Comparison of Epidural Steroid Injections with Conservative Management in Patients with Lumbar Radiculopathy

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Abstract

Pain in the back is the most common of all chronic pain disorders. Back pain and sciatica, or leg pain originating from injury to or pressure on the sciatic nerve, are major causes of disability in adults, occurring in 15% to 20% of the working-age population annually and 70% to 90% of adults at some point in their lives. Men and women are affected equally. The study was conducted prospectively in 60 patients of 18 to 60 years of age with documented chronic low back pain with sciatica. Thirty patients were treated in group-A with conservative treatment (NSAID+ therapeutic exercises+ superficial thermotherapy and ADL instruction) plus epidural steroid injection and 30 samples were treated in group B with conservative treatment only.

Epidural steroid injection treatment group is significantly improved than conservative treatment group ($p<0.05$). There was more improvement of pain in group –A than in Group B ($p= 0.007$) and SLR was more increased in group –A than group-B ($p=0.03$). So, epidural steroid injection is a effective treatment for lumber rediculopathy especially in acute phase.

Key words : *Lumber rediculopathy, epidural injection*

Introduction

Back pain is the most common of all chronic pain disorders. It may be originated from injury to or pressure on the sciatic nerve, are major causes of disability in adults, occurring in 15% to 20% of the working-age population annually and 70% to 90% of adults at some point in their lives. Men and women are affected equally.[1]

Sciatica is basically a nerve entrapment syndrome. As such, a local epidural steroid injection will reduce the soft tissue swelling, oedema, pressure, inflammation and soft adhesions[2,3] on the nerve trunk[4,5,6] as local steroid injections would do in other entrapment syndromes like carpal tunnel syndrome.

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Management of chronic low back ache can be by two methods. Non invasive and invasive techniques: Non invasive technique include pharmacologic and non-pharmacologic approaches. Pharmacologic therapy includes use of various drugs such as Acetaminophen, NSAIDs, Opioid analgesics, Skeletal muscle relaxants, Tricyclic antidepressants, Gabapentin and others. Non pharmacologic therapy includes accupuncture, exercise therapy, massage, yoga, thermo therapy etc. Invasive methods include administration of epidural steroid injection and surgical intervention. Epidural injection of corticosteroids is one of the most commonly used interventions in managing chronic low back pain. Steroids presumably exert their effects by limiting inflammatory response, inhibiting leukocyte aggregation, preventing degranulation of inflammatory mediators, stabilizing lysosomal and other membranes, and reducing the synthesis and release of proinflammatory factors.

Meterials and Methods

The study was conducted prospectively in 60 patients of 18 to 60 years of age with documented chronic low back pain with sciatica at BSMMU , Popular Diagnosis Centre (Uttara and Narayangonj). Sixty patients were included in this study, 30 samples were group-A (NSAID+ therapeutic exercises+ superficial thermotherapy and ADL instruction + Epidural steroid injection treatment) and 30 samples were group B conservative treatment (NSAID+ therapeutic exercises+ superficial thermotherapy and ADL instruction). Patients in the epidural steroid injection treatment group were treated with 80 mg of Depomedrol (methylprednisolone) in combination with 3 ml of 2% plain xylocaine and 3 ml of normal saline in the lumbar epidural space. Patients in the conservative group were treated with bed rest, non-steroidal anti-inflammatory agents, muscle relaxants, The exclusion criteria were patients refused to take epidural steroid injection and participated in this study, known contraindications for epidural steroid injections, infection, bleeding tendency or malignancy, patient's refusal, previous lumbar epidural steroid injections, previous lumbar spine surgery, unstable neurological deficits, cauda equine syndrome, high inflammatory marker (High ESR and C–Reactive protein) and local skin infection. All patients with lumbar radicular pain, having pretreatment visual analogue scale scoring of more than 6 and of more than 2 weeks duration, including low back and uni or bilateral leg pain were included in the study.

Data were processed manually and analyzed with the help of SPSS (Statistical package for social sciences) Version 19.0.Quantitative data were expressed as mean and standard deviation and comparison were done by student "t" test. Qualitative were expressed as frequency and percentage and

comparison, carried by chi-square (X^2) test. Other statistical test was done whenever it is necessary. A probability value (p) of less than 0.05 was considered to indicate statistical significance.

The predominant nerve root involved giving rise to sciatica symptoms was determined on clinical evidence and plain radiological findings. Gradings were recorded for pre-epidoral steroid injection(ESI) pain, parasthesia, and weakness, and measurements taken for ipsi-lateral and contra-lateral straight leg raising tests, and spinal motion (flexion and extension). One week post-ESI, the patient was reviewed and the same parameters were recorded for comparison and analysis. Pain and parasthesia improvements expressed in percentages, as subjectively judged by patients, and were also noted.

Results

In our study, age group of majority patients were in 3rd to 5th decad , which was 83.3% in group- A and 73.34% in group B (Table-1).

Table-1 : Age group distribution of the study group

Age group	Study group		Total
	Group-A n (%)	Group-B n (%)	
30-40 yrs	16(53.3)	14(46.67)	30
41-50 yrs	09(30.0)	08(26.67)	17
51-60 yrs	03(10.0)	05(16.67)	08
61-70 yrs	02(6.67)	03(10.0)	05
Total	30(100)	30(100)	60

Table shows age groupdistribution of the study population, Majority age group were 3rd to 5th decad , which was 83.3% were group A and 73.34% in group B.

Table- 2 : Sex distribution of the study population

Sex	Study group		Total
	Group-A n(%)	Group-B n(%)	
Male	11(36.67)	13(43.33)	24(40%)
Female	19(63.3)	17(56.67)	36(60%)
Total	30(100)	30(100)	60(100%)

Table shows female were predominant, 63.3% female was in group A and 56.67% female was group B. Thirty six percent male was group A and 43.3% male was group B.

Table 3 : Association between group A and group B according to pre-ESI ipsilateral SLR test statuses

	Study group		Total	P value
	Group-A (injec) n(%)	Group-B (cons) n(%)		
SLR 15°–30°	04(13.3)	12(40.0)	16	<0.03
SLR 35°–60°	16(53.3)	13(43.3)	29	
SLR 65°–90°	10(36.7)	05(16.7)	16	
Total	30(100)	30(100)	60	

Association between group A and group B according to pre-ESI ipsilateral SLR test status, In group A (Injec) 13.3% was SLR 15°–30°, 53.3% was SLR 35°–60° and 36.7% was SLR 65°–90°. In Group B (con) 40% was SLR 15°–30°, 43.3% was SLR 35°–60° and 16.7% was SLR 65°–90°.($p<0.05$) that was statistically significant.

Table 4: Pain improvement of the study population

	Study group		Total	P value
	Group-A (injec) n(%)	Group-B (cons) n(%)		
Poor	03(10)	09(30.0)	12	0.007
Moderate	04(13.3)	11(36.67)	15	
Good	10(33.3)	06(20.0)	16	
Excellent	13(43.3)	04(13.3)	17	
Total	30(100)	30(100)	60	

Table shows pain improvement of the study population, 43.3% pain excellent improvement was in group A and 13.3% pain excellent improvement was in group B. Good pain improved 33.3% in group A and 20% in group B, so group A treatment is significantly better than group B ($p <0.05$) that was statistically significant.

Discussion

The treatment of epidural steroid injection in sciatica is by no means a permanent cure, though quite a few patients had no more recurrences in their lifetime. Many countries and all continents with varying success as reported in the United Kingdom [3,4], America [7], India [8], Australia [9], New Zealand [10] and Europe [11]. The most dreaded complication was epidural abscess[12] and localized infection of various forms [13], whereas complications such as meningitis[14] and arachnoiditis[15] occurred rarely [16] and only in subdural injections [17] or not at all [18]. Other rare forms such as retinal haemorrhage, myopathy and lipomatosis associated with Cushing's syndrome have also been reported.[19]

SLR test discloses lumbosacral root tension. Normally it should be possible to raise the limb to 80^0 to 90^0. In this study, 28+11=39 patients of both group showed significant increase of ipsilateral SLR. Both groups showed in the range of 20^0 improvement of Ipsilateral SLR. ESI success rate is very encouraging (77%) especially in acute cases and is mare or less same as with other studies like Epidural steroid injection for sciatica: an analysis of 526 consecutive cases with measurements.[20]

In study of Dinajpur done by Ahsan K and Mahmud SA reported results were divided according to preoperative pain grade. Twenty eight patients out of 36 in acute LBP group showed 77% pain improvement, 11 patients of chronic LBP group showed only 30% of pain improvement. Among 28 patients out of 36 in acute LBP group showed 77% pain improvement and 11 patients out of 36 of chronic LBP group showed only 30% of pain improvement. So, it is concluded that epidural steroid injection is a simple, cost effective and minimally invasive treatment for LBP especially in acute phase.[21]

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