Original Research Article

Lumbar spondylosis and epidural steroid injection: Our experience at a tertiary care centre

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Abstract

Background: Impairments of back and spine are ranked as the most frequent cause of limitation of activity in individuals younger than 45 yrs old. For some interventional therapies, like epidural steroid injections, utilization rates have increased dramatically. They have become one of the most commonly performed interventions in the United States for low back pain with radiculopathy for the people with root compression and lumbar canal stenosis on MRI findings **Material and Methods:** Interventional study conducted in 68 patients of lumbar canal stenosis attending orthopedic department OPD. The patients underwent epidural steroid injection with 15 ml of normal saline, 2 ml of 2% preservative-free Xylocaine®, and 2mL (40 mg/ml) of triamcinelone acetate. Visual Analogue Scale for pain score and Straight Leg Raising test responses were assessed before and after injection at specific time interval. **Result:** Out of 68 subjects, 48.5% were males and 51.5% females. Mean angle on straight Leg raising test at right leg was 67.6 degrees before steroid injection and 82.9 degree after the injection ($p<0.001$). Mean angle on straight Leg raising test at right leg was changed from 65.2 to 80.1 degrees and at left leg it was changed from 66.2 to 82.6 degree after steroid injection and 82.5 degree after the injection ($p<0.001$). Mean VAS score at admission was 6.11 which was improved to mean value of 4.42 at 1st month and 3.12 at 2nd month ($p<0.001$) **Conclusion:** The patients of lumbar spondylosis got relief of symptoms upto 2 months of the epidural steroid injection and improved their mobility which is much cost effective and risk free than any surgical procedure.

Key words: *Lumbar spondylosis, epidural steroid, SLRT, VAS*

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INTRODUCTION

It is estimated that about 80% population suffers from low Backache at some time with annual prevalence of 18% and incidence of 15-20%.[1] Impairments of the back and spine are ranked as the most frequent cause of limitation of activity in individuals younger than 45 yrs old by the National Center for Health Statistics. Low back pain can be self-limiting but patients off the work for 6 months have only a 50:50 probability of ever returning to work, and at 1 year this probability decrease to 25%.[2] Fortunately, for the large majority of individuals, symptoms are mild and transient, with 90% subsiding within 6 weeks.[3,4] Chronic low back pain, defined as pain symptoms persisting beyond 3 months, affects an estimated 15–45% of the population.[3,5,6] For the minority with intractable symptoms, the impact on quality of life and economic implications are considerable.[3,7] Despite the high prevalence of low back pain within the general population, the diagnostic approach and therapeutic options are diverse and often inconsistent, resulting in rising costs and

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variability in management throughout the country.[3,8] In part, this is due to the difficulty establishing a clear etiology for most patients, with known nociceptive pain generators identified throughout the axial spine.[3,9] Back pain has been termed as "an illness in search of a disease".[3,10] Indeed, once "red flag" diagnoses such as cancer and fracture have been ruled out, the differential sources of low back pain remain broad, including the extensive realm of degenerative changes within the axial spine for which radiological evaluation is nonspecific and causal relationships are tentative.[3,11,12] Various treatment methods include bed rest, physiotherapy, manipulations, traction, analgesics, anti-inflammatory drugs, physical therapy and epidural steroid injections. Other therapies are heat, acupuncture, massage. Epidural steroid injections are most effective in the presence of nerve root compression. Epidural steroid injections are safe and conservative method of treatment for chronic low back pain. They are quick, simple and economic. Potential hazards of spinal surgeries are avoided. The steroids are potent anti-inflammatory agents. [1]

OBJECTIVE: To evaluate the effect of the epidural steroid injection in the patients suffering from lumbar spondylosis with lumbar canal stenosis on magnetic resonance imaging study.

METHODOLOGY

The current interventional study was conducted in orthopedic department of a tertiary care centre involving 68 patients fulfilling eligibility criteria of diagnosed as lumbar spondylosis and lumbar canal stenosis. Study was approved by our institution's Scientific Research Board (Institutional Ethical Committee). Between June 2019 and May 2020, a total of 68 patients suffering from low back pain with unilateral or bilateral sciatica for at least 3 months and who were not responding to rest and analgesics were enrolled in the study. All patients had undergone magnetic resonance imaging (MRI) scans before assessment for eligibility, confirming the existence of lumbar disc disease (lumbar canal stenosis). The patients underwent epidural steroid injection with 15 ml of normal saline, 2 ml of 2% preservative-free Xylocaine®, and 2 ml (40 mg/ml) of triamcinelone acetate.[1] Visual Analogue scale for pain score and Straight Leg Raise Test (SLRT) responses were assessed before and after injection. For the procedure, the patient was placed in a sitting/lateral position on the operating table. Following skin preparation, the particular disc space was identified and both the skin overlying the disc space and the underlying ligaments were infiltrated with 2–3 ml of 2% preservative-free Xylocaine® without epinephrine. At all steps vital signs including respiratory rate, pulse rate, and blood pressure were monitored by an anesthetist. A 18-gauge spinal needle was placed between the disc space by interlaminar approach and confirmed by loss of resistance technique (medscape epidural steroid injection technique) and epidural steroid injected in the epidural space. Outcomes: Following screening and enrollment (visit one), all patients were physically examined. The pain score (Visual Analogue Scale) was obtained for low back pain and Straight Leg Raising Test as a part of health-related quality of life assessment tools. Imaging included lumbar spine x-rays, MRI of the lumbo-sacral spine, routine complete blood count. Clinical evaluations were performed immediately after injection, at 1st month (visit two), at 2nd month (visit three). The pain score (Visual Analogue Scale) and the Straight Leg Raise Test (SLRT) (positive=< 60°) were used to differentiate patients whose symptoms improved from those who remained symptomatic.

Statistical method: Data was collected by using a structured proforma. Data entered in MS excel sheet and analyzed by using SPSS 19.0 version IBM USA. Quantitative data was expressed in terms of Mean and Standard deviation. Qualitative data was expressed in terms of proportions. Comparison of mean SLRT and VAS score before and after procedure was assesses by using Paired t test.

RESULT

Table 1: Distribution of study population according to Age and Sex

		Male		Female	
		Frequency	Percent	Frequency	Percent
Age group in years	**25-40**	10	30.3	7	20.0
	40-55	12	36.4	10	28.6
	> 55	11	33.3	18	51.4
	Total	33	100.0	35	100.0

Out of 68 subjects 33 were males (48.5%) and 35(51.5%) were females. Majority of the subjects (33.3% males and 51.4% females) were from more than 55 years of age. Mean age of subjects was **47.9 ± 10.1** years.

TABLE 2: Effect of epidural steroid injection on Straight Leg Raising Test

		Mean	SD	p	Inference
Right	At admission	65.2	11.8	0.0001	H.S.
	At discharge	80.1	11.2		
left	At admission	66.2	10.2	0.0001	H.S.
	At discharge	82.6	12.8		

In our study Straight Leg Raising Test was taken as the parameter for the evaluation of the effect of the epidural steroid injection. After giving the steroid injection in epidural space, the SLRT in right leg was changed from the mean angle of 65.2 to 80.1 degrees. Whereas on left side it was changed from 66.2 to 82.6 degree which was considered as highly significant value statistically. The difference in the mean angle change in both legs was found to be statistically significant ($p<0.001$).

TABLE 3: Effect of epidural steroid injection on pain score

VAS	Mean	SD	F	p	Inference
0 day	6.11	0.7	82.2	0.0001	H.S.
1 month	4.42	0.91			
2 months	3.12	0.4			

In our study, pain score in the form of Visual Analogue Scale (VAS) was taken as another parameter for the evaluation of the effect of the epidural steroid injection. It was found that mean VAS score at admission was 6.11± 0.7 which was improved to mean value of 4.42± 0.91 at the end of one month and 3.12±0.4 at the end of second month. The difference in the mean VAS score was found to be statistically highly significant ($P<0.001$).

DISCUSSION

We aimed to study role epidural steroid injection in the patients of lumbar spondylosis. We had 33 males and 35 females, a total of 68 patients in our series – according to Gupta *et al.*[13], commonest age group was between 30-40 years, while in our series, the commonest age group was >55 years, followed by 25-40 and 40-55 years. According to Wallace *et al.*[1,14] and Sethi *et al.*[1,15] lumber route is effective because it deposited the drug close to the site of lesion so that route was chosen.

In our study it was found that there was significant improvement in the Straight Leg Raising Test after the epidural steroid injection which was consistent with the results of study performed by Tony TT Loy at Hongkong[16] which stated significant improvement in SLRT after the epidural steroid injection and also consistent with the results of study conducted by Dr. HJ Menon and Dr. Patil S at Surat[17] and also with the results of the study conducted by A Wani, M Habib *et al.* at Jammu[18] all of which can be considered as highly significant statistically. In our study we found that there was significant improvement in the pain score (VAS) after giving epidural steroid injection which is consistent with the results of the study conducted by Thanigai S. *et al.*[19], Murakibhavi *et al.*[20], Khemka A *et al.*[21] and Jadhav V *et al.*[22] which can be considered as significant statistically

CONCLUSION

This study has provided an opportunity to evaluate the effect of the epidural steroid injection in the patients of lumbar spondylosis and we found that the patients of lumbar spondylosis got relief of symptoms upto 2 months of the epidural steroid injection according to study period and which is much cost effective and risk free than any surgical procedure. Also, the range of movement of leg was improved.

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