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Original Research Article

A prospective clinical assessment of the role of caudal epidural steroid injections in the management of chronic low backache

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Abstract

Aims: The aim of this study was to find Role of caudal epidural steroid injections in the management of chronic low backache.

Materials and Methods: A prospective study was conducted in the Department of Orthopaedics, Shri Shankaracharya Institute of Medical Sciences, Bhilai, Chhattisgarh, India for the period of 1 year. Total 80 Patients with chronic low back pain and sensory symptoms not responding to conservative management were include in this study. 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: Total 120 ESI were given to 80 patients. 50 patients were given single injection, while 20 had two and 10 received three ESI doses**.** We included total 80 cases in this study, 35 were males and 45 females with chronic LBP.Out of 80 cases of LBP, Lumbar disc herniation was seen in 26, lumbar canal stenosis in 8 and degenerative disc disease in 14 cases while 32 cases had non-specific LBP. Follow up was done at one week, one month and then every three months up to twelve months of treatment (post third ESI 9 months).Mean pre ESI, VAS was 7.06 while it was 4.75 at one year of treatment. Mean pre ESI, ODI score was 58.88 while after twelve months of treatment with ESI it was 44.74 at one year. We obtained excellent results in 26.75 percent, good in 37.5 percent, fair in 22.5 percent while poor in 13.75 percent patients.

Conclusion: ESIs are very effective and significantly reduce pain in patients with chronic function-limiting LBP.

Keywords: Low back pain, Epidural steroid injections

Introduction

Low back pain (LBP) is a most common problem. Approximately 80% Indian experience LBP during their lifetime. An estimated 15-20% develops protracted pain, and 2-8% has

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chronic pain. Every year, 3-4% of the population is temporarily disabled, and 1% of the working-age population is disabled totally and permanently because of LBP [1]. LBP is second only to the common cold as a cause of lost work time; it is the fifth most frequent cause for hospitalization and the third most common reason to undergo a surgical procedure. LBP is defined as chronic after 3 months because most normal connective tissues heal within 6-12 weeks unless pathoanatomic instability persists. A slowed rate of tissue repair in the relatively avascular intervertebral disc may impair the resolution of chronic LBP. Traumatic or degenerative conditions of the spine are the most common causes of chronic LBP. A number of anatomic structures of the lumbar spine have been considered as the origin of LBP [2-6]. Many studies have shown significant improvement with epidural injections with or without steroids in patients with chronic LBP. Among the multiple interventions used in managing chronic spinal pain; lumbar epidural injections have been used extensively to treat lumbar radicular pain. Epidural steroid injections (ESIs) are a common treatment option for many forms of LBP and leg pain. They have been used for low back problems since 1952 and are still an integral part of the non-surgical management of sciatica and LBP. The goal of the injection is pain relief; at times the injection alone is sufficient to provide relief, but commonly ESIs is used in combination with a comprehensive rehabilitation program to provide additional benefit [7-8]. However, there is a paucity of studies exploring the prediction of the therapeutic efficacy of an epidural injections are administered by accessing the lumbar epidural space by multiple routes including transforaminal, caudal, and interlaminar. Substantial differences have been described among these 3 approaches, with the transforaminal approach having the advantage of being target-specific and using the smallest volume, fulfilling the aim of reaching the primary site of pathology, namely the ventral lateral epidural space [9-11]. In our set up, ESIs are routinely used to support non-operative treatment for chronic LBP and our anecdotal perception is that a considerable proportion of patients report substantial pain relief after this procedure and save health care costs.

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.

Materials and Methods

A prospective study was conducted in the Department of Orthopaedics, Shri Shankaracharya Institute of Medical Sciences, Bhilai, Chhattisgarh, India for the period of 1 year, after taking the approval of the protocol review committee and institutional ethics committee. After taking informed consent detailed history was taken from the patient.

Methodology

Total 80 patients of LBP with caudal epidural steroids under sterile conditions in operating room under guidance of fluoroscopic control that fulfilled the required inclusion criteria and was not responding to other non-surgical and non-invasive methods.

Patients with chronic low back pain and sensory symptoms not responding to conservative management were include in this study. Patient's prior lumbar disc surgery and any motor deficit were exclude from study. Methyleprednisolone 80 mg, bupivacane 0.5% (6 ml), 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

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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 one month 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 included evaluation of VAS and ODI after a periodical gap of three months regularly up to one year. Cases were categorized as per excellent, good, fair and poor depending upon pre decided criteria of pain relief and activity levels as per VAS and ODI scores.

Results

Total 120 ESI were given to 80 patients. 50 patients were given single injection, while 20 had two and 10 received three ESI doses**.** We included total 80 cases in this study, 35 were males and 45 females with chronic LBP. Out of 80 cases of LBP, Lumbar disc herniation was seen in 26, lumbar canal stenosis in 8 and degenerative disc disease in 14 cases while 32 cases had non-specific LBP. (Table 3) Follow up was done at one week, one month and then every three months up to twelve months of treatment (post third ESI 9 months). Mean pre ESI, VAS was 7.06 while it was 4.75 at one year of treatment. (Table 4) Mean pre ESI, ODI score was 58.88 while after twelve months of treatment with ESI it was 44.74 at one year. (Table 5) We obtained excellent results in 26.75 percent, good in 37.5 percent, fair in 22.5 percent while poor in 13.75 percent patients. (Table 6)

Table 1: Showing number of epidural doses given

Number of patients=80	Number of ESI doses	Total doses=120
50	01	50
20	02	40
10	03	30

Table 2: Showing sex distribution of cases of ESI

Gender	Number of cases	Percentage
Males	35	43.75
Females	45	56.25

Table 3: Showing causes of LBP

CauseNumber of	Cases	Percentage
Non specific	32	40
Lumbar disc herniation	26	32.5
Lumbar canal stenosis	8	10
Degenerative disc disease	14	17.5
Total	80	100

Table 4: Showing mean VAS score

Time interval	Mean	SD (standard deviation)
Pre injection	7.06	1.21
At one week	3.77	0.84
At one month	3.59	0.76
At 3 months	4.03	0.77
At 6 months	4.21	0.82
At 9 months	4.45	0.91
One years	4.75	0.75

Table 5: Showing ODI score (percentage)

Time interval	Mean	SD
Pre injection	58.88	7.69
At one week	26.11	4.57
At one month	25.47	3.74
At 3 months	24.62	2.84
At 6 months	23.10	4.42
At 9 months	41.32	7.57
One years	44.74	7.52

Table 6: Showing results after intervention by ESI

Result	Number of patients=80	Percentage
Excellent	21	26.25
Good	30	37.5
Fair	18	22.5
Poor	11	13.75

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 [12] and Lievre [13] described use of ESI by transforaminal route while use of corticosteroids by caudal epidural space was reported by Cappio [14]. 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*. [15] 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*. [16] 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*. [17] 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 One month. In a meta-analysis study, Choi H J *et al*. [18] 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*. [19] for comparing effectiveness of transforaminal versus caudal ESI for managing 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 (one year). The current study obtained significant pain relief by caudal route in 82 percent cases

over a period of three months and moderate relief in 60 percent cases over one year. Only 5 patients required further surgery as they were not relieved of pain and radicular symptoms even after two ESI. Singh H *et al*. [20] 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 abscess [21, 22] have been reported with use of ESI, we reported complication of pain at the ESI site only in 6 patients. This was managed with conservative means.

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 the 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.

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