

Comparison of Treatment Outcome of Transforaminal and Caudal Epidural Steroid Injections for Radiating Low Back Pain

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ABSTRACT

Introduction: Back pain is one of the most common reasons for the patients to seek emergency care. Caudal-ESI is both the safest and the easiest epidural injection, and it does not always require fluoroscopic guidance. Transforaminal ESI seems to be more effective at reducing pain, improving functionality, and preventing spinal surgery, based on the data reported in previous studies and systematic reviews. Hence; under the light of above mentioned data the present study was undertaken for assessing and comparing the efficacy of Transforaminal and Caudal Epidural Steroid Injections Outcome for the treatment in patients with chronic low back pain.

Material and methods: A total of 20 patients with chronic low back pain who underwent treatment with Transforaminal or caudal epidural steroid injection were enrolled in the present study. Patients belonged to the age group of 20-75 years of age. All the patients were divided into two groups with 10 patients in each group as follows: Group 1 included patients who were given injections through Transforaminal route, while group 2 included patients who were given injections through caudal route. Pain relief after the epidural steroid injection using Visual analogue scale (VAS). Clinical profile of the subjects was obtained and details were filled in a proforma. All the results were summarized in Microsoft excel sheet and were analyzed by SPSS software.

Results: Mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post-injection 3 month for subjects of group 1 was found to be 7.5, 4.3, 3.5 and 3.4 respectively. Mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post-injection 3 month for subjects of group 2 was found to be 7.2, 5.1, 4.1 and 4.2 respectively. While comparing the mean VAS among the patients of both the study groups, at different post-treatment time intervals, significant results were obtained.

Conclusion: Transforaminal approach demonstrated superior effectiveness and should be performed with increasing frequency.

Keywords: Transforaminal, Caudal, Steroid

INTRODUCTION

Back pain is one of the most common reasons for the patients to seek emergency care. It has a broad range of potential etiologies for both adult and pediatric populations. Lower back pain is a common problem. Nearly everyone is affected by it at some point in one's life. There is a generally accepted method for the management of lower back pain for up to 6 weeks (severe back pain). It was unclear how severe the back pain was in people with pain and disability for over six weeks.¹⁻³

Musculoskeletal conditions such as back pain have a major impact on the health care system due to the combined high prevalence and associated disability. The total cost of back pain worldwide is estimated to represent billions of dollars annually. Corticosteroid injections have shown an early and moderate but not sustained improvement compared to placebo in specific outcomes. Corticosteroids have shown good efficacy in reducing pain in a large proportion of patients with lumbar radicular pain.²⁻⁴ The steroid injection was first used in 1953, since then it has been increasingly utilized as it was found to have local anti-inflammatory function due to inhibition of secretion of cytokines, thereby reducing pain. Therefore, corticosteroid injections were considered as an efficient and safe choice. Complications from corticosteroid injection are rare. However Surgery particularly is the main treatment modality recommended for treatment leading to decrease in pain score.³⁻⁶ Most Epidural steroid injections (ESIs) are used combining with local anesthetics. Caudal-ESI is both the safest and the easiest epidural injection, and it does not always require fluoroscopic guidance. Transforaminal ESI seems to be very effective in reducing pain, improving performance, and preventing spinal surgery, based on data reported in previous studies and systematic reviews.⁵⁻⁷ Hence; under the light of above mentioned data the present study was undertaken for assessing and comparing the efficacy of Transforaminal and Caudal Epidural Steroid Injections Outcome for the treatment in patients with chronic low back pain.

MATERIAL AND METHODS

A total of 20 patients with chronic low back pain who underwent treatment with Transforaminal or caudal epidural steroid injection were enrolled in the present study. Patients belonged to the age group of 20-75 years of age. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients

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after explaining in detail the entire research protocol. All the patients were divided into two groups with 10 patients in each group as follows: Group 1 included patients who were given injections through Transforaminal route, while group 2 included patients who were given injections through caudal route. With all aseptic precautions, in group 1 (Transforaminal), Patients were placed in the prone position and were supported by pillows under the abdomen to reduce lumbar lordosis. The needle tip was advanced slowly and cautiously past the superior articular process lateral surface. Patients of group 2 (Caudal) were placed in prone position for fluoroscopy-guided caudal epidural injection. In lateral view of fluoroscopy, the sacral hiatus could be identified as an abrupt drop off at the end of S4 lamina. Proper needle tip placement was verified by observing spread of contrast medium within the epidural space. Patient monitored for 15 mins after the procedure and observed for immediate side effects. Pain relief after the epidural steroid injection using Visual analogue scale (VAS). Clinical profile of the subjects was obtained and details were filled in a proforma. All the results were summarized in Microsoft excel sheet and were analyzed by SPSS software. Chi- square test and student t test was used for assessment of level of significance.

RESULTS

In the present study, a total of 20 patients with chronic low back pain were analysed. All the patients were divided into two groups with 10 patients in each group. Mean age of the patients of group 1 and group 2 was 45.8 years and 42.8 years respectively (table-1). 40 percent of the patients of Group 1 and 50 percent of the patients of Group 2 were females while the remaining were males (table-2). In the present study, mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post-injection 3 month

Age group (years)	Group 1		Group 2	
	Number	Percentage	Number	Percentage
18-30	1	10	1	10
31-40	2	20	1	10
41-50	4	40	4	40
51-60	3	30	4	40
Mean	45.8		42.8	

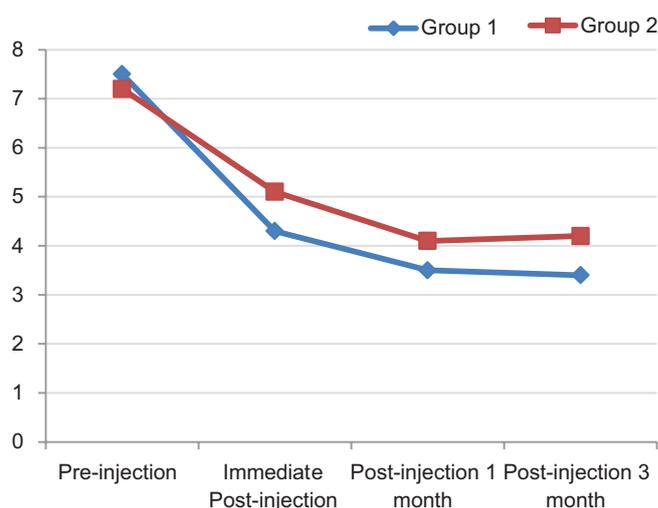
Table-1: Age-wise distribution of patients

Gender	Group 1		Group 2	
	Number	Percentage	Number	Percentage
Males	4	40	5	50
Females	6	60	5	50
Total	10	100	10	100

Table-2: Gender-wise distribution

Time interval	Group 1	Group 2	p- value
Pre-injection	7.5	7.2	0.12
Immediate Post-injection	4.3	5.1	0.00
Post-injection 1 month	3.5	4.1	0.00
Post-injection 3 month	3.4	4.2	0.00

Table-3: Mean VAS Score



Graph-1: Comparison of mean VAS

for subjects of group 1 was found to be 7.5, 4.3, 3.5 and 3.4 respectively (table-3). Mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post-injection 3 month for subjects of group 1 was found to be 7.2, 5.1, 4.1 and 4.2 respectively (fig-1). While comparing the mean VAS among the patients of both the study groups, at different post-treatment time intervals, significant results were obtained.

DISCUSSION

Epidural steroid injections (ESIs) have been performed for decades and are one of the most commonly used spinal injections. The lumbar epidural steroid injection (LESI) was performed in the form of Transforaminal (TF), caudal (C), or interlaminar (IL) in the lumbar spine; these methods offer different advantages and disadvantages, which may result in different results. Transforaminal ESI appears to be very effective in reducing pain, improving performance, and preventing spinal surgery, based on data reported in previous studies and systematic reviews. Some relevant research has already been done comparing the effectiveness of the Transforaminal and Interlaminar route, but no comparison of the Transforaminal and Caudal route has been successfully performed. However, it remains to be debated whether TF or C methods should be used in clinical practice, and no explanatory standards regarding the Lumbar Epidural Steroid Injection exist. It is therefore necessary to compare the clinical efficacy of the various procedures to create data that can be used to build clinical guidelines.⁷⁻⁹ Hence; under the light of above mentioned data the present study was undertaken for assessing and comparing the efficacy of Transforaminal and Caudal Epidural Steroid Injections Outcome for the treatment in patients with chronic low back pain.

In the present study, a total of 20 patients with chronic low back pain were analysed. All the patients were divided into two groups with 10 patients in each group. Mean age of the patients of group 1 and group 2 was 45.8 years and 42.8 years respectively. Mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post-

injection 3 month for subjects of group 1 was found to be 7.5, 4.3, 3.5 and 3.4 respectively. Jung et al in their study of comparison of transforaminal epidural steroid injection and lumbar/caudal epidural steroid injection for the treatment of Lumbosacral Radiculopathy stated that an epidural steroid injection (ESI) is usually used for the treatment of low back pain with radiculopathy. An ESI can be performed by two procedures: I) a lumbar or caudal epidural steroid injection and II) a transforaminal epidural steroid injection. Ninety-three patients who had undergone transforaminal epidural steroid injection (Group II) and either a lumbar or caudal epidural steroid injection (Group I) were retrospectively studied. They assessed the pain, walking, standing improvement and side effects after each procedure, which were evaluated as being very good, good, fair or poor. There were no statistically significant differences in the pain, walking, standing improvement and side effects between the two groups. However, there was a statistically significant difference in the pain improvement following transforaminal epidural steroid injection in those not effectively responding to an initial lumbar or caudal epidural block in Group II.⁹

In the present study, Mean VAS at Pre-injection, Immediate Post-injection, Post-injection 1 month and Post-injection 3 month for subjects of group 1 was found to be 7.2, 5.1, 4.1 and 4.2 respectively. When we compared the mean VAS between the patients of both study groups, at different time points after treatment, significant results were obtained. Lee JH et al investigated whether surgical resection (TFESI) is more important than caudal injection (CESI) for detecting clinical outcomes in patients with lumbosacral disc herniation (LDH). Articles were selected that compared the therapeutic efficacy of TFESI and CESI in the treatment of lower back pain and leg symptoms caused by LDH. Literature searches were conducted using MEDLINE, EMBASE, Cochrane, and Korean databases of studies published until July 2017. After reviewing the articles, immigrants, and full text of 6,711 subjects after the first data search, six studies were included in the standard information. Data including pain scores, performance points, and follow-up time were extracted from four studies and analyzed using a random effects model to determine effect size and their statistical significance. Evaluation of the quality and level of evidence was established based on the grade of evaluation of recommendations, development and evaluation methodology. Among the six studies, four articles supported the rise of TFESI to CESI, one article showed no significant difference, and one article supported the rise of CESI in TFESI. To obtain concurrent or higher clinical outcomes on TFESI, CESI may need to inject a greater number of medications than was commonly used. The meta-analysis showed a short-term and long-term tendency for better performance of TFESI than CESI without counting. The level of evidence was low because of impartiality and impartiality. A thorough review of selected articles revealed better clinical benefits with TFESI than CESI, probably because TFESI was able to deliver the drug directly to the target site.¹⁰

CONCLUSION

From the above results, the authors concluded that Transforaminal approach demonstrated superior effectiveness and should be performed with increasing frequency. However; further studies are recommended.

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