

Frequency of Improved Functional Outcome in Patients with Lumbar Disc Prolapse Treated with Caudal Epidural Steroid Injections

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ABSTRACT

Aim: To evaluate the improved functional outcome in patients with lumbar disc prolapse treated with caudal epidural steroid injections.

Methods: This cross sectional survey was conducted from 1-1-2007 to 3-1-2008 in the Department of Neurosurgery Hayatabad Medical Complex Peshawar. A total of 100 cases between 20-50 years, either sex having clinically significant back pain radiating to lower limb (sciatica), MRI proven disc, Straight leg raise (SLR) <60 degrees and Single level disc (L3-S1) were enrolled in the study while cases with cauda equina syndrome (loss of bowel and bladder control with neurological deficit), rapidly progressive neurological deficit (sensory loss, motor weakness in involved nerve root), presence of infection (lymphocytes >11,000/mm³, ESR > 30 mmHr), Known case of bleeding disorder (PT>19, APTT>38) and Hypertensive patient and known case of Ischemic heart disease (ECG, BP Recording) were excluded from the study.

Results: The patients aged 20-50 years with mean±SD 38.64±7.99 and males 78 (78%) and 22 (22%) females were included. According to McNab's criteria at 2nd week of intervention 40% patients had poor outcome and 48% had fair and 12% had good outcome while no patient was recorded with excellent results. At 4th week of intervention, 14%, 32% had fair, 40% had good results.

Conclusion: Improved functional outcome in patients with lumbar disc prolapse treated with caudal epidural steroid injections was found in the study.

Keywords: Functional outcome, Lumbar disc prolapsed, Caudal epidural steroid injection

INTRODUCTION

The most common reasons for low back pain are radiculopathy, disc herniation and spinal stenosis¹ amongst which prolapsed disc is the major cause of morbidity due to low back pain². According to one study lumbar radiculopathy in patients younger than 40 years of age is herniated nucleus pulposus. The nucleus pulposus may bulge into the canal. Nerve root compression may cause secondary inflammation of the nerve root, giving the patient subjective symptoms of pain³. Detailed history, physical examination supplemented by neuroimaging can differentiate herniated disc prolapse from other causes of LBP and sciatica. Lasegue sign or straight leg raising test, described by frost in 1881 was devised to distinguish hip disease from sciatica⁴. Sciatica is characterized by radiating pain in an area of leg typically served by one nerve root in sacral or lumbar spine. The estimated annual incidence of sciatica in western countries is 5 cases per 1000 adults⁵.

Majority of patients (90.6%) have herniated disc at a single level either at L4-5 or L5-S1. Males suffer more than females in a ratio of 2.6:1.3. LBP treatment varies from conservative to operative modalities with varied results. Conservative treatment includes rest, analgesics, traction and sometimes spinal manipulation. Those not responding may require surgical intervention. The international consensus has been that surgery should be offered only if symptoms persist after a period of conservative treatment⁵.

Epidural steroid injection is a low risk alternative to surgical intervention in patients in whom conservative treatment has failed. It has been advocated because it modulates the body's response to inflammatory stimuli⁶ and has been used with gratifying results. They are a combination of long acting steroids and epidural anesthetic⁷.

The idea before this study was to establish that caudal epidural steroid injection is cost effective, minimally invasive, avoids surgical intervention and provides early relief of symptoms in patients with radicular pain associated with lumbar disc prolapse. Epidural steroid injection is a low risk alternative to surgical intervention in the treatment of lumbar disc herniation. If more patients show good functional outcome in this study, it would be emphasized that

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this intervention should be considered before surgical options in patients who fail conservative treatment.

SUBJECTS AND METHODS

A total of 100 cases between 20-50 years, either sex having clinically significant back pain radiating to lower limb (sciatica), MRI proven disc, Straight leg raise (SLR) < 60 degrees and Single level disc (L3-S1) were enrolled in the study while cases with cauda equina syndrome (loss of bowel and bladder control with neurological deficit), rapidly progressive neurological deficit (sensory loss, motor weakness in involved nerve root), presence of infection (lymphocytes >11,000 mm³, ESR> 30 mmHr), Known case of bleeding disorder (PT>19, APTT>38) and Hypertensive patient and known case of Ischemic heart disease (ECG, BP Recording) were excluded from the study. In all cases fit for intervention was performed by a single consultant surgeon. In all patients a caudal epidural injection was given consisting of 80mg of steroid (triamcinalone) and long acting anesthetic agent (bupicaine). Follow up of the patients was performed initially at 2 weeks and then at 4 weekly intervals up to 12 weeks in the outdoor. Patients in fair and poor grade of Macnab's criteria at 2 weeks, follow up was given a second injection. The assessment of the patient was carried out using the Macnab's criteria at each follow up in terms of Excellent, Good i.e. improved functional outcome. All the data was entered on the respective Performa for each patient. All the data was entered on Performa and then was analyzed in SPSS version 16 on a computer. Qualitative variables like gender and improved functional outcome (Excellent or Good) was presented as descriptive statistics, calculating their frequencies and percentages. Quantitative variable like age was presented as numerical statistics, calculating its mean and standard deviation.

RESULTS

In our study, most of the patients were found with the age between 41-50 years i.e., 56(56%), while 28(28%) were found between 31-40 years and only 16(16%) were found between 20-30 years of age, and mean and standard deviation was recorded as 38.64±7.99 (Table 1). Gender distribution is presented in Table 2, where male dominancy was observed in our study as 78(78%) were found as male and rest of 22(22%) were female. In Table 3 we calculated functional outcome according to Macnab's criteria at 2nd week of intervention 40(40%) patients had poor outcome, 48(48%) had fair and 12(12%) had good outcome while no patient was recorded with excellent results. At 4th week of intervention,

14(14%), 32(32%) had fair, 40(40%) had good results while 14(14%) had excellent results.

Table 1: Frequency and percentage of age (n=100)

Age years	n	%age
20 – 30	16	16
31 – 40	28	28
41 – 50	56	56
Mean±SD	38.64±7.99	

Table 2: Frequency & percentage of gender (n=100)

Gender	n	%age
Male	78	78
Female	22	22

Table 3: Functional outcome according to Macnab's criteria after caudal epidural injection

Outcome	2 nd wk	4 th wk	8 th wk	12 th wk
Excellent	-	14(14%)	18(18%)	20(20%)
Good	12(12%)	40(40%)	46(46%)	48(48%)
Fair	48(48%)	32(32%)	30(30%)	28(28%)
Poor	40(40%)	14(14%)	6(5%)	4(4%)

DISCUSSION

Chronic back pain and its associated disabilities represent an important health problem⁸. The rising prevalence of obesity may increase the impact of chronic back pain. The competitive nature of the modern workplace places individuals with less than perfect health and, in particular, those with painful conditions at a disadvantage. Workplace accommodation may not be an option for many occupations and, even where possible, is frequently linked with economic losses for employee and employer alike. Reports of epidural corticosteroid injections to treat sciatica date back to the 1950s^{9,10}. Their use has increased over time despite limited quality data, as reflected by conflicting reviews of their efficacy and safety^{11,12}. These reviews varied in terms of criteria for inclusion of patients, study design, types of interventions, outcome measures, and use of additional treatments.

A review (2004) by the Technology Assessment Committee of the Institute of Clinical Systems Improvement (ICSI)¹³ focused on fluoroscopically guided, transforaminal epidural steroid injections in radicular lumbar pain. Although it used an evidence-based approach, the rating system was different from that of the American Academy of Neurology (AAN). It concluded that, even though results based on limited data appeared to be promising, there was insufficient evidence to comment on the efficacy of transforaminal epidural steroid injections in radicular lumbar pain¹³.

The current study reveals at final follow up i.e., 12th week, 4(4%) patients with poor results, 28(28%)

had fair, 48(48%) had good and 20(20%) had excellent results. We found these results in agreement with a study conducted by Javaed S and Colleagues³ who found (20%) patients in excellent category, 40(40%) in good, 20(20%) in fair and no patient in poor.

Runu et al¹⁵ evaluated that at the end of 3 months, good results were seen in 39%, fair in 33% and considered Epidural Steroid Injection as a safe and effective mode of treatment of Low Back Pain. It provides pain free period to enable the patient for physiotherapy, which helps in early recovery. Banaszkiwicz et al¹⁶ evaluated 41% of patients either an excellent/good response to caudal epidural injection while 34% were no better or worse.

The limitation of this study was that we did not included any side effects of caudal epidural injection but the reported complications of epidural steroid injections are usually minor and transient: the most frequent is a transient headache. Reported major complications are rare (aseptic meningitis, arachnoiditis, bacterial meningitis, epidural abscess, and conusmedullaris syndrome), and may result from subarachnoid, rather than epidural injection. There may be underreporting of complications, and the reported safety track record of experienced practitioners with large volumes may not reflect the track record of smaller volume or less experienced practitioners¹⁷. More patients showed good functional outcome in this study, it would be emphasized that this intervention should be considered before surgical options in patients who fail conservative treatment.

We conducted this study considering the fact that caudal epidural steroid injection is cost effective, minimally invasive, avoids surgical intervention and provides early relief of symptoms in patients with radicular pain associated with lumbar discs prolapse. Epidural steroid injection is a low risk alternative to surgical intervention in the treatment of lumbar disc herniation and having excellent functional outcome.

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