

Efficacy of Epidural Steroids Injections for Treatment of Chronic Low Backache Patients

Kamala G.R.¹, Hanumantharaya G.H.²

¹Assistant Professor, Department of Anaesthesiology, ²Associate Professor, Department of Orthopaedics, Basaveshwara Medical College and Hospital, Chitradurga, Karnataka 577502, India.

Abstract

Background: Low Back Pain (LBP) is the leading cause of disability in adults. Aetiology of low back pain is usually multi factorial [1]. The aim of this study is to assess the effectiveness of epidural steroid injection in low back pain. **Materials and Method:** This is prospective study of 64 patients conducted at Basaveshwara Medical College and Hospital over a period of 2 years from January 2014 to December 2015. 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. Revised Oswestry Disability Index (ODI) and Visual Analogue Score (VAS) were used for evaluation during follow up. **Results:** In our study 64 patients received epidural steroid injection. Among 64 patients 4 patients did not come for follow up and 8 patients required surgery after first injection. The remaining 52 patients were analyzed. The mean age of patients was 40.5 years. Disc prolapse was involved at L4-L5 in 20 patients (38.46%). Single level disc prolapse was seen in 34 patients (65.38%). Degeneration of spine was associated in 8 patients. During follow up functional status and pain response of patients was improved significantly. **Conclusion:** Epidural steroid injection is an effective and safe method of treatment for chronic low backache patients.

Keywords: Epidural Steroids; Efficacy; Low Backache; ODI.

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 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 chronic low backache.

Corresponding Author: Hanumantharaya G.H., Associate Professor, Department of Orthopaedics, Basaveshwara Medical College and Hospital, Chitradurga, Karnataka 577502, India.
E-mail: rayamsortho@gmail.com

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Materials and Methods

This is a prospective study of 64 patients conducted at Department of Orthopedic department of Basaveshwara Medical College and Hospital, Chitradurga, Karnataka over a period of 2 years from January 2014 to December 2015. Ethical clearance was obtained before the study was started. Patients with failure of conservative management, age between 18 years to 65 years, SLRT between 40 to 70 degrees, patients who had given informed written consent were included in the study. Patients with progressive motor deficit, compression fractures, caudaequina syndrome, previous lumbar spine surgeries, patients with history of allergy to steroids and local anaesthetic drugs, patients with coagulopathy, systemic infection or infection at injection site, uncontrolled diabetes, patients not willing to participate in the study and pregnant women 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 patient 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 interphase to be injected is aseptically prepared with isopropyl alcohol and povidone iodine. After local skin anaesthesia, patient kept in lateral decubitus 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 lateral position for a few moments and then transferred back to the ward.



Fig. 1: Shows confirmation epidural space through standard technique

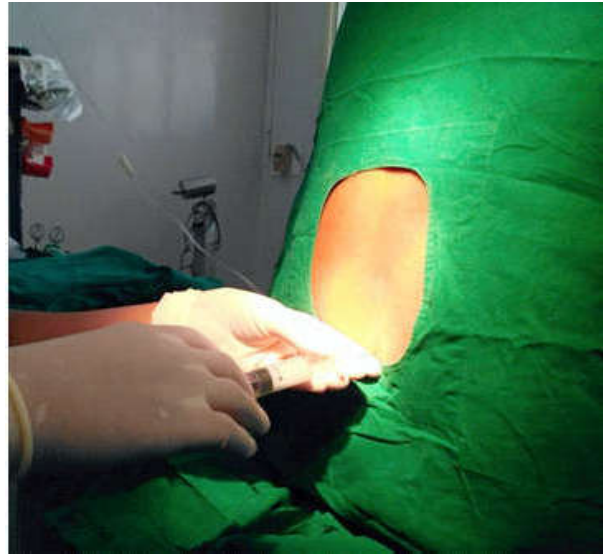


Fig. 2: Injection of steroids into epidural space

The patients were reviewed after 48 hrs, one week, one month & 3 months after the epidural steroid injection. During follow up, the Oswestry disability index (ODI) and visual analogue score (VAS) were used to evaluate the response of epidural steroid injection. The ODI was employed to quantitative the level of functional disability. It consists of ten questions, each with six alternative scores. The sum of the scores was expressed as a percentage. A change of more than 10 points or a change of a minimum of 20% was considered a significant clinical improvement. 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). The categorical data was presented in the form of frequencies and percentages and quantitative data was presented as measures of central tendency and dispersion.

Results

About 64 patients in this study received epidural steroid injection. Among 64 patients, 8 patients required surgery due to severity of pain even after

second injection. 4 patients did not come for follow up after injection. The remaining 52 patients were analyzed. The mean age of patients was 40.5 years. There were 30 (57.69%) male and 22 (42.31%) patients were female. Disc prolapse was involved at L4-L5 in 20 patients (38.46%) and L5-S1 in 14 patients (26.92%). Two levels (L4-5, L5-S1) disc prolapse seen in 18

patients (34.62%). Degeneration of spine was associated in 8 patients.

Significant Functional status according to ODI score of patient improvement was observed in all follow up, which is seen in Figure 3. Figure 4 shows significant reduction in pain intensity according to VAS score was observed in all follow up visits.

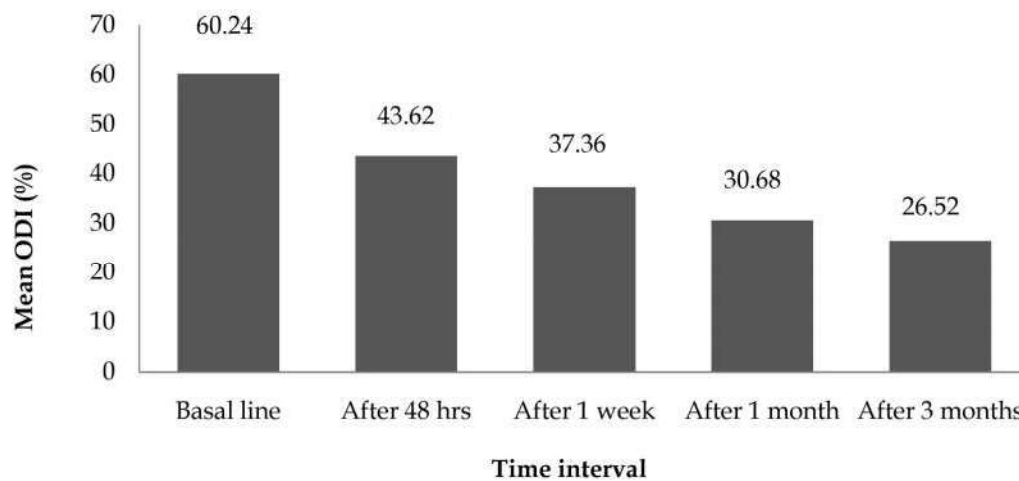


Fig. 3: Shows ODI of patient after ESI

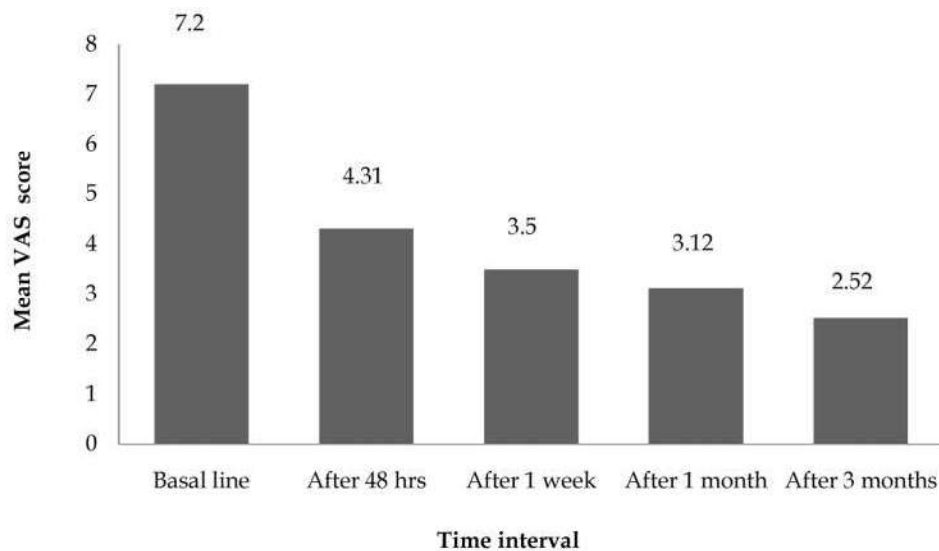


Fig. 4: Shows VAS score after ESI

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 and improvement of disability using Oswestry disability score [9]. In our study, the ODI was decreased by 38% in first week and by more than 55% at the end of 3 months. Similarly 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 [16], 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.

The efficacy of ESI is good and fair for radicular pain secondary to disc herniation and spinal stenosis respectively [10]. Abdi et al [11] in 2007 reported that efficacy of interlaminar ESIs was strong for short-term pain relief, but limited role in long-term pain relief. Mathews et al [13] conducted double-blind study with 57 patients and reported that ESI was shown to be significantly more pain free ($p < 0.05$). A larger proportion of the treated group were improved at every assessment point up to 1 year, with the most marked effect at 3 months. They found that mean pain score was reduced from 65.4 to 35.8 after two weeks. They experienced almost a 50% reduction in pain at 3 months follow-up. Dilke et al [14] reviewed and showed significant improvement in pain relief 1-3 weeks after ESI. Campbell et al [15] conducted a study of 84 patients with lumbar canal stenosis received an ESI once a week for 3 weeks. During 24 months follow-up, 50 patients had required surgical decompression and 34 patients had relief of their symptoms without surgery.

The study by Cuckler et al. 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 [11,12]. 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 [17]. Only few patients reported with local pain at injection

site and headache, which are subsided with conservative treatment.

Most pain specialists strongly believe that ESIs are effective in the treatment of patients with sciatica. This belief is based on judgments and opinions of experts, is reinforced by the study observations. 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. It helps in improvement of functional parameters of the patients. Epidural steroid injection is an effective and safe method of treatment for chronic low backache patients.

Conflict of interest: Nil

Source of support: None

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