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Research Article

Efficacy of Epidural Corticosteroid Injection (ESI) In Patients with Failed Conservative Treatment of Low Back Pain and Sciatica

Amir Hussain, Amna Afzal

and Sabina Nayab

Punjab Medical College Faisalabad,
Pakistan

ABSTRACT:

OBJECTIVES: To record efficacy of Epidural Corticosteroid Injection (ESI) in patients with failed conservative treatment of low back pain and sciatica.

DURATION: This prospective descriptive observational analysis was conducted at Allied Hospital Faisalabad during the period of 6 months from July 2017 to December 2017.

MATERIAL & METHODS: We included 70 cases between 20-70 years of age of either gender and presenting with low back pain and/or with a clinical diagnosis of unilateral sciatica and those with failed conservative treatment. The epidural steroid injection was given with the help of experienced/trained anaesthetist. The subjects were evaluated for Oswestry Disability Index (ODI) and those having $\geq$45% ODI and/or pain score $\geq$5 after one week were repeated with epidural steroid injection. Maximum two injection were given. Subsequently, all cases were followed up after 1 week, 1 month, 3 and 6 months to determine the efficacy of ESI.

RESULTS: Out of 70 cases, 44.29%(n=31) were male and 55.71%(n=39) were females, mean$\pm$sd was calculated as 53.19$\pm$8.64 years. Oswestry Disability Index(ODI) at baseline was 59.11$\pm$6.34 and 31.25$\pm$4.19 at 6 months, p value was <0.05 i.e 0.00. Pain score at baseline was 7.77$\pm$2.41 at baseline and 3.87$\pm$1.09 at 6 months, p value was <0.05 i.e 0.00.

CONCLUSION: Epidural steroid injection (ESI) is found to be an effective management modality for controlling low back pain and sciatica in failed conservative treatment while no side effects during this trial were observed.

Keywords: Low back pain, sciatica, Epidural Steroid Injection (ESI), efficacy

INTRODUCTION:

Low back pain (LBP) and associated sciatica are major health problems all over the world, it restricts mobility and increases hospital visits. In Western world, the rate of life time LBP is estimated in 80% of the cases.[1-2]

It is a disabling situation and lasts for weeks/months or years. Estimated evidence is 15-20% cases with back pain in adult population during one year. Low back pain may affect almost all the adult population. It is responsible for disability in working population which causes economic burden on society.[1]

Spinal pain may be due to socio-economical, physical, poor medical health, occupational, psychological state and environmental. All these factors may contribute as the risk of back pain.[3]

Psychological evaluation may be done in some of the cases.[4] Treatment options varies from conservation treatment to surgical management with varying outcome. Conservative management options include bed rest, analgesics, spinal manipulation and traction. Cases with failed conservative treatment may require surgical management. It is estimated that the LBP may not completely relieved even after surgery.[1]

In some selected cases, epidural steroid injections (ESI) is used with satisfying results for patients and physicians both.[5]

The lumbar epidural space is accessible either by interlaminar, transforaminal or caudal routes.[5] previous studies reveal the efficacy of all types of epidural corticosteroids irrespective of administration route and it varies from 18-90%,[5] however, various studies since long time are described the administration of lumbar epidural steroid injections by various routes.[5-21] Various analysis failed to separate all three approaches.[6,7,10-19] Epidural steroid injection following physiotherapy may provide analgesia for a long duration.[22]

A local research based data was required to evaluate the effect of epidural steroid injection (ESI) in low back pain cases and sciatica, however, this study was done at Allied Hospital, Faisalabad to facilitate the health care professionals and the patients as well.

METHODOLOGY:

This prospective descriptive observational analysis was conducted at Allied Hospital Faisalabad during the period of 6 months from July 2017 to December 2017. We included 70 cases between 20-70 years of age of either gender and presenting with low back pain and/or with a clinical diagnosis of unilateral sciatica and those with failed conservative treatment i.e. antidepressants, NSAIDs, oral steroid, bed rest and traction for minimum 6 weeks were the part of our study. All cases with bleeding disorders, diabetes mellitus, motor deficit and prior lumbar disc surgery were excluded from this trial. The sciatica was defined as pain in leg radiating below knee, restricted straight leg raising and positive on sciatic nerve stretching test. Baseline pain on visual analogue scale (VAS) was recorded in each patient. For evaluation and outcome of low back pain Oswestry Disability Index (ODI)----a gold standard[23] was used. It includes ten-question paper and pencil measure for disability due to low back pain. Our participants were required to answer the ODI questionnaire. Score range was 0 to 100 with 0 to 20% showing minimal disability, 21-40% had moderate and 41-60% had severe disability, 61-80% had crippled and 81-100% had bed ridden patients with low back pain.[24] We included only those cases with >20% ODI and/or pain score 3 on VAS. Due hospital formalities were completed to start this study. Complete relevant history, physical and radiological examination was done. The informed written consent was obtained. Routine laboratory tests including Hb%, platelet count, total and differential leukocyte count, erythrocyte sedimentation rate, bleeding and clotting time were done. Random BSR was also done. The injection was administered in operation theatre of our hospital.

The epidural steroid injection was given with the help of experienced/trained anesthetist. An 18 gauge Tuohy epidural needle was used and inserted into the epidural space at L3–L4 or L4-L5 space with the bevel upward and stylet in position. An 80 mg of Methylprednisolone was diluted in 10 ml of distill water of injection and injected in epidural space. After the injection, hemodynamic values were monitored and recorded every five minutes for thirty minutes in the operating room. The participants were asked to lie in supine position or on the sciatic radiation side for at least 24 hours after the injection, we done it considering that let the steroid settle near the inflamed site. In this duration they were observed for any possible complications. After 24 hours of injection, pain and subjective improvements were recorded. On one week follow up each patient was re-evaluated. The subjects were evaluated for ODI and those having $\geq$45% ODI and/or pain score $\geq$5 after one week were repeated with epidural steroid injection. Maximum two injection were given. Subsequently, all cases were followed up after 1 week, 1 month, 3 and 6 months to determine the efficacy of ESI. SPSS version 18 was used for data evaluation. Student t test was used to compare the changes in pain and functional status. P value $\leq$0.05 was significant.

RESULTS

In this study, out of 70 cases, 37.14%(n=26) were between 20-50 years of age whereas 62.86%(n=44) were between 51-70 years' age, mean$\pm$sd was calculated as 53.19$\pm$8.64 years. (Table No. 1)

Gender distribution shows that 44.29%(n=31) were male and 55.71%(n=39) were females. (Table No. 2)

Oswestry Disability Index(ODI) at baseline was 59.11±6.34, 45.25±7.82 after 1 week, 38.79±5.43 after 1 month, 34.58±4.61 at 3 months and 31.25±4.19 at 6 months, p value was computed as <0.05 i.e 0.00. (Table No. 3)

Pain score at baseline was 7.77±2.41 at baseline, 4.29±1.74 after 1 week, 4.11±1.85 after 1 month, 4.03±1.63 at 3 months and 3.87±1.09 at 6 months, p value on comparison of baseline and 6 months after the injection was computed as <0.05 i.e 0.00. (Table No. 4)

Table No. 1: Age distribution(n=70)

Age(in years)	No. of patients	%
20-50	26	37.14
51-70	44	62.86
Total	**70**	**100**

Table No. 2: Gender distribution(n=70)

Gender	No. of patients	%
Male	31	44.29
Female	39	55.71
Total	**70**	**100**

Table No. 3: Oswestry Disability Index (ODI) (n=70)

ODI	Mean	SD
At baseline	59.11	6.34
1 week	45.25	7.82
1 month	38.79	5.43
3 months	34.58	4.61
6 months	31.25	4.19

Table No. 4: Pain score of the patients (n=70)

Pain score	Mean	SD
At baseline	7.77	2.41
1 week	4.29	1.74
1 month	4.11	1.85
3 months	4.03	1.63
6 months	3.87	1.09

DISCUSSION:

The management of low back pain is controversial as the cause of LBP is multi-factorial and treatment varies from case to case. No medicine or surgical intervention is required in cases with mild low back pain and only rest may improve this condition. A study suggests that bed rest for two days is sufficient in these cases; however, long duration may not give perceptible clinical outcome.[25] The role of exercise is distinctive and suggested according to patients' tolerance for managing low back pain.[26] Whereas NSAIDs do not treat the root cause of the morbidity. Considering potential side effects, it may not be recommended for a longer duration. Short-term anti-depressants and corticosteroids may reduce the pain. Other modalities include transcutaneous electrical nerve stimulation (TENS), ultrasound and traction but no scientific approach in these various types of treatment modalities is proved yet.[27] The failure rate is 30% in cases undergoing surgery for correctable pathological lesions.[28] The use of epidural steroid injection is not new for the management of low back pain. It is an effective and minimally invasive modality. In 1952, it was used for the first and still remains the integral part of conservative treatment of low back pain.[29] After this hypothesis various physicians used methylprednisolone and a better outcome was recorded. The efficacy was found more effective in cases presenting with chronic back pain.[30]

Bogduk N and others in a meta-analysis including 40 trials regarding the use of lumbar and caudal steroid injections while managing LBP, 36 studies suggested that ESI may be used for the management of LBP and Sciatica.[31] Another meta-analysis out of 12 RCTs assessed the efficacy of ESI for LBP and concluded it effective in 6 trials.[32]

In the current study we used ODI and VAS for the evaluation of ESI, similar results i.e. 49% of the cases at six months found with significantly reduced pain.[33]

The findings of Belivesus P and others further strengthen our results by concluded that methyl prednisolone is an effective modality for reducing long-term low back pain.[30]

A local study evaluated short and long term pain control between ESIs and those with conservative management with lumbar radiculopathy; they concluded that ESIs are significantly more effective than conservative management for controlling pain in these cases.[34]

The limitation of our study was that we did not include a comparative group i.e. conservative management group, however, this descriptive observational study, we found ESIs as an

effective management modality for controlling low back pain and sciatica.

CONCLUSION:

Epidural steroid injection (ESI) is found to be an effective management modality for controlling low back pain and sciatica in failed conservative treatment i.e. antidepressants, NSAIDs, oral steroid, bed rest and traction for minimum 6 weeks while no side effects during this trial were observed.

REFERENCES:

1. Singam AP, Dhakate VR, Yelurkar SS, Gosavi SN. Use of epidural steroids in cases of low back pain and sciatica: A prospective observational study. International J of Healthcare and Biomedical Research 2014;2:98-104
2. Hult L: The Munkfors investigation. Acta Ortho ScandSuppl 1954; 16:1.
3. Rubin DI. Epidemiology and risk factors for spine pain. NeurolClin, 2007, 25(2):353-71.
4. WHO Technical Report Series 919, Table-6, 2003:38-9.
5. Manchikanti L, Singh V, Kloth D et al. Interventional techniques in the management of chronic pain: Part 2.0. Pain Physician 2001:4:24-96.
6. Kepes ER, Duncalf D. Treatment of backache with spinal injections of local anesthetics, spinal and systemic steroids. *Pain* 1985; 22:33-47.
7. Benzon HT. Epidural steroid injections for low back pain and lumbosacral radiculography. *Pain* 1986;24:277.
8. Bogduk N, Christophidis N, Cherry D et al. Epidural Use of Steroids in the Management of Back Pain. Report of Working Party on Epidural Use of Steroids in the Management of Back Pain. National Health and Medical Research Council. Canberra, Commonwealth of Australia, 1994, pp 1-76.
9. Koes BW, Scholten RJPM, Mens JMA et al. Efficacy of epidural steroid injections for low back pain and sciatica: A systematic review of randomized clinical trials. *Pain* 1995; 63:279-88.
10. Bogduk N. Epidural steroids for low back pain and sciatica. *Pain Digest* 1999; 9:226-7.
11. Koes BW, Scholten R, Mens JMA et al. Epidural steroid injections for low back pain and sciatica. An updated systematic review of randomized clinical trials. *Pain Digest* 1999; 9:241-7.
12. Benzon HT. Epidural steroid injections. *Pain Digest* 1992; 1:271-80.
13. Benzon HT, Molly RE. Outcomes, efficacy, and compliances from management of low back pain. In Raj PP, Abrams BM, Benzon HT et al (eds). *Practical Management of Pain*, ed 3, Mosby, Philadelphia, 2000,pp 891-903.
14. Watts RW, Silagy CA. A meta-analysis on the efficacy of epidural corticosteroids in the treatment of sciatica. *Anaesth Intens Care* 1995; 23:564-9.
15. McQuay HJ, Moore RA. Epidural Corticosteroids for Sciatica. *An Evidence-Based Resource for Pain Relief*. Oxford University Press, New York, 1998, pp 216-8.
16. Nelemans PJ, deBie RA, deVet HCW. Injection therapy for subacute and chronic benign low back pain. *Spine* 2001; 26:501-15.
17. Vroomen PC, de Krom MC, Slofstra PD et al. Conservative treatment of sciatica: A systematic review. *J Spinal Disord* 2000;13:463-9.
18. Revel M. Value of percutaneous treatments of the lumbar spine in back and nerve root pain. *Semin Musculoskelet Radiol* 1997;1:349-54.
19. Curatolo M, Bogduk N. Pharmacologic pain treatment of musculoskeletal disorders: Current perspectives and future prospects. *Clin J Pain* 2001;17:25-32.
20. Manchikanti L. The role of neural blockade in the management of chronic low back pain. *Pain Digest* 1999;9:166-81.
21. Ogoke BA. Caudal epidural steroid injections. *Pain Physician* 2000;3:305-12.

22. Glenn R. Buttermann - Treatment of lumbar disc herniation: epidural steroid injection compared with discectomy: a prospective, randomized study. JBJS 2004; 86-A:670-9.
23. Fairbank JC, Pynsent PB, "The Oswestry Disability Index." Spine 2000; 25(22):2940-52.
24. Fairbank JC, Couper J, Davies JB, O'Brien JP. The Oswestry low back pain disability questionnaire. Physiotherapy 1980;8:271-3.
25. Deyo RA, Diehl AK, Rosenthal M – How many days of bed rest for acute low back pain: a randomized clinical trial. N Engl J Med 1986;315:1064.
26. Malmivaara A, Hakkinen U, Aro T, et al - The treatment of low back pain – bed rest, exercises or ordinary activity? N Engl J Med 1985;332:1786.
27. Maher CG. Effective Physical Treatment for Chronic Low Back Pain. Ashish D. Diwan, Safdar N. Khan., editors – Ortho Clin of N Am. 2004:57-64
28. Spangfort EV. The lumbar disc herniation. A computer-aided analysis of 2,504 operations. Acta Orthop Scand Suppl. 1972;142:1-95.
29. Robecchi A, Capra R. Hydrocortisone; first clinical experiments in the field of rheumatology. Minerva Med 1952;43:1259-63.
30. Beliveau P. A comparison between epidural anesthesia with and without corticosteroid in the treatment of sciatica. RheumatolPhys Med. 1971;11:40-5.
31. Bogduk N. Epidural steroids for low back pain and sciatica. Pain Digest 1999;9:226-7.
32. Koes BW, Scholten RJPM, Mens JMA, Bouter LM. Efficacy of epidural steroid injections for low-back pain and sciatica: a systematic review of randomized clinical trials. Pain 1995;63:279-88.
33. Baral BK, Shrestha RR, Shrestha AB, ShresthaCK. Effectiveness of epidural steroid injection for the management of symptomatic herniated lumbar disc. Nepal Med Coll J 2011;13(4):303-7.
34. Laiq N, Khan MN, Iqbal MJ, Khan S. Comparison of Epidural Steroid Injections with conservative management in patients with lumbar radiculopathy. Journal of the College of Physicians and Surgeons Pakistan 2009;19(9):539-43.