

Original Article

PROSPECTIVE STUDY OF EPIDURAL STEROIDS FOR LOW BACK PAIN IN ORTHOPAEDIC DEPARTMENT OF A TERTIARY CARE HOSPITAL IN SURAT CITY

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Financial Support: None Declared

Conflict of interest: None Declared

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How to cite this article:

Mehta R, Rathod J, Narang D, Rupani M. Prospective Study of Epidural Steroids for Low Back Pain in Orthopaedic Department of a Tertiary Care Hospital in Surat City. Natl J Community Med. 2012; 3(4):740-3.

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Date of Submission: 6-11-12

Date of Acceptance: 12-12-12

Date of Publication: 30-12-12

ABSTRACT

Introduction: Low back pain is one of the leading problems of patients coming to Orthopedic outdoor patient department(OPD) at SMIMER. There are many modalities of treatment available for low back pain. Epidural steroid injections are one of the modes of treatment for low back pain.

Methodology: In this study, patients were admitted for chronic low back pain and given epidural steroids for the same. They were then followed up for a period of 6 months and then results were analyzed using visual analogue scale and compared with those patients of control group who were treated conservatively using bed rest, analgesics and physiotherapy. Data was entered in Microsoft Excel and data analysis was carried out using SPSS software version 16(licensed to VN SUGU). Kruskal Wallis test was applied for determining the difference in Visual Analogue Scale score among the three groups.

Results: Mean age of patients was 51.52 years and standard deviation was 14.97 years. By using Kruskal Wallis test it was found that epidural steroid injections are effective significantly in reducing visual analogue score for both low back pain with radiculopathy and mechanical back pain as compared to the control group.

Conclusion: Epidural steroids are an effective way of treating low back pain with radiculopathy and mechanical back pain providing significant relief to the patient.

Key words: Epidural steroids, low back pain

INTRODUCTION

Low back pain is the most common chronic pain in India. The estimated cost of evaluation and treatment runs into billions of rupees per year. Thus it places a huge burden on health care industry.

There are several different modalities available to treat low back pain. Epidural steroid injections (ESIs) are one of them. First used in 1952, they still deserve a part in management of these

patients. Its main goal is to provide pain relief. Moreover it can be repeated up to thrice in a year¹. Even if after repeating it for three times if patient is not relieved he is advised for surgery.

A limited number of studies have been conducted to address the issue of efficacy of epidural steroid injections in the treatment of low back pain. These studies have been inconclusive². Further studies are needed to explore the efficacy of epidural steroid injections in the treatment of chronic back pain to provide

healthcare professionals with the most effective modalities.

Epidural steroids are used in treatment of low back pain caused by intervertebral disc herniation or degenerative changes in the vertebrae that result in compression of spinal nerves. Steroids may reduce inflammation or mechanical compression of spinal nerve roots. They may reduce inflammation^{1,3} and decrease pain through several mechanisms, including inhibition of phospholipase A2, stabilization of hyper excitable nerve membranes and reduction of capillary permeability. In addition to the low back (the lumbar region), epidural steroid injections are used to ease pain experienced in the neck (cervical) region and in the mid spine (thoracic) region. Various studies in India and abroad have shown controversial results with some claiming in favor and some against use of epidural injections for low back pain². This article focuses on amount of pain relief in low back pain.

METHODS

Study setting: This was a prospective study carried out in orthopaedic ward at SMIMER hospital of SURAT city. SMIMER hospital is 750 bedded fully equipped tertiary center in South Gujarat. Orthopaedic ward is 90 bedded ward having 3 divisions, 2 for male and 1 for female patients. It caters to patients of trauma, backache, arthroplasty, arthroscopy, tumors, and even deformity corrections are treated.

Study period and sample size: This study was carried out from August 2011 to August 2012 for one year on 90 patients.

Selection of subjects: The first 60 patients were recruited consecutively based on their diagnosis into two groups of low back pain with radiculopathy and mechanical back pain such that each group had 30 patients each. The rest of the 30 patients were recruited into the control group irrespective of their type of back pain.

Data collection: Patients were grouped into three: (i) Low back pain with radiculopathy, (ii) Mechanical back pain and (iii) Control group. Patients with low back pain with radiculopathy and those with Mechanical back pain were treated with epidural steroids and those in control group were treated conservatively with analgesics, bed rest and physiotherapy.

Statistical analysis: Data was entered in Microsoft Excel and data analysis was carried out using SPSS software version 16 (licensed to VNNGU). Kruskal Wallis test was applied for determining the difference in Visual Analogue Scale score among the three groups.

Inclusion criteria: Patients above 18 years of age and giving written informed consent were included in the study.

Exclusion criteria: Patients having low back pain with radiculopathy with canal diameter less than 9mm. All patients had preoperative physical examination, measurements, plain radiological examination and hematological tests performed to exclude inflammatory, infective and neoplastic conditions.

Procedure: In our study, the injections were given by expert anesthetists. Patients were made to sit as usually for giving spinal anesthesia. Back was painted and draped. Lumbar spinal level is located. Local anesthesia is given. With the help of tuohy needle and hanging drop technique epidural injection, single shot of methyl prednisolone, bupivacaine, and hyaluronidase is given. Patient is given supine position and vitals are monitored for 15 to 20 minutes. Patient is discharged next day.

Tool for pain assessment: Visual analogue scale was used for pain relief assessment and for radicular pain assessment. A visual analogue pain scale lets you bypass the cognitive level of your brain and give a truer representation of patient's pain. It is a simple assessment tool consisting of a 10 cm line with 0 on one end, representing no pain, and 10 on the other, representing the worst pain ever experienced, which a patient indicates so the clinician knows the severity of his or her pain.

Follow up: Patients were followed at 1 month, 2 month and then at 6 month. An epidural steroid injection delivers drug into epidural space. In our study we have used injections of methyl prednisolone acetate and hyaluronidase along with bupivacaine, each having its specific role. Methyl prednisolone acetate is usually injected as anti-inflammatory agent. It reduces inflammation at epidural area thereby relieving pain. It is the safest steroidal agent when used epidurally as the risk of adhesive arachoiditis is very low.⁴ Bupivacaine is a long lasting anesthetic agent is mainly used for pain relief; it also acts as agent to clear / dilute the chemical

or immunogenic inflammatory agents⁵ Hyaluronidase an enzyme preparation is mainly used to enhance the drug penetrance. It also acts as a local flushing agent.

From August 2011 to August 2012, 90 cases of low back pain were admitted in Orthopaedic ward of Smimer. Age of the patients ranged from 20 to 70 years with a median of 52. The mean age of the patients was 51.52 years with SD of 14.97.

RESULTS:

Table 1: Age distribution among the three groups (n=90)

Age	Radicular back pain (%)	Mechanical back pain (%)	Control group (%)	Total (%)
20-29	2(25)	3(37.5)	3(37.5)	8 (100)
30-39	5(35.71)	4(28.57)	5(35.71)	14(100)
40-49	5(31.25)	6(37.5)	5(31.25)	16(100)
50-59	8(38.09)	7(33.33)	6(28.57)	21(100)
60-69	6(33.33)	5(27.77)	7(38.88)	18(100)
>=70	4(30.76)	5(38.46)	4(30.76)	13(100)
Total	30(33.33)	30(33.33)	30(33.33)	90(100)

Out of total ninety patients, forty seven were male and rest forty three were female as shown in table 2 below.

Table 2: Gender distribution of patients in the three groups

Sex	Radicular back pain (%)	Mechanical back pain (%)	Control group (%)	Total (%)
Male	17(36.17)	14(29.78)	16(34.04)	47(100)
Female	13(30.23)	16(37.21)	14(32.55)	43(100)
Total	30(33.33)	30(33.33)	30(33.33)	90(100)

Table 3: Mean and Standard Deviation of Visual Analogue Scale at admission and at follow up in the three groups

Treatment Group	VAS at admission	VAS at 1 month	VAS at 2 month	VAS at 6 month
Low back pain with radiculopathy				
Number of patients	30	30	27*	26*
Mean	7.43	4.87	3.30	2.23
Std. Deviation	.626	2.047	2.163	2.065
Mechanical back pain				
Number of patients	30	30	30	30
Mean	7.47	4.53	3.17	2.20
Std. Deviation	.571	2.145	2.102	1.972
Control Group				
Number of patients	30	30	30	30
Mean	7.40	5.50	4.53	3.80
Std. Deviation	.932	1.503	1.548	1.883

*7 patients were lost to follow up as they did not return to the OPD in spite of repeatedly contacting them telephonically

Visual analogue scale being scored on an ordinal scale, Kruskal Wallis test was applied on the three groups to estimate the difference between the groups.

Table 4 shows mean ranks on Kruskal Wallis

test on all the groups. As seen from the table, VAS at 2 months and VAS at 6 months was significantly different in the three groups. Post-hoc test was carried out for VAS scores at 2 months and at 6 months.

Post-hoc test on VAS scores at 2 months and at 6 months on the three groups is given in table 5 which shows that there was significant decrease in VAS scores at 2 months and at 6 months in both radiculopathy group and in mechanical back pain group as compared to the control group after giving epidural injection.

Table 4: Mean ranks on Kruskal Wallis test on the three groups

VAS score in three groups	Patients	Mean Ranks	χ^2 , p-value
VAS at admission			
Low back pain with Radiculopathy	30	44.23	0.132, 0.936
Mechanical back pain	30	46.25	
Control	30	46.02	
Total	90		
VAS at 1 month			
Low back pain with Radiculopathy	30	43.63	3.924, 0.141
Mechanical back pain	30	40.05	
Control	30	52.82	
Total	90		
VAS at 2 month			
Low back pain with Radiculopathy	27	38.19	11.224, 0.004
Mechanical back pain	30	36.90	
Control	30	56.33	
Total	87		
VAS at 6 month			
Low back pain with Radiculopathy	26	36.06	15.341, < 0.001
Mechanical back pain	30	36.10	
Control	30	57.35	
Total	86		

Table 5: Post-hoc test on VAS scores at 2 months and at 6 months on the three groups

VAS score Diagnosis	Patients	Mean Ranks	χ^2 P-value
VAS at 2 month			
Mechanical back pain	30	23.93	8.708 0.003
Control	30	37.07	
Total	60		
Low back pain with Radiculopathy	27	22.59	7.829 0.005
Control	30	34.77	
Total			
VAS at 6 month			
Mechanical back pain	30	23.1	11.376 0.001
Control	30	37.9	
Total	60		
Low back pain with Radiculopathy	26	21.06	10.638 0.001
Control	30	34.95	
Total	56		

DISCUSSION

Low back pain occurs from a variety of causes and only second to headache in respect of its incidence⁵. In fact most of patient will suffer from low back pain in some parts of their lives. Acute as well as chronic low back pain is mostly treated by rest and analgesics. But in some cases of acute especially with disc prolapsed severe pain are not relieved by these conservative method. In that case surgical intervention is indicated. But this type of surgical management requires comprehensive operative facilities, skilled surgeons and carries the risk of surgery itself. In this situation epidural steroid injection is a very good and effective alternative to surgical intervention. This procedure could be done in any ordinary operation theatre and does not require much expertise, with minimal risk and very much cost effective⁶. Its success rate in present series is very encouraging, which is more or less same as with other series of steroid injections for low back pain.

CONCLUSION

Epidural steroids is an effective, simple and minimally invasive method for control of low back pain in both groups viz. low back pain with radiculopathy and those with mechanical back pain providing excellent to good relief to the patients.

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