

Original Research Article

Study of role of caudal epidural steroid in management of low back pain in Malayalam patients

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ABSTRACT

Background: 85 patients of different age groups were treated with caudal epidural steroid injection for the management of low back pain. As low back pain is quite common in adults.

Methods: X-ray, MRI of the lumbar region was studied. Degree of the pain was assessed by visual analogue scale (VAS), study of lumbo-sacral joint was studied to know the causes of low back pain (LBP).

Results: As per the MRI study classification LBP was classified as, 16 (16.3%) had Acute back pain without any cause, 14 (14.2%) had spondylolithesis having symptoms of claudication with low back pain. 26 (26.5%) had stenosis of Lumbar canal with symptoms of claudication 42 (42.8%) had disc degeneration with or without root radiation having complaint of back pain and leg pain. The improvement as per VAS scale was from 1 week to 3 months in the management of LBP.

Conclusions: This pragmatic approach to various causes of low back pain managed with epidural steroid injection will be useful to orthopedic surgeon to treat such pain efficiently because back pain becomes common factor as age advances due to resorption or degenerative factors and curvatures of vertebral column becomes less pronounced.

Keywords: Visual analogue scale, Lumbar canal stenosis, Caudal epidural steroid injection, Low back pain

INTRODUCTION

Low back pain (LBP) is the most frequent and persistent pain that occurs in 15-80% of the patients in globally including, India.^{1,2} It also has been reported that 13% of the population suffers with persistent low back of high intensity with either moderate or severe disability.³ Back pain also prevalent in 12% children and adolescents, 15% of adults and 27% of elderly. Introduction of caudal epidural steroid injection started at 1900.⁴ Tissue of the low back are capable of transmitting pain include muscles, ligaments, fascia, discs, nerve roots, dura and facets joints. It is difficult to identify the causative factors for LBP which may be either a facet joint or disc or another structure which is generally differentiated based on clinical features of somatic/ referred or radicular pain

but persistant LBP is a diagnostic dilemma in majority of the patients even in experienced hands with availability of all advanced technologies. It is believed that, the benefits of caudal epidural steroid injection may be multifold including clearing the adhesions or inflammation from the vicinity of nerve root sleeve and neurolytic or other unknown benefiter effect.^{5,6} Hence this study was under taken to evaluate the role of caudal epidural steroid injections in the patients with different clinical manifestation of LBP.

METHODS

The study was conducted on 98 patients visiting to Azeezia Medical College Hospital, Kerala. The duration

of study was about three years (October 2016 to November 2018).

After getting approval from institutional ethics committee, X-ray anterior posterior and lateral view of lumbar region was taken and symptomatic treatment was given to them for 4 to 6 weeks and assessed with visual analogue scale (VAS) scale and patients who did not show any improvement on VAS scale, magnetic resonance imaging (MRI) of lumbo-sacral spine was done to study cause of low back pain, who did not respond to conservative treatment.

Inclusion criteria

Patients aged between 30 to 65 years having low back pain radicular symptoms and neurogenic claudication not responding to symptomatic treatment for 4 to 6 week were selected for study

Exclusion criteria

The patients having osteoporotic fracture lumbar spine, patients younger than 30 years, older than 65 year, patients having cardio-vascular and neurogenic disease were excluded from study.

Procedure

After routine investigation. Caudal epidural injection was given under monitorial aesthetic care. The patients were asked to lie down in prone position, on radiolucent table. The gluteal region was cleared and draped. 4 cm above the proximal and of natal cleft. Needle was inserted straight through sacral hiatus; also there was C-Arm image intensifier to confirm the site of needle insertion. 20 G spinal needle was inserted into sacral hiatus Aspiration was done to confirm that that the needle did not pierce epidural blood vessels or inside the dura 2cc air was injected through the syringe to confirm the needle was in the epidural space. Position of the needle in the sacralhiatus was also confirmed under C-arm 50 cc syringe containing 25 cc normal saline 5 cc lignocaine 2% and 80 mg Depomedrol acetate was slowly injected. It was stop and go procedure. After the injection patient was put in supine position and vitals were monitored for 5-10 minutes. Then patients were asked to move toes and legs actively to check the muscle power. The patients in whom bloody tap was encountered, the procedure was abandoned and post ponded for a week.

The patients was discharged on the same day and instructed to like in supine position for next 6 hours to prevent headache, nausea and vomiting. He was called after 24 hours to know about the pain and any adverse effects. He was again started with conservative treatment simultaneously; subsequent follow up in outpatient department (OPD) was done one week, three weeks and three months intervals and assessed on VAS.

VAS method includes 0-2 score don't feel any pain, 2-4 feels un-comfortable, 4-6 score is quite Annoying, 6-8 score feels dreadful pain, 8-10 feels in tolerable pain (Table 1).

The statistical analysis was done in the 2007 micro software.

Table 1: The VAS score given from 0-10 according to intensity of pain.

Intensity of pain		
None	0-2	I
Un-comfortable	2-4	II
Annoying	4-6	III
Dreadful	6-8	IV
Excruciating	8-10	V

RESULTS

The ratio of male and female was 2:1. VAS score rate study was 00 at grade-1, 35 (35.7%) at grade-2, 46 (46.9%) at grade-3, 9 (9.1%) at grade-4, 8 (8.1%) were at grade 5 (Table 2).

Table 2: VAS score rate study (n=98).

VAS score rate grades	No of the patients	%
Grade-1	00	-
Grade-2	35	35.7
Grade-3	46	46.9
Grade-4	09	9.1
Grade-5	08	8.1

The grade 3 has significant observation while grade 5 had least number of patients.

Classification of low pain as per MRI study was 16 (16.3%) had acute back pain without any cause 14 (14.2%) spondy lolisthesis with complaint of caudation and low back pain. 26 (25.5%) had stenosis of lumbar canal having the complaint of claudication 42 (42.8%) had degeneration of disc with or without root radiation having complaint of back and leg pain (Table 3).

Study of improvement as per VAS score on caudal epidural steroid injection were in acute back pain out of 16, 12-14 had relief on first visit, 4 had relief first week, 4-6 on three weeks 4-8 on three months. In spondylolisthesis 4-8 had relief first visit and 4 had on 1st week 4-6 on three weeks and 4-8 on there months. Stenosis of lumbar canal, 4 to 8 had relief out of 26, 4-8 on first week 4-8 on third week 4-8 on three months. In degeneration of disc with or without radiation 8-12 with radiation and 4-8 without radiation 4 with radiation and 4 without radiation had improvement in first week 4 had improved with radiation and 4-8 without radiation improved on third week. 4-8 had relief with radiation and

8-12 without radiation on third month as per VAS scale (Table 4).

Adverse effect observed in the patients was vertigo (47%) immediately and injection site pain (68%) and headache (9%).

Table 3: Classification of low pain as per MRI study (n=98).

Diagnosis	Number of patients	%	Complaints
Acute back pain (cause not observed in MRI)	16	16.3	Back pain
Spondylolisthesis	14	14.2	Claudication and low back pain
Lumbar canal stenosis (LCS)	26	26.5	Claudication
Degeneration of disc with without root radiation	42	42.8	Back pain and leg pain

The degeneration of disc with without root radiation had more complaints and Spondylolisthesis had least number of complaints.

Table 4: Study of improvement as per VAS score on caudal epidural steroid injection (n=98).

Diagnosis	At first visit	One week	Three weeks	Three months
Acute back pain	12-14 (16)	0-4 (16)	4-6 (16)	4-8 (14)
Spondylolisthesis	4-8 (14)	0-4 (4)	4-6 (14)	4-8 (12)
Lumbar canal stenosis (LCS)	4-8 (26)	4-8 (18)	0.4/4-8 (14)	4-8 (14)
Degeneration of disc with without root radiation	8-12/4-8 (42)	0-4/0-4 (36)	0-4/4-8 (28)	4-8/8-12 (28)

The degeneration of disc with without root radiation had long duration and more patients to treat while Spondylolisthesis had least patients.

DISCUSSION

The present study of role of caudal epidural steroid injection in the management of LBP. VAS score rate study- 00 at grade-1, 35 (35.7%) at grade-2, 46 (46.9%) at grade-3, 9 (9.1%) at grade-4, 8 (8.1%) were at grade-5 (Table 1). In the classification of LBP as MRI study – 16 (16.3%) had acute LBP (not any cause) 14 (14.2%) had spondylolisthesis, 26 (26.5%) stenosis of lumbar canal having complaint of claudication, 42 (42.8%) had degeneration of disc with or without root radiation (Table 2). Study of improvement as per VAS score treated with caudal epidural steroid injection. In acute LBP (no cause) 12-14 had relief in first visit 4 had relief on first week 4-6 had relief on third week 4-8 had relief on third month in spondylolisthesis patients 4-8 had relief on first visit 4 had relief on first week 4-6 had relief on third week and 4-8 had relief on third month. In lumbar canal stenosis 4-8 patients relief on first visit, 4-8 had relief first week and 4 had relief on third week and 4-8 had relief third month. In the study of degeneration of disc (with or without radiation) 8-12 had relief with radiation and 4-8 without radiation at first visit. 4 had relief on first week and 4-8 had relief at third week and 4-8/8-12 had relief on third month (Table 3). These findings were more or less in agreement with previous studies.⁵⁻⁷

The exact mechanism of action of epidurally injected and local anesthetic is unclear. It can be hypothesized that achieved neural blockade alters or interrupts nociceptive input reflex mechanism of the afferent fibers, self-sustaining activity of the neurons and patterns and patterns of the central neuronal activities.⁸ Corticosteroids reduce the inflammation by inhibiting either the synthesis or release of number pro-inflammatory mediators and by causing a reversible local anesthetic effect.⁹ In contrast

local anesthetics have been described to provide short to long term symptomatic relief bases on various mechanism.

The LBP could be due to excess release of neurotransmitters causing complex central responses including hyperplasia and phenotype changes which are considered as part of neuronal plasticity.¹⁰ The administration steroid could be effective for short term and in some rare cases steroids have long term potency, Hence efficacy of the steroid is un-predictable.¹¹ But it is reported that administration of steroid caudal epi-durally is more effective only in lumbar radicular pain and less effective in sciatica. Moreover radicular pain can occur without disc herniation. Hence it is believed that radicular pain includes partial axonal damage, neuroma formation focal demyelination, intra neural edema, impaired microcirculation, chemical irritation and inflammation around discs and nerve roots which generate the pain was relieved by administration of steroid and local anesthesia but duration of relief is un-predictable,

Hence caudal epidural steroid injection is an effective surgery sparing procedure that should be a part of conservative care in the management of LBP and radiculopathy.

Evolutionary point of view vertebral column was like cantilever bridge which has modified into pillar to transmit the body weight of erect posture.¹² Hence there was re-orientation of vertebral column occur. This re-orientation depends on environmental and nutritional status which leads to variations in adoption results into spondylolisthesis, herniation, and degeneration of disc because every part of the vertebra has individual function.

CONCLUSION

The present study of role of caudal epidural steroid injection in the management of LBP. The procedure can be performed easily as a day care procedure less technically demanding and with low complication compared with surgical treatment. Moreover a cost effective alternative approach to management of LBP. But this study demands further embryological, genetic, anthropological, nutritional, bio- mechanical study because the exact factors and mechanism of formation of primary and secondary curvatures of vertebral column is still un-clear.

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Ethical approval: The study was approved by the institutional ethics committee

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