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Original Research Article

To Determine the Impact of Caudal Epidural Steroid Injection (CESI) on the Condition of Backache Sciatica Syndrome: a Retrospective Study

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Abstract

Aim: To determine the impact of Caudal Epidural Steroid Injection (CESI) on the condition of Backache Sciatica Syndrome.

Material and Methods: This study was done in the Department of PMR, ANMMCH, Gaya. A total of 120 individuals with chronic LBA and symptoms who had not responded to therapy or other non-invasive, non-surgical conservative treatment options were included in the study. The patients underwent cervical epidural steroid injection (CESI) under sterile conditions in the OT with fluoroscopic guidance. The study evaluated the results of the caudal epidural steroid injections by measuring ache scores on the Oswestry disability index (ODI) and visual analog scale (VAS).

Results: Of the 120 cases, 37 had lumbar disc herniation, 11 had lumbar canal stenosis, 22 had degenerative disc disease, and 50 had non-specific LBA. This passage describes a study in which patients were treated with a procedure called CESI, and their pain levels were measured before the procedure (mean VAS of 7.11) and at various follow-up intervals, including 1 week, 1 month, and 3 months up to 1 year after the procedure. At 1 year, the mean VAS was 4.82, indicating a decrease in pain from before the procedure. This passage discusses the results of a study that looked at the effectiveness of ESI treatment (presumably epidural steroid injection) on patients' scores on ODI before and after treatment. The study found that the mean ODI score before treatment (was 59.12), and after 12 months of treatment with injection, it was 44.64. The study also reported that 27.5% of patients had excellent results, 38.33% had good results, 21.67% had fair results, and 12.5% had poor results from the treatment.

Conclusion: This study suggests epidural steroid injections significantly reduce pain for patients with chronic function-limiting low back aches. This study may pave the way for further research in this area.

Keywords: Epidural Steroid Injections, Low Backache, Rehabilitation.

Introduction

Backache and sciatica are prevalent health issues that significantly impact individuals' quality of life and functional capabilities. Sciatica, characterized by pain radiating from the lower back down the leg, is often caused by compression or irritation of the sciatic nerve. Various etiologies, such as herniated discs, spinal stenosis, and degenerative disc disease, can contribute to this condition. [1-6] Management of backache and sciatica syndrome typically involves conservative treatments such as physical therapy, analgesics, and anti-inflammatory medications. However, when these measures fail to provide adequate relief, more invasive interventions like Caudal Epidural Steroid Injection (CESI) are considered. CESI involves the injection of corticosteroids and local anesthetics into the epidural space via the caudal canal. This method aims to reduce inflammation and provide pain relief by delivering medication directly to the site of nerve irritation. [7-11] CESI is particularly beneficial for patients with chronic back pain and sciatica, offering an alternative to surgical interventions. The efficacy of CESI in alleviating back pain and sciatica is attributed to the anti-inflammatory properties of corticosteroids, which inhibit the production of pro-inflammatory cytokines and reduce nerve root edema. Additionally, the local anesthetic component provides immediate pain relief by blocking nerve conduction. The combination of these agents helps to break the pain cycle and facilitates improved mobility and function. Several studies have evaluated the effectiveness of CESI in managing backache and sciatica syndrome. [12-14]

Material and Methods

This study was done in the Department of PMR, ANMMCH, Gaya, Bihar, India for one year. A total of 120 individuals with chronic LBA and symptoms who had not responded to therapy or other non-invasive, non-surgical conservative treatment options were included in the study. Patients with diabetes mellitus, prior lumbar disc surgery, motor deficit, trauma, local or systemic infection, or malignancy were excluded from the study. The patients underwent cervical epidural steroid injection (CESI) under sterile conditions in the OT with fluoroscopic guidance. The procedure was done in the prone position, with the skin area (sacral hiatus) infiltrated with injectable 1% lignocaine. A Tuohy needle (18 gauge) was through the sacral hiatus route, and the C-arm image's lateral view approves the correct needle placement. Diluted Iohexol dye was inserted, and upon confirmation of the dye spill, the required CESI was given in each dose session. The patients were then shifted to the recovery room and the ward following hemodynamic stabilization and discharged after starting rehabilitation exercises and medication. The study evaluated the results of the caudal epidural steroid injections by measuring ache scores on the Oswestry disability index (ODI) and visual analog scale (VAS). Two epidural doses were given to 25 patients. In comparison, a 3rd dose was administered to 10 patients. Patients who had not experienced pain reduction were given the second dose one month later. After three months of the second treatment, patients who did not get pain relief were given a third dose. To examine the ODI and VAS scores, the research was followed up with patients after a continuous cyclical break of 3 months up to 1 year. Depending on previously determined criteria for pain relief and activity levels measured by VAS and ODI scores, the cases were divided into excellent, good, fair, and poor categories.

Results

This study involved 165 patients who were given CESI. Out of these, a single injection is put to 85 patients, two injections are put to 25 patients, and three injections are put to 10 patients [Table 1]. The study focused on 120 cases of LBA and included 50 male and 70 female patients [Table 2]. Of the 120 cases, 37 had lumbar disc herniation, 11 had lumbar canal stenosis, 22 had degenerative disc disease, and 50 had non-specific LBA [Table 3]. This passage describes a study in which patients were treated with a procedure called CESI, and their pain levels were measured before the procedure (mean VAS of 7.11) and at various follow-up intervals, including 1 week, 1 month, and 3 months up to 1 year after the procedure. At 1 year, the mean VAS was 4.82, indicating a decrease in pain from before the procedure [Table 4]. This passage discusses the results of a study that looked at the effectiveness of ESI treatment (presumably epidural steroid injection) on patients' scores on ODI before and after treatment. The study found that the mean ODI score before treatment (was 59.12), and after 12 months of treatment with injection, it was 44.64 [Table 5]. The study also reported that 27.5% of patients had excellent results, 38.33% had good results, 21.67% had fair results, and 12.5% had poor results from the treatment [Table 6]

Table 1 Number of epidural doses given

Number of patient (120)	Number of ESI	Total dose (165)
85	01	85
25	02	50
10	03	30

Table 2 Gender distribution of cases of ESI

Gender	Number of cases (120)	%
M	50	41.67
F	70	58.33

Table 3 Causes of LBA

Cause number	No. of cases	%
Non-specific	50	41.67
Lumbar disc herniation	37	30.83
Lumbar canal stenosis	11	9.17
Degenerative disc disease	22	18.33
Total	120	100

Table 4 Mean VAS score

Time interval	Mean	SD (standard deviation)

Pre-injection	7.11	1.19
At 1 week	3.81	0.81
At 1 month	3.62	0.78
At 3 months	4.08	0.74
At 6 months	4.26	0.78
At 9 months	4.51	0.87
1 year	4.82	0.78

Table 5 ODI score (percentage)

Time interval	Mean	SD
Pre-injection	59.12	7.77
At 1 week	26.21	4.62
At 1 month	25.55	3.84
At 3 months	24.77	2.88
At 6 months	23.03	4.39
At 9 months	41.11	7.62
1 year	44.64	7.58

Table 6 Results after intervention by ESI

Result	Number of patients (120)	%
Excellent	33	27.5
Good	46	38.33
Fair	26	21.67
Poor	15	12.5

Discussion

ESI is a minimally intrusive method for treating low back pain with radiculopathy. Despite the risks associated with the procedure, such as infection and epidural hematoma, the risk-to-benefit ratio makes ESI a compliant and cost-effective treatment option in orthopedics. In our study, none of these complications were observed. [14] LMA has become a common issue due to inappropriate positions, no exercise, and a sedentary lifestyle. Prolonged use of analgesics is not advisable as it can lead to other complications. Various physical therapy techniques, manipulations, and lumbar traction are utilized for low back pain, but the result is unfair. Surgical procedures are advised only in cases where the neurological condition is deteriorating. [15] Through a minimum range of treatment options, many patients with low back pain visit orthopedic clinics. ESI can be administered through caudal, interlaminar, or transforaminal approaches. We employed the caudal epidural method in our study and were satisfied with the outcomes. At the local site, corticosteroids provide anti-inflammatory and immunosuppressive effects. They function by preventing the formation of brain peptides and stabilizing membranes. [16] According to research by Panayiotis *et al.*, 68% of patients were asymptomatic, 20% of patients' pre-injection symptoms remained unchanged, and 12% of patients reported varying degrees of pain alleviation following ESI. Peng *et al*. proposed that the fundamental mechanism of radiating leg pain in individuals with discogenic LBA may be the release of chemical mediators or inflammatory cytokines into the epidural space through rips, which could cause harm to nearby nerve roots. [17] Choi *et al*. discovered in meta-analysis research that the ESI advantages for low back pain are limited to less than six months. After caudal ESI, our study produced immediate benefits of pain reduction for 9-12 months. [18] In our study, 85% of patients experienced significant pain alleviation after three months, and 62% experienced moderate improvement after a year. Only 10 individuals needed a third dose because they still had pain and symptom alleviation even after two ESI. [19] It is crucial to remember that ESI should not be administered to pregnant patients (due to fluoroscopy exposure) with any bleeding issue or any type of local or systemic infection. Additionally, patients with congestive heart failure, diabetes mellitus, and allergies to local anesthetic drugs should not use them. In higher doses, corticosteroids may suppress the hypothalamic-pituitary axis and result in adrenal dysfunction. Although using ESI has been associated with problems like an epidural abscess, bacterial meningitis, dural puncture, and aseptic meningitis, the only issue was pain at the ESI site in nine individuals treated using conservative methods. [20]

Conclusion

This study suggests epidural steroid injections significantly reduce pain for patients with chronic function-limiting low back aches. This study may pave the way for further research in this area.

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