Section: Orthopaedics

Original Research Article

STUDY OF ROLE OF CAUDAL EPIDURAL STEROID MANAGEMENT OF LOW BACK PAIN IN ANDHRA PRADESH POPULATION

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Abstract

Background: Low back pain (LBP) is a common disability. The patient suffers from functional and psychological disability because it impairs their normal biological and social lives. **Materials and Methods:** 90 (ninety) adults with low back pain (LBP) were studied. They studied the lumbar region with x-rays and MRIs, and the degree of pain was assessed using the VAS scale, as well as the lumbo-sacral joint, to determine the cause of LBP. A routine blood examination was carried out in every patient to correlate the clinical manifestations. **Result:** In the VAS score study, 33 (36.6%) had grade-II, 40 (44.4%) had grade-III, 9 (10%) had grade-IV, 8 (8.8%) had grade-V, 15 (16.6%) had acute LBP, 13 (14.4%) had spondyloisthesis, 24 (26.6%) had lumber canal stenosis, and 38 (42.2%) had degeneration of the disc without relation. In the study of improvement, spondylosis and LBP had the lowest VAS score, while degeneration of disc patients had an increased VAS score (8.12). **Conclusion:** Caudal epidural injections of steroids and Bupivacaine are effective in patients with chronic low back pain in adults.

INTRODUCTION

Low back pain is remarkably common, especially in adulthood. Patients with low back pain (LBP) suffer from functional and psychological disabilities that impair their activities of normal life due to the visible impact of pain. Drugs provide temporary relief to some extent, but the disability of the patient persists due to chronic symptoms.[1] Wadells pain behavior circle comprehensively explains this point: pain behavior is wrapped up in the theories of primary and secondary pain and may include meanings such as griming, limping, excessive talking, excessive silence, refusing to work, seeking health care, and taking medications.[2]

Anatomically, there are five lumbar vertebrae and a sacrum, making the lumbar spine. The vertebral bodies increase in size from first to fifth, indicative of load-bearing capacity.[3] The intervertebral discs have outer fibrous covering the annulus fibrosis, central hyaline cartilage, and the innermost nucleus pulposus, a gelatinous material that is packed under pressure. The changes in biomechanics of the spine are due to the degeneration process or congenital trauma; the cartilage plate breaks and the nucleus pulposus outside ruptures the posterior ligament mostly posterolaterally into the spinal canal until the pressure inside it becomes neutral. The herniated nucleus pulposus (HNP) impinges the nerve root in the foramen or is extruded into the canal, causing radicular symptoms or neurogenic claudicating to add to it.[4] Central sensitization plays a major role in magnifying the actual intensity of low back pain (LBP). Hence, the attempt is made to evaluate the various VAS grades and different types of LBP in adults of both sexes.

MATERIALS AND METHODS

90 patients regularly visiting Narayana Medical College and Hospital Nellore in Andhra Pradesh (52403) were studied.

Inclusive Criteria

Patients aged between 30 to 65 years with low back pain (LBP), ridiculer symptoms, and neurogenic claudication who did not respond to symptomatic treatment for 4 to 16 weeks were selected for the study.

Exclusion Criteria

patients with osteoporotic fractures or lumbar spine fractures; patients younger than 30 years; patients older than 65 years. Patients with cardio-vascular and neurogenic diseases were excluded from the study.

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

The patient was discharged on the same day and instructed to be in the supine position for the next 6 hours to prevent headaches, nausea, and vomiting. He was called after 24 hours to learn about the pain and any adverse effects. He was again started with conservative treatment simultaneously; subsequent follow-up in OPD was done at one-week, three-week, and three-month intervals and assessed on the VAS (Visual Analogue Scale).

The duration of the study was from November 2022 to December 2023.

Statistical Analysis: types of LBP were classified as per MRI vision with a percentage, and the study of the duration of improvement as per the VAS score was noted. Different complaints of the patients were classified by percentage, and different grades of VAS score were also classified by percentage. The statistical analysis was done in the 2007 Micro software. The ratio of males and females was 2:1.

RESULTS

[Table 1] VAS score study in low back pain patients: grade-I had 00, grade-II had 33 (36.6%), grade-III had 40 (44.4%), grade-IV had 09 (10%), and grade-V had 08 (8.8%) patients.

[Table 2] Classification of low back pain as per MRI study Acute back pain was not observed in the MRI. 15 (16.6%) complaint was back pain, spondylolisthesis 13 (14.4%) had claudication LBP, 24 (26.6%) had lumbar canal stenosis complaint was claudicate, 38 (42.2%) had degeneration of disc with or without root radiation complaint was Back pain and leg pain.

[Table 3] Study of improvement as per VAS score 4–8: caudal epidural steroid injection Acute back pain: patients had a VAS score of 12–14. After one week, VAS scores were 0–4, and patients were 15, After 3 weeks, the VAS score was 4-6, patients were 10, and after 3 months, the VAS score was 4-8, and patients were 5.

Spondylosthesis patients had a 13 VAS score at the first visit (4–3); at one week, patients had a 7 VAS score of 0-4. After three weeks, patients were 4 and VAS scores were 4-6 at 3 months. Patients were 2, and the VAS score was 4–8.

Lumbar canal stenosis: patients were 24 at first visit; VAS score was 4–7 at 1st week; 11 patients had a VAS score of 4–8. After the 3rd week, 8 patients had a VAS score of 0.4–4.8. After 3 months, 5 VAS scores were 4–8.

Degeneration of disc with or without root radiation: the number of patients was 38; the VAS score was 8–12 at the 1st week; 20 patients had a VAS score of 0.4–4; after the 3rd week, 18 patients had a VAS score of 0–4/4.8; and at three months, 14 patients had a VAS score of 4.8–8.12.

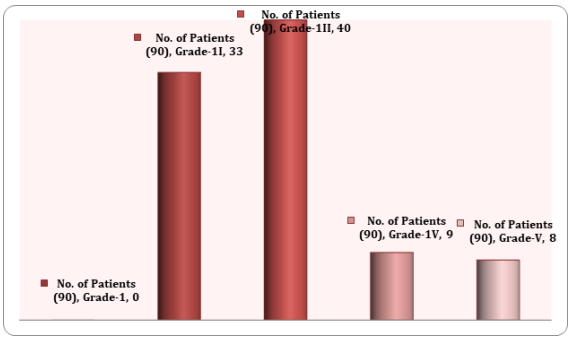

Figure 1: VAS score study in Low back pain patients

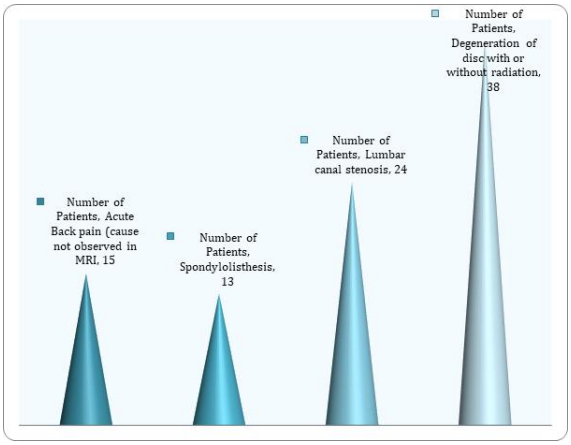

Figure 2: Classification of low pain as per MRI study

Table 1: VAS score study in Low back pain patients. Total No. of patients: 90

VAS score rate grades	No. of Patients (90)	Percentage (%)
Grade-1	00	-
Grade-1I	33	36.6%
Grade-1II	40	44.4%
Grade-1V	09	10%

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Grade-V	08	8.8%

Grade-III has 40 (44.4%) highest number and grade-V has 8 (8.8%) least number of VAS score as per MRI study.

Table 2: Classification of low pain as per MRI study. Total No. of patients: 90

Sl No	Diagnosis	Number of Patients	Percentage (%)	Complicities
1	Acute Back pain (cause not observed in MRI	15	16.6	Back pain
2	Spondylolisthesis	13	14.4	Claudication and LBP
3	Lumbar canal stenosis	24	26.6	Claudication
4	Degeneration of disc with or without radiation	38	42.2	Back pain and leg pain

Table 3: Study of improvement as per VAS score on caudal Epidural steroid injection. Total No. of Patients: 90

Sl. No	Diagnosis	At first visit	One week	After three weeks	At Three months
1	Acute Back pain	12-14 (15)	0-4 (15)	4-6 (10)	4-8 (5)
2	Spondylolisthesis	4-3 (13)	0-4 (7)	4-6 (4)	4-8 (2)
3	Lumbar canal stenosis	4-7 (24)	4-8 (11)	0.4 – 4.8 (8)	4-8 (5)
4	Degeneration of Disc with or without root radiation	8-12(38)	0-4/0-4 (20)	0-4 / 4-8 (18)	4-8 / 8-12 (14)

The degeneration of disc with or without root radiation had duration of treatment and more patients to treat while spondylolisthesis had least number of patients.

DISCUSSION

The present study examines the role of caudal epidural steroids in the management of LBP in the Andhra Pradesh population. The VAS score in LBP patients was 33 (36.6%) in grade II, 40 (44.4%) in grade III, 09 (10%) in grade IV, and 8 (8.8%) in grade V [Table 1]. 15 (16.6%) had acute back pain (not observed in the MRI), 13 (14.4%) had spondylolisthesis, 24 (26.6%) had lumbar canal stenosis, and 38 (42.2%) had disc degeneration with or without radiation [Table 2]. In the study of improvement, acute LBP and spondylolisthesis patients had the lowest VAS score (4-6), while degeneration disc patients had an increased VAS score (8–12) [Table 3]. These findings are more or less in agreement with previous studies.[5-7]

The exact mechanism of action of epidurally injected and local anesthetics is unclear. It can be hypothesized that achieved neural blockade alters or interrupts the nociceptive input reflex mechanism of the afferent fibers, the self-sustaining activity of the neurons, and patterns and patterns of the central neuronal activities.[8] Corticosteroids reduce inflammation by inhibiting either the synthesis or release of a number of pro-inflammatory mediators and by causing a reversible local anesthetic effect.[9,10] In contrast, local anesthetics have been described to provide short- to long-term symptomatic relief based on various mechanisms.

The LBP could be due to the excess release of neurotransmitters, causing complex central responses including hyperplasia and phenotype changes, which are considered part of neuronal plasticity.[11] The administration of a steroid could be effective in the short term, and in some rare cases, steroids have long-term potency. Hence, the efficacy of the steroid is unpredictable.[12] But it is reported that administration of steroid caudal epidurally 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 de-myelination, intraneural edema, impaired microcirculation, chemical irritation, and inflammation around the discs and nerve roots that generate the pain. The pain was relieved by the administration of steroid and local anesthesia, but the duration of relief is unpredictable. Hence caudal epidural steroid injection is an effective surgery-sparing procedure that should be part of conservative care in the management of LBP and radiculopathy.

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

CONCLUSION

Present study of the role of caudal epidural steroid injection in the management of LBP. The procedure can be performed easily as a daycare procedure, which is less technically demanding and has fewer complications compared with surgical treatment. Moreover, it is a cost-effective alternative approach to the management of LBP. But this study demands further embryological, genetic, anthropological, nutritional, and biomechanical study because the exact factors and mechanisms of the formation of primary and secondary curvatures of the vertebral column are still unclear.

Limitation of study: Owing to the tertiary location of the research center, the small number of patients, and the lack of the latest techniques, we have limited findings and results.

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