopropyl alcohol and povidone iodine. After local skin anaesthesia, patient kept in sitting position. The needle enters between the lamina of two vertebrae directly posterior to the vertebra. Loss of resistance and negative aspiration technique is used. Injection Methyl prednisolone (80 mg, 2ml) was taken along with 2ml 0.5% injection bupivacaine plus 6ml normal saline and injected. The patient was allowed to lie in a supine position for a few moments and then transferred back to the ward.

The patients were reviewed after 48 hrs, one week & 3 months after the epidural steroid injection. During follow up, visual analogue score (VAS) was used to evaluate the response of epidural steroid injection. VAS score was used for assessment of current back and lower extremity pain, ranging from 0 (no pain) to 10 (worst pain possible). If a patient subjectively reported a decrease in pain within one week after a single injection, no more injections were administered. If the patient didn't have improvement within a week, a second injection was performed. Patients with low back pain not responding to second dose of ESI were considered for surgery. All patients were advised to take mild analgesics during the post-injection period. No special exercise program or other physical therapy was employed after the injections. The data analysis was done by using the software SPSS (vs 20.0).

RESULTS: About 54 patients in this study received epidural steroid injection. The mean age of patients was 44.52 years. There were 34 (62.96%) male and 20 (37.03%) patients were female. Disc prolapse was involved at L4-L5 in 24 patients (44.44%) and L5-S1 in 18 patients (33.33%). Degeneration of spine was associated in 12 patients. VAS score was improved significantly during follow up at 48 hours, one week and at 3 months.

DISCUSSION; Intervertebral disc herniation, lumbar spinal canal stenosis, degenerated protruded disc and osteoarthritis of spine are the most common diagnosis of chronic radicular low back pain. Radicular pain is the result of inflammation of the nerve root in the epidural space provoked by leakage of disc material, compression of the nerve root vasculature and irritation of dorsal root ganglia from spinal stenosis. Epidural injection is one of the nonoperative treatments in managing chronic low backache.^{5,6}

A prospective randomized study compared the efficacy of lumbar ESI using a parasagittal interlaminar approach and midline interlaminar approach. At the end of 6 months, the parasagittal group had a significantly higher percentage of pain relief in the visual analogue scale.⁷ In our study VAS score was decreased by 50% in the first week and by 65 %

at the end of 3 months. This result indicates that the functional status of patients and pain intensity was significantly improved in all follow up visits. Beliveau et al,⁸ showed that epidural injection of methyl prednisolone was more effective in long standing back pain and sciatica. We also used methyl prednisolone for epidural steroid for all patients.⁹ The efficacy of ESI is good and fair for radicular pain secondary to disc herniation and spinal stenosis respectively.

Abdi et al¹⁰ in 2007 reported that efficacy of interlaminar ESIs was strong for short-term pain relief, but limited role in long-term pain relief. Dilke et al¹¹ reviewed and showed significant improvement in pain relief 1-3 weeks after ESI. The study by Cuckler et al.¹² compares the efficacy of epidural steroid injection with that of saline or procaine in patients with a radiculopathy related to either a discal herniation or lumbar spinal stenosis. They concluded that results were better than those obtained in the saline-treated group. Bupivacaine is a local anaesthetic agent, act as 'flushing' agents to dilute the chemical or immunologic agents that promote inflammation and improves neural blood flow and dysfunction. Our study shows that the combination of methyl prednisolone and bupivacaine more effective treatment modality in chronic low backache.^{7,8}

Post injections complications like local pain at injection site, epidural hematoma, epidural abscess, bacterial meningitis and post-dural puncture headache have been reported in some studies.^{13,14} only few patients reported with local pain at injection site and headache, which are subsided with conservative treatment. The limitations in this study are limited follow up, small size and lack of control group. Finally we conclude that epidural steroid injections reduce the period of hospital stay, analgesic intake & helps in early rehabilitation. Epidural steroid injection is an effective and safe method of treatment for chronic low backache patients.

Conflict of interest: Nil

Source of income: None

REFERENCES

1. Benzon HT. Epidural steroid injections for low back pain and lumbosacral radiculopathy. *Pain* 1986; 24: 277-95.
2. Maher CG. Effective Physical Treatment for Chronic Low Back Pain. *Ortho Clin North Amer* 2004; 57-64.
3. Pandey, Efficacy of Epidural Steroid Injection in Management of Lumbar Prolapsed Intervertebral Disc: A Comparison of Caudal, Transforaminal and Interlaminar Routes. *J Clin Diagn Res.* 2016 Jul; 10(7)
4. Raj PP. Intervertebral disc: anatomy-physiology-pathophysiology- treatment. *Pain Pract* 2008; 8: 18-44.
5. Keith DW, Ashley LP. Low back pain and disorders of intervertebral discs. *Campbell's operative orthopaedics. Vol-III. 9th ed.* 2003: 3014-80.
6. Bowman, Wedderburn, L. Outcome assessment after epidural corticosteroid injection for low back pain and sciatica. *Spine*, 18, 1993:1345-1350.
7. Ghai B, Vadaje KS, Wig J, Dhillon MS. Lateral parasagittal versus midline interlaminar lumbar epidural steroid injection for management of low back pain with lumbosacral radicular pain: a double-blind, randomized study. *Anesth Analg.* 2013 Jul. 117(1):219-27.

8. Beliveau P. A comparison between epidural anesthesia with and without corticosteroid in the treatment of sciatica. *Rheumatol Phys Med* 1971; 11: 40-45.
9. Benyamin RM, Manchikanti L, Parr AT, et al. The effectiveness of lumbar interlaminar epidural injections in managing chronic low back and lower extremity pain. *Pain Physician*. 2012 Jul-Aug. 15(4):E363-404.
10. Abdi S, Datta S, et al. Epidural steroids in the management of chronic spinal pain: a systematic review. *Pain Physician*. 2007 Jan. 10(1):185-212.
11. Dilke TF, Burry HC, Grahame R. Extradural corticosteroid injection in management of lumbar nerve root compression. *Brit Med J* 1973; 2: 635-7.
12. Cuckler JM, et al. The use of epidural steroids in the treatment of lumbar radicular pain. A prospective, randomized, doubleblind study. *J Bone Joint Surg Amer* 1985; 67: 63-6.
13. Campbell MJ et al. Correlation of spinal canal dimensions to efficacy of epidural steroid injection in spinal stenosis. *J. Spinal Disord Tech*. 2007; 20:168–171.
14. Koes BW, Scholten R, MENS J, et al. Efficacy of epidural steroid injections for low-back pain and sciatica: a systematic review of randomised clinical trials. *Pain*. 1995; 63:279–288.