Indian Journal of Orthopaedics Surgery 2019;5(4):247–251

Content available at: iponlinejournal.com

Indian Journal of Orthopaedics Surgery

Journal homepage: www.innovativepublication.com

Original Research Article

Role of caudal epidural steroid injections in the management of chronic low backache

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ARTICLE INFO

Article history:
Received 16-10-2019
Accepted 27-11-2019
Available online 06-01-2020

Keywords:
Low back pain
caudal epidural injection
conservative treatment
visual analogue scale.

ABSTRACT

Introduction: Back pain especially in lumbar region has increased to epidemic proportions in general population. It may have associated radiculopathy. Conservative treatment is mainstay treatment for all eviating pain and radiculopathy. A dependable alternative is epidural steroid injection given in multiple doses.

Materials and Methods: 50 Patients were treated with caudal epidural steroid injection for chronic low backache of more than three months at our institute. They were evaluated clinically before and after epidural steroid on the basis of pain, unrestricted activities of day to day life and work performance on the basis of visual analogue scale and oswestry disability index.

Results: Patients were followed for one year. They were categorized into excellent, good, fair and poor on the basis of pain alleviation and capability to work. We reported excellent 13, good 15, fair 12 and 10 poor results. Three patients required surgery for disc prolapse. Only complication reported was pain at epidural injection region.

Conclusion: Epidural steroids are slowly proving to be a reliable alternative for all eviating pain and radiculopathy for a short term. It provides significant symptom free time for patients to receive physiotherapy that is crucial for early and adequate rehabilitation.

1. Introduction

Incidence of pain in lumbar region or low back pain (LBP) seems to threaten to rise to epidemic proportions while calculating frequency of patients reporting to orthopaedic departments and those seeking pain reliefs in day to day practice. In many cases, LBP is associated with sciatica. Lumbar disc herniation, degenerative disc d isease, lumbar canal stenosis, facet arthropathy and idiopathic pain are common causes of chronic LBP. A detailed history and general physical examination can provide a valuable information regarding etiology of pain. Observation of gait and posture, range of motion of spine, palpation of spine, heel to toe walk, squat and rise, straight leg raising test (SLR), superficial and deep reflexes, motor and sensory testing are often sufficient to rule out any serious condition that requires immediate further evaluation and intervention. The possibility of referred pain from other organ systems must be kept in mind.

Low back pain when treated by irregular medication, inadequate rest and lack of exercises accelerates towards a chronic phase. Various researches have attributed chronic LBP to internal disc disruptions in lumbar region. In a study by Verrills P et al,[1] discogenic pain prevalence has been reported as 21.8% by lumbar discography. Plan of treatment should be reassessed if there is no significant improvement in symptoms after 4 to 6 weeks. Epidural steroids are commonly used in intervention al management for pain in many countries including United States.[2]

First published report of injection of steroids into arthritic joints was in 1951 by Hollander et al.[3] Steroids were first used in treatment of lumbar radiculopathy in 1950s and 1960s.[4] When epidural steroid administration was found to be effective for management of sciatica, it was adapted

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https://doi.org/10.18231/j.ijos.2019.049

for other types of neural blockade that included facet joint blocks.[5,6]

Methylprednisolone acetate, triamcinolone diacetate and triamcinolone acetonide etc. have been used for neural blockade for pain management. Concerns regarding steroid toxicity to nerves originate from potential toxicity by multiple chemical entities like polyethelene glycol, benzyl alcohol etc. used in epidural steroid injections. Epidural steroid injections (ESI) provide a significant pain free period for patients to undergo rehabilitation and hence an early recovery to work. Surgical treatment is offered to patients not responding to conservative methods or in patients with worsening neurological deficits.

The aim of this study was to evaluate the functional outcomes in cases of chronic low back ache of more than three months managed by caudal epidural steroid injections at department of orthopaedics, government medical college Patiala.

1.1. Method of caudal epidural injection

We treated 50 cases of LBP with caudal epidural steroids under sterile conditions in operating room under guidance of fluoroscopic control that fulfilled the required inclusion criteria and were not responding to other non surgical and non invasive methods.

Inclusion criteria were chronic low back pain patients with sensory symptoms not responding to conservative management. Exclusion criteria were prior lumbar disc surgery and any motor deficit. Patients were thoroughly examined and routine investigations done.

1.2. Dose formulation

Methyleprednisolone-80 mg, bupivacane 0.5% (6ml), normal saline 32 ml

Patient was put in prone position with a pillow under pubic symphysis. Area of skin over sacral hiatus was infiltrated with 1% lignocaine. After piercing sacrococcygeal ligament, an 18 gauge Tuohy needle was introduced into sacral canal through sacral hiatus route. Accurate placement of epidural injection needle was confirmed by lateral view of c arm image intensifier and ESI dose was given.

We noted the pain scores on visual analogue scale (VAS) and Oswestry disability index (ODI) to evaluate the results after caudal ESI. Cases were evaluated as per their ability to perform activities and their ability to return to work before and after the administration of ESI. A total of three epidural doses were given. Second dose was given after a gap of three weeks to patients with insignificant / no pain relief. Third dose was given only in patients not achieving any pain relief after three months. Further follow up in cluded evaluation of VAS and ODI after a periodical gap of three months regularly up to one year. Cases were categorized

Fig. 1: Showing prone position of patient for caudal ESI

Fig. 2: Showing needle insertion for caudal ESI

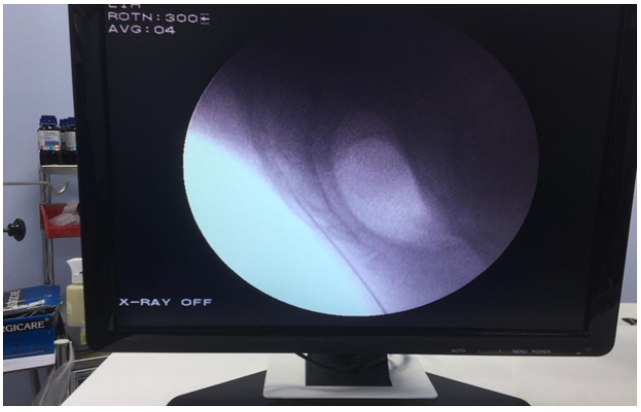

Fig. 3: Showing fluoroscopic image of caudal ESI technique

as per excellent, good, fair and poor depending upon pre decided criteria of pain relief and activity levels as per VAS and ODI scores.

2. Results

Following step by step outline for performing this interventional procedure, using high quality fluoroscopic equipment we made following observations-

1. Total 75 doses of caudal epidural steroids were used in 50 patients.
2. Age of cases varied from 21 to 64 years (mean age 38 year).
3. Number of males was 24 and female s 26.
4. 60% of all cases received symptomatic partial pain relief after first dose within next two days while others in three weeks.
5. Average duration of pain relief was 42 days (range 12 days to one year).
6. All patients were evaluated by radiological examination by x rays to rule out any significant or concurrent abnormality.
7. Further evaluation by magnetic resonance imaging was done for thirty five cases which showed single or multiple level lumbar discs prolapsed for 15 cases, degenerative disc disease in 10 cases and mild to moderate lumbar canal stenosis in 7 cases.
8. We did not observe any major complication during or after the procedure.

Table 1: Showing number of epidural doses given

Number of patients	Number of ESI doses	Total doses
30	01	30
15	02	30
05	03	15

Total 75 ESI were given to fifty patients. Thirty patients were given single injection, while 15 had two and 5 received three.

Table 2: Showing sex distribution of cases of ESI

Sex of patient	Number of cases	Percentage
Males	24	48
Females	26	52

We included total 50 cases in this study, 24 were males and 26 females with chronic LBP.

Out of 50 cases of LBP, Lumbar disc herniation was seen in 15, lumbar canal stenosis in 7 and degenerative disc disease in 10 cases while 18 cases had non-specific LBP.

Table 3: Showing causes of LBP

Cause	Number of cases	percentage
Non specific	18	36
Lumbar disc herniation	15	30
Lumbar canal stenosis	7	14
Degenerative disc disease	10	20

2.1. Follow Up

Follow up was done at one week, three weeks and then every three months up to twelve months of treatment (post third ESI 9 months).

Table 4: Showing mean VAS score

Time interval	Mean	SD (standard deviation)
Pre injection	6.92	1.19
At one week	3.84	0.77
At three weeks	3.64	0.75
At three months	3.92	0.75
At six months	4.13	0.78
At nine months	4.41	0.88
At twelve months	4.62	0.72

Mean pre ESI, VAS was 6.92 while it was 4.62 at twelve months of treatment.

Table 5: Showing ODI score (percentage)

Time interval	Mean	SD
Pre injection	59.2	7.54
At one week	26.01	4.40
At three weeks	25.35	3.66
At three months	24.57	2.78
At six months	23.01	4.40
At nine months	41.29	7.53
At twelve months	44.67	7.48

Mean pre ESI, ODI score was 59.2 while after twelve months of treatment with ESI it was 44.67

Table 6: Showing results after intervention by ESI

Result	Number of patients	percentage
Excellent	13	26
Good	15	30
Fair	12	24
Poor	10	20

3. Results

We obtained excellent results in 26 percent, good in 30 percent, fair in 24 percent while poor in 20 percent patients.

4. Discussion

Back pain especially in lumbar region has become a routine problem due to faulty postures, lack of exercises, and excessive burden on spine with or without history of minor to moderate trauma. Prolonged use of analgesics is neither advisable nor beneficial. Lumbar tractions, various physiotherapy techniques, manipulations, all have been used for LBP but with inconsistent results. Surgical interventions are recommended for incessant cases or with a deteriorating neurological status only. With such a limited armamentarium, there are a big number of unsatisfied / unrelieved patients of LBP visiting various orthopaedic departments.

Epidural steroid injections can be used by caudal, interlaminar or transforaminal approaches. Robechhi and Capra, (1952)[7] and Lievre (1953)[8] described use of ESI by transforaminal route while use of corticosteroids by caudal epidural space was reported in 1957 by Cappio.[9] We used caudal epidural technique and found satisfying results.

Corticosteroids exert both anti inflammatory and immunosuppressive effects. These have various modes of action like membrane stabilization and inhibition of neural peptide synthesis.

Panayiotis JP et al (2001)[10] conducted a study on treatment of lumbosacral radicular pain with epidural steroid injections. They concluded that 68% of patients were asymptomatic, 20% had no change in pre injection radicular symptoms, and 12% had various degrees of pain relief.

Peng et al (2007)[11] observed in a study over 42 patients that leakage of chemical mediators or inflammatory cytokines produced in a painful disc into epidural space through annular tear could lead to injury to adjacent nerve roots and might constitute the primary pathophysiological mechanism of radiating leg pain in patients with discogenic low back pain but with no disc herniation.

Ackerman et al (2007)[12] documented change of pain score and functional score only after 2 weeks of treatment with ESI and followed cases up to 24 weeks. We could obtain comparable results after second ESI at three weeks. In a meta-analysis study, Choi H J et al (2013)[13] studied long term benefits of epidural steroids in LBP in terms of pain, disability and subsequent surgery. There study suggested benefits for less than six months only. We achieved short term benefits of pain relief for 9 to 12 months after caudal ESI.

In a systemic review by Jun L et al (2016)[14] for comparing effectiveness of transforaminal versus caudal ESI for mana ging lumbosacral radicular pain, the outcomes and clinical significance of 6 prospective studies were summarized. They found both transforaminal and caudal ESI to be similarly effective. Transforaminal ESI was more effective for pain over duration of less than six months and caudal ESI exhibited better impact on both pain and functionality over a longer period (12 months). The current study obtained significant pain relief by caudal route in 80 percent cases over a period of three months and moderate relief in 56 percent cases over twelve months. Only three patients required further surgery as they were not relieved of pain and radicular symptoms even after two ESI. Singh H et al (2018)[15] concluded that better results can be obtained with caudal ESI in patients presenting earlier.

ESI should not be given to antenatal patients (due to fluoroscopy exposure), cases with any bleeding disorder, any local or systemic infections. These should be avoided in patients with allergy to local anaesthetic agents and patients with congestive cardiac failure and diabetes mellitus. Corticosteroids may cause adrenal dysfunction and suppression of hypothalamic – pituitary axis suppression in larger doses. Though Dural puncture (0.5 to 5%),[4] bacterial meningitis, aseptic meningitis and epidural ab scess[16,17] have been reported with use of ESI ,we reported complication of pain at the ESI site only in 4 patients. This was managed with conservative means.

5. Conclusion

ESI can be used as alternate method of treatment to patients with chronic LBP not responding to other conventional non surgical methods of treatment. They may reduce t he need of subsequent surgeries. Caudal ESI can be given easily and are a day care procedure only. When done under adequate aseptic conditions and a good quality fluoroscope, caudal ESI are a relatively safe procedure in experienced hands in carefully selected cases.

6. Source of Funding

None.

7. Conflict of Interest

None.

8. Consent of Patients

Taken

9. Ethical committee approval

Taken

References

1. Verrills P, Nowesenitz G, Barnard A. Prevalence and characteristics of discogenic pain in tertiary practice: 223 consecutive cases utilizing lumbar discography. *Pain Med*. 2015;16(8):1490–1499.
2. Manchikanti L, Pampati V, Falco FJ. Hirsch JA-Growth of spinal interventional pain management techniques: Analysis of utilization trends and medicare expenditures 2000 to 2008. *Spine*. 2000;38:157–168.
3. Hollander JL, Brown EMJ, Jessar RA, Brown CY. Hydrocortisone and cortisone injected into arthritic joints; comparative effects of and

use of hydrocortisone as a local anti arthritic agent. *J Am Med Assoc*. 1951;147:1629–1635.
4. Bogus N, Christophidis N, Cherry D. Epidural use of steroids in the management of back pain. Report of the working party. NHMC, Canberra, Australia ; 1994,. p. 1–76.
5. Goebert HW, Jallo SJ, Gardener WJ, Wasmuth C. Painful radiculopathy treated with epidural injections of procaine and hydrocorisone acetate results in 113 patients. *Anesth Analg*. 1961;14:130–164.
6. Mcclain RF, Kapural L, Mekhail NA. Epidural steroid therapy for back and leg pain: mechanisms of action and efficacy. *Spine J*. 2005;50:191–201.
7. Robecchi A, Capra R. Hydrocortisone (compound F); first clinical experiments in the field of rheumatology. *Minerva Med*. 1952;43(98):1259–1263.
8. Lievre JA, Bloch-Mechel H, Pean G. Lhydrocortisone en injection locale. *Rev Rhum*. 1953;20:310–311.
9. II trattamento idrocortisonico per via epidurale sacrale delle lombosciatalgie. *Reumatismo*. 1957;9:60–70.
10. Panayiotis J. Treatment of Lumbosacral Radicular Pain with Epidural Steroid Injections. *Orthopaedics*. 2001;24(2):145–149.
11. Peng B, Wu W, Li Z, Guo J, Wang X. Chemical radiculitis. *Pain*. 2007;127:11–16.
12. Ackerman WE, Ahmed M. The efficacy of lumbar epidural steroid injections in patients with lumbar disc herniations. *Anesth Analg*. 2007;104:1217–1222.
13. Choi HJ, Hahn S, Kim CH, Jang BH, Park S. Epidural steroid injection therapy for low back pain: a meta-analysis. *IJTA Health Care*. 2013;29(3):244–253.
14. Jun L, Hengxing Z, Lu L, Xueying L, Jun J. The effectiveness of transforaminal versus caudal routes for epidural steroid injections in managing lumbosacral radicular pain. *Med*. 201695;p. 1–11.
15. Singh H. Correlation of functional results of caudal epidural steroid injections with duration of symptoms in PIVD. *Int J Re Orthop*. 2018;4(3):458–462.
16. Manchikanti L, Staats PS. Evidence based practice guidelines for interventional techniques in the management of chronic spinal pain. *Pain Physician*. 2003;6:3–80.
17. Boswell MV, Trescot AM. Interventional techniques: Evidence based practice guidelines in the management of chronic spinal pain. *Pain Physician*. 2007;10:7–111.

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Cite this article: Sreen S, Sahni G, Arora S, Kumar A, D. Role of caudal epidural steroid injections in the management of chronic low backache. *Indian J Orthop Surg* 2019;5(4):247-251.