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Original Research Article

A Clinical Assessment of the Effectiveness of Transforaminal Epidural Injection with Trigger Point Injection in the Treatment of Low Back Pain

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Abstract

Aim: To compare the effectiveness of transforaminal epidural injection with trigger point injection in the treatment of low back pain.

Materials and Methods: This study was conducted in the Department of Anesthesia, Patna Medical College and Hospital, Patna, Bihar, India for two years. We selected eighty- six patients of chronic back pain of either gender. All gave their written consent for active participation in the study. Demographic profile of each patient was recorded. Patients were divided into 2 groups of 43 each. Group A patients were given transforaminal epidural corticosteroid injections (TFESI) and group B were given trigger point injection (TPI). Visual analogue scale (VAS) score was evaluated before procedure and at 1 month, 3 months and 6 months.

Results: Group A comprised of 23 males and 20 females and group B had 19 males and 24 females. The mean age in group A patients was 35.2 years and in group B was 36.1 years. Duration of pain symptoms was 6.8 months in group A and 7 months in group B. Affected root stump was L5 seen in 10 in group A and 8 in group B, S1 20 in group A and 19 in group and both L5 and S1 13 in group A and 16 in group B. The difference was significant ($P< 0.05$). The mean VAS core at 1 month in group A was 34.7 and in group B was 41.2, at 3 months was 26.3 in group A and 32.5 in group B and at 6 months was 12.5 in group A and 25 in group B. A significant difference was observed ($P< 0.05$).

Conclusion: Lumbar transforaminal epidural steroid injection found to be effective and efficient in managing lower back pain as compared to trigger point injection.

Keywords: Epidural injection, Point injection, Low back pain.

Introduction

Low back pain (LBP) is a prevalent and debilitating condition affecting millions of individuals worldwide. It is one of the leading causes of disability and lost work days, imposing a significant economic burden on healthcare systems. LBP can originate from various sources, including intervertebral discs, facet joints, and paraspinal muscles, making its management complex and multifaceted. Among the interventional techniques available, transforaminal epidural injection (TFEI) combined with trigger point injection (TPI) has emerged as a promising approach for alleviating LBP. [1] The aetiology of LBP is often multifactorial, involving both nociceptive and neuropathic pain mechanisms. Common causes include disc herniation, spinal stenosis, and degenerative disc disease, which can lead to nerve root compression and radiculopathy. Additionally, myofascial pain syndrome, characterized by trigger points—hyperirritable spots in skeletal muscles—contributes to chronic LBP. These trigger points can refer pain to distant areas, compounding the complexity of LBP diagnosis and treatment. [2,3] TFEI involves the delivery of corticosteroids and local anaesthetics into the epidural space via the intervertebral foramen. This targeted approach allows for direct deposition of the medication near the affected nerve root, reducing inflammation and alleviating pain. TFEI has shown efficacy in managing radicular pain associated with lumbar disc herniation and spinal stenosis. Studies have demonstrated significant pain relief and functional improvement in patients undergoing TFEI compared to those receiving conservative treatments. [4,5] TPI involves the injection of local anaesthetics, often combined with corticosteroids, directly into the trigger points within the muscles. This technique aims to inactivate the trigger points, relieve referred

pain, and restore normal muscle function. TPI has been effective in treating myofascial pain syndrome and reducing muscle spasms, which are common in chronic LBP patients. [6] Combining TFEI with TPI offers a comprehensive approach to managing LBP by addressing both neuropathic and myofascial pain components. This integrated technique targets the nerve roots and the muscular sources of pain, potentially providing more substantial and sustained relief. Recent studies have explored the synergistic effects of this combined approach, reporting improved outcomes in pain reduction, functional status, and quality of life in LBP patients. [7-9] While both TFEI and TPI are generally considered safe, potential complications such as infection, bleeding, and transient increases in pain should be acknowledged. However, serious adverse events are rare, and the combined approach's benefits often outweigh the risks. Proper patient selection, precise injection techniques, and adherence to aseptic protocols are essential to minimize these risks and optimize patient outcomes.

Materials and Methods

This study was conducted in the Department of Anesthesia, Patna Medical College and Hospital, Patna, Bihar, India for two years, we selected eighty-six patients of chronic back pain of either gender. All gave their written consent for active participation in the study. Demographic profile of each patient was recorded. Patients were divided into 2 groups of 43 each. Group A patients were given transforaminal epidural corticosteroid injections (TFESI) and group B were given trigger point injection (TPI).

Visual analogue scale (VAS) score was evaluated before procedure and at 1 month, 3 months and 6 months. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 were set significant.

Results

Group A comprised of 23 males and 20 females and group B had 19 males and 24 females [Table 1]. The mean age in group A patients was 35.2 years and in group B was 36.1 years. Duration of pain symptoms was 6.8 months in group A and 7 months in group B. Affected root stump was L5 seen in 10 in group A and 8 in group B, S1 20 in group A and 19 in group and both L5 and S1 13 in group A and 16 in group B. The difference was significant (P< 0.05) [Table 2]. The mean VAS core at 1 month in group A was 34.7 and in group B was 41.2, at 3 months was 26.3 in group A and 32.5 in group B and at 6 months was 12.5 in group A and 25 in group B. A significant difference was observed (P< 0.05).

Table 1: Patients distribution

Groups	Group A	Group B
Method	TFESI	TPI
M:F	23:20	19:24

Table 2: Demographic data.

Parameters	Group A	Group B	P value
Mean age (years)	35.2	36.1	0.94
Duration of pain symptoms (months)	6.8	7.0	0.86
Affected nerve root			
L5	10	8	0.31
S1	20	19	
L5 and S1	13	16	

Table 3: Comparison of pain

Period	Group A	Group B	P value
1 month	34.7	41.2	0.02
3 months	26.3	32.5	0.05
6 months	12.5	25.0	0.04

Discussion

We performed present study to compare transforaminal epidural injection with trigger point injection for low back pain. In this study we enrolled eighty- six patients of low back pain. Patients were divided into 2 groups of 43 each. Group patients were given transforaminal epidural corticosteroid injections (TFESI) and group B were given trigger point injection (TPI). Studies suggest inflammation of the affected nerve roots in the mechanism of pain.[8] The inflammatory component has attracted the use of corticosteroids to decrease inflammation and thus reduction in pain.[9] Steroid injections have been used through different routes as an alternative to surgery or adjunct to conservative therapy. Epidural steroid injection has been used for treatment of lumbosacral radiculopathy with varying success rates, 20- 80%. [10] Our results showed that

group A comprised of 23 males and 20 females and group B had 19 males and 24 females. Bathia et al, [11] in their study compared 90 patients who were given TFESI [group E] and 90 patients who were given TPI [group T]. The VAS score in group E at one month (33±13.16), three months (25±16) and six months (16.14±16) was less than that the scores in group T at one month (40.6±14.16), three months (33±18) and six months (26±22). The difference of VAS and ODI between group E and T was statistically significant. The mean age in group a patient was 35.2 years and in group B was 36.1 years. Duration of pain symptoms was 6.8 months in group A and 7 months in group B. Affected root stump was L5 seen in 10 in group A and 8 in group B, S1 20 in group A and 19 in group and both L5 and S1 13 in group A and 16 in group B. Roy et al, [12] included 30 patients having lumbosacral radiculopathy secondary to prolapsed disc. As per NRS, almost all patients had complete pain relief (mean 98%) immediate post procedure. At 24hrs, the score was 79%, at 1 month 60%, at 6 months 58.5% and at 1 year 59%. Pre procedure VAS was 9.2 and thereafter 0.6, 1.8, 3.9, 3.8 and 4.2 at similar time points. Roland-Morris score was 18/24, 10/24, 9/24, at pre-procedure, at 6 months and at 1 year, respectively. No complication was noted in any patient except post procedural local pain. The mean VAS core at 1 month in group A was 34.7 and in group B was 41.2, at 3 months was 26.3 in group A and 32.5 in group B and at 6 months was 12.5 in group A and 25 in group B. Abdullah et al, [13] in their study found that the mean VAS mean scores of the groups at admission were 7.22 and 7.55, respectively; and there was not a significant association between the groups ($p > 0.05$). A significant difference between the study groups occurred after procedure starting from minute 5 ($p<0.05$). The pain scores decreased significantly in the TPI group. The patients in the NSAI group also benefited from the treatment, but the trigger point injection group benefited more as observed in all time points of VAS scoring. During the 60 minutes' follow-up period, the mean VAS pain score decreased by 0.41 ± 1.30 in the TPI group and by 2.59 ± 2.37 in the NSAI group ($p<0.001$). Respond the treatment was significantly higher group TPI than group NSAID (21/22 vs 20/32 respectively, $p=0.008$). Bhatti et al, [14] evaluated the effectiveness of transforaminal epidural steroid injection (TFESI) for treating lumbar radiculopathy caused by nerve root compression, A total of 50 patients were followed up for 6 months post-injection. Pain intensity and functional impairment were assessed with the Numeric Pain Rating Scale (NPRS) and the Oswestry Disability Index (ODI) scores, respectively, at the first visit, 3 months, and 6 months. There was a mean reduction of 4.7 points in NPRS from a mean of 8.2 pre-injection to 3.5 at 6 months follow-up ($P = 0.001$). Likewise, a mean ODI score of 29 was recorded at 6 months follow-up (mean reduction of 13.7 points in ODI score) as compared to 42.7 at baseline ($P = 0.001$).

Conclusion

Lumbar transforaminal epidural steroid injection found to be effective and efficient in managing lower back pain as compared to trigger point injection.

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