

Effectiveness of Cervical Epidural Steroid Injection for Management of Non-Operative Cervical Pain

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Conflict of interest: Nil

Abstract

Background & Methods: The aim of the study is to study the effectiveness of Cervical epidural steroid injection for management of non-operative cervical pain. The cervical interlaminar epidural injections in managing chronic neck and upper extremity pain were reviewed. The quality assessment and clinical relevance criteria utilized were the Cochrane Musculoskeletal Review Group criteria as utilized for interventional techniques for randomized trials and the criteria.

Results: The chi-square statistic is 21.4178. The p -value is 0.000086. The result is significant at $p < 0.05$. The chi-square statistic is 0.0734. The p -value is 0.963945. The result is *not* significant at $p < 0.05$.

Conclusion: The evidence is good for radiculitis secondary to disc herniation with local anesthetics and steroids, fair with local anesthetic only; whereas, it is fair for local anesthetics with or without steroids, for axial or discogenic pain, pain of central spinal stenosis, and pain of post-surgery syndrome. Lower costs are related to the fewer missed work-days in the short term following ESIs.

Keywords: Cervical, epidural, steroid & pain.

Study Design: Observational Study.

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Introduction

Epidural steroid injections (ESIs) have been used as an adjunct in the treatment of sciatica. Since the early reports, success rates ranging from 18% to 90% (average, 67%) have been documented. However, the efficacy of ESI has lasted, on the average, less than 3 months [1].

In recent years, understanding of disc degeneration has undergone a significant transformation. Impairments of the back and spine are ranked as the most frequent cause of limitation of activity in individuals younger [2]. Epidural injections in the cervical, thoracic, and lumbosacral spine were developed to diagnose and treat spinal pain. Structural abnormalities do not always cause pain, and diagnostic injections can help to correlate abnormalities seen on imaging studies with associated pain complaints [3].

In addition, epidural injections can provide pain relief during the recovery of disc or nerve root injuries and allow patients to increase their level of physical activity. Because severe pain from an acute disc injury with or without radiculopathy often is

time limited, therapeutic injections help to manage pain and may alleviate or decrease the need for oral analgesics [4].

Material and Methods

Present Study was conducted at Tertiary care centre for 01 Year on 50 patients. The cervical interlaminar epidural injections in managing chronic neck and upper extremity pain were reviewed. The quality assessment and clinical relevance criteria utilized were the Cochrane Musculoskeletal Review Group criteria as utilized for interventional techniques for randomized trials and the criteria. The level of evidence was classified as good, fair, and limited based on the quality of evidence developed.

Inclusion Criteria:

1. All patients between 18 to 50.

Exclusion Criteria:

2. Below 18 and above 50.
3. Those who did not give consent.

Result

Table 1: Patient Demographics

	ESI
Age	52.5±10.2
BMI	29.1±5.9

Table 2: Patient Demographics

	ESI	P Value
Diagnosis		0.000086
Spondylosis	16	
Disc herniation	21	
Spinal stenosis	04	
Degenerative disc disease	09	
ESI level		
C4-5	19	
C5-6	24	
C6-7	07	

The chi-square statistic is 21.4178. The *p*-value is .000086. The result is significant at *p* < .05.

Table 3: Quality of Life Outcomes

	ESI	P Value
PDQ		0.963945
Baseline	57.2±29.7	
3 months	47.9±28.2	
Change	7.0±23.7	
PHQ-9		
Baseline	6.5±5.9	
3 months	5.8±5.5	
Change	1.1±4.1	
EQ-5D / QALY		
Baseline	0.60±0.24	
3 months	0.73±0.18	
Change	0.13±0.20	

The chi-square statistic is 0.0734. The *p*-value is 0.963945. The result is *not* significant at *p* < 0.05.

Discussion

Overall, the volume of evidence for the use of therapeutic epidural injections in the treatment of acute and chronic back pain is large. Clinical studies have shown that epidural steroid injections have provided short-term improvement and may be considered in the treatment of selected patients with radicular pain as part of an active therapy program [5]. There is however insufficient evidence to demonstrate that epidural steroid injections are effective in the treatment of back pain in the absence of radicular symptoms [6].

In a 2021 Hayes evolving evidence review regarding epidural steroid injections (ESI) for the treatment of thoracic spine pain, it was concluded that thoracic disc herniation is rare, and patients may present with thoracic axial pain, but no radicular pain. The clinical evidence is limited, and the results of one randomized controlled trial suggests that ESI, either anesthetic alone or anesthetic plus corticosteroid, for chronic thoracic pain in patients who primarily had

disc-associated pain provides clinical benefits at up to 2 years [7].

Steroids classically work by the abolition of the rate-limiting step by the enzyme PLA2 to liberate arachidonic acid from cell membranes. No difference in outcome between males and females were noted. An initial successful outcome in 72% in TFESI group and 56% in ILESI group of the current patients was observed over an average follow-up period of 12 months [8].

Also, the results were obtained with an average of 1.42 & 1.6 steroid injections in group I & II respectively, which is significantly fewer than the traditionally prescribed 3 to 4 injections. As per Roland Morris Disability improvement assessment by first month 64% patients had significant reduction of disability in TFESI group whereas it was 32% for ILESI group. By the end of study period significant disability improvement persisted in 40% in TFESI group, it was 18% for ILESI group, which shows even though steroid effects deteriorates over a period of time, percentage of people achieved

persistent disability improvement for a significant period of 12 months were more in TFESI group.

Rosas et al. (2010) performed a retrospective case series to evaluate fluoroscopically directed thoracic transforaminal epidural injections. One hundred and ninety-eight foraminal nerve blocks and foraminal epidural injections to the thoracic spine. This new technique was reviewed to evaluate improved safety, as this approach should decrease the change of inadvertently injuring surrounding structures. There were no major complications when this new technique was properly performed. The authors concluded that this new technique of performing thoracic transforaminal epidural injections under fluoroscopy allows the ability to gauge needle depth, thereby decreasing potential injury to surrounding structures, including the pleura, dura mater, and vasculature. The findings are limited by lack of outcome data other than safety data and lack of comparison group [9].

Manchikanti et al. (2010) conducted a double-blind randomized controlled trial of interlaminar epidural steroid injections, with and without steroids, in managing chronic pain of lumbar disc herniation or radiculitis. Seventy patients were equally randomized to receive either a local anesthetic only (group I) or a local anesthetic mixed with a steroid (group II). Outcomes were measured at baseline, 3-, 6-, and 12-months post-treatment with the Numeric Rating Scale (NRS), the Oswestry Disability Index 2.0 (ODI), employment status, and opioid intake [10]. Significant pain relief ($\geq 50\%$) was seen at 12 months in 74% of patients in group I and 86% in group II, and 69% and 83% in ODI scores respectively. Patients in group II also had more improvement in functional status at 12 months (83% vs. 69%) and required less opioid intake.

Conclusion

The evidence is good for radiculitis secondary to disc herniation with local anesthetics and steroids, fair with local anesthetic only; whereas, it is fair for local anesthetics with or without steroids, for axial or discogenic pain, pain of central spinal stenosis, and pain of post-surgery syndrome. Lower costs are related to the fewer missed work-days in the short term following ESIs.

References

1. Spitzer RL, Williams JB, Kroenke K, Hornyak R, McMurray J. Validity and utility of the PRIME-MD patient health questionnaire in assessment of 3000 obstetric-gynecologic patients: the PRIME-MD Patient Health Questionnaire Obstetrics- Gynecology Study. *Am J Obstet Gynecol.* 2000;183:759-769.
2. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med.* 2001;16: 606-613.
3. Johnson JA, Coons SJ, Ergo A, Szava-Kovats G. Valuation of EuroQOL (EQ-5D) health states in an adult US sample. *Pharmacoeconomics.* 1998;13:421-433.
4. Badia X, Diaz-Prieto A, Gorris MT, et al. Using the EuroQol-5D to measure changes in quality of life 12 months after discharge from an intensive care unit. *Intensive Care Med.* 2001;27: 1901-1907.
5. Jansson KA, N'emet G, Granath F, Jo'nsson B, Blomqvist P. Health-related quality of life (EQ-5D) before and one year after surgery for lumbar spinal stenosis. *J Bone Joint Surg Br.* 2009;91: 210-216.
6. Wilson H. Minimum Clinically Important Differences of Health Outcomes in a Chronic Pain Population: Are They Predictive of Poor Outcomes? [dissertation]. Arlington, TX: University of Texas at Arlington; 2008.
7. Parker SL, Godil SS, Shau DN, Mendenhall SK, McGirt MJ. Assessment of the minimum clinically important difference in pain, disability, and quality of life after anterior cervical discectomy and fusion: clinical article. *J Neurosurg Spine.* 2013;18: 154-160.
8. Loewe B, Unutzer J, Callahan CM, Perkins AJ, Kroenke K. Monitoring depression treatment outcomes with the Patient Health Questionnaire-9. *Med Care.* 2004;42:1194-1201.
9. Rosas, HG, Gilula, LA. Performing thoracic transforaminal injections: A new technique. *Radiology,* January 7, 2010;254(2).
10. Manchikanti L, Singh V, Falco FJ, et al. Evaluation of the effectiveness of lumbar interlaminar epidural injections in managing chronic pain of lumbar disc herniation or radiculitis: a randomized, double-blind, controlled trial. *Pain Physician.* 2010.