



THERAPEUTIC EFFECT OF SELECTIVE NERVE ROOT BLOCK IN LUMBAR PROLAPSED INTERVERTEBRAL DISC WITH RADICULOPATHY

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ABSTRACT

Aim: To study the effect of selective nerve root block over an affected lumbar nerve root in prolapsed intervertebral disc.

Methodology: This is a Hospital based prospective study done in the Out Patient Department of Orthopaedics in the Assam Medical College, Dibrugarh for the period of June, 2020 to May, 2021. The study participants who fulfilled the inclusion and the exclusion criteria were included in this study. Demographic details like age, sex was obtained. We hypothesised that SNRB was a definite treatment in low grade disc prolapse with radiculopathy. Patients were followed up clinicoradiologically at 3 wks, 1 month, 2 month, 3 months and were assessed with respect to improvement in pain and radiculopathy. Outcomes were measured using ODI (Oswestry Disability Index) 16, numerical score for pain (NPRS)¹⁷ and straight Leg raise test (SLRT). **Results:** Among the participants, majority were male with mean age of 42.00 +/- 8.68 years. The mean duration of conservative treatment was 23.09 +/- 19.19 wks. The effect of SNRB is typically short lasting in majority of patients. Those with severe disc prolapse just had immediate post procedural relief. **Conclusion:** This procedure, prior to operative intervention in patients with lumbar radiculopathy due to prolapsed intervertebral disc is an important therapeutic and diagnostic tool. Although the effect is typically short lasting in majority of patients yet it gains a valuable interval period of reduced pain and radiculopathy in patients with mild to moderate pathology. Those with severe disc prolapse who were not willing for surgery neither responded nor gained any interval period with reduced pain except for the immediate post procedural relief. This immediate relief can be considered as a diagnostic tool to confirm that the blocked root is the affected one that needs to be decompressed. It correlates with the amount of relief the patient will have if that particular nerve root is decompressed surgically.

KEYWORDS :

Introduction:

Lumbar radiculopathy can be defined as pain from lower back radiating until the leg or further beyond along the course of a particular lumbar nerve.¹ The lifetime prevalence of lumbar radiculopathy has been reported to be 5.3% in men and 3.7% in women.² Lumbar radiculopathy due to a prolapsed disc resolves spontaneously in 23-48% of patients, but up to 30% will still have pronounced symptoms after one year, 20% will be out of work, and 5-15% will undergo surgery.² Selective Nerve Root Block (SNRB) is practiced as a part of the management of radicular pain due to a particular affected nerve root in both cervical and lumbar regions.¹ It is used invariably for those with or without significant surgical spinal lesions.¹ Several approaches available to access the lumbar epidural space are the caudal, interlaminar, and transforaminal (also known as nerve root or selective epidural injection).³ The transforaminal approach is advantageous because corticosteroid preparation can be closely injected to the probable source of irritated nerve root and this approach results in better ventral epidural spreading than the inter-laminar approach.⁴ There have been very less studies of non-surgical pharmacological treatment modalities like administration of corticosteroid through specific trans-foraminal nerve root blocks in the Indian population with prolapsed intervertebral disc associated radiculopathy. So, this study is designed to assess the efficacy of selective nerve root block with corticosteroids and anaesthetic agent (bupivacaine) in the management of pain associated with prolapsed lumbar intervertebral disc that didn't get relief from standard conservative treatment.

Methodology:

This study was conducted in the Department of Orthopaedics, Assam Medical College & Hospital, Dibrugarh which is a tertiary care centre. The study was done for a period of one year. It is a Hospital based prospective study. Study subject included all conservative cases of prolapsed intervertebral disc attending the Out Patient Department of Orthopaedics, AMCH in the study period fulfilling all inclusion criteria (32 cases). The Inclusion Criteria included Age group between 19 and 60 years of either sex, All cases of PIVD with radiculopathy not improved by standard conservative treatment, Patients who denied surgical intervention. The Exclusion Criteria involves those with more of back pain component than radiating pain, Patients with motor deficit, Sequestered disc seen on MRI, Patients with claudication and facet arthropathy, Patient with past history of spinal surgery, Pain secondary to traumatic spinal fractures and neoplastic causes,

Pregnancy, breast feeding and medical disorders such as bleeding diathesis, uncontrolled diabetes.

Data Collection:

After obtaining the informed written consent, all the study subjects were evaluated by thorough clinical history, physical examination, and appropriate investigations. The following parameters were documented in the study proforma. This included Demographic details like age of the patient, sex, Pain which was assessed using numerical pain rating scale.¹⁷

Statistical analysis:

The statistical analysis of data was performed using the computer program, Statistical Package for Social Sciences (SPSS for Windows, version 21.0 Chicago, SPSS Inc.) and Microsoft excel 2010. Discrete data were expressed as number and percentage (%). Results on continuous measurements were presented mean +/- standard deviation and compared using Analysis of Variance (ANOVA) while categorical data was represented as percentage. Where the p value was found significant (p<0.05) using ANOVA among 5 groups, post hoc analysis was done to find out the significance between 2 individual groups. For all analysis, the statistical significance was fixed at 5% level (p value <0.05)

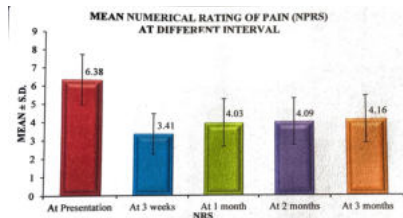
Results:

In our study the men age distribution was found to be 42.00 +/- 8.68 years. There were 23 males (71.88%) and 9 females (28.13%) and the ratio of male: female was 2.56:1. The mean duration of conservative treatment was 23.09 +/- 19.19 weeks in our study which was comparable to study like Dr Arun Kumar K, Dr Jayaprasad S et al.¹ In our study 18 cases (56.25%) had L4-L5 level involvement and 14 cases (43.75%) had L5-S1. At presentation all 32 cases had pain along with radiculopathy. At 3 wks, 6 cases (18.75%), at 1 month 7 cases (21.88%), at 2 months 5 cases (15.63%) and at 3 months 6 cases (18.75%) had residual pain which is comparable to studies like Arun Kumar et al¹, Dr.Mistry.mitul et.al¹⁷ At presentation all 32 cases (100%) had radiculopathy. At 3 wks 6 cases (18.75%), at 1 month 8 cases (25.00%), at 2 months 18 cases (56.25%) and at 3 months 20 cases (62.5%) had recurrence of radiculopathy. At presentation the mean Oswestry Disability index ODI was 31.28 +/- 6.02, at 3wks 18.53 +/- 8.27, at 1 month 20.97 +/- 7.67, at 2 months 22.34 +/- 7.67, at 3 months 22.88 +/- 7.43. The p value is <0.001 which was statistically significant.

It is comparable to studies like Arun Kumar et al¹, Sanjiv kumar et al.

ODI	MEAN	S.D.
At Presentation	31.28	6.02
At 3 weeks	18.53	8.27
At 1 months	20.97	7.67
At 2 months	22.34	7.76
At 3 months	22.88	7.43
p value	<0.001	

At presentation the mean NPRS was 6.38+/-1.39. At 3 wks it was 3.14+/-1.13, at 1 month it was 4.03+/-1.33, at 2 month 4.09+/-1.30 and at 3 month 4.16+/-1.32. The p value is <0.001 which is statistically significant. It is comparable to studies such as Christine El-Yahouchi, MD et al.



At presentation the mean SLRT was 46.44+/-17.96, at 3 wks the mean SLRT was 73.94, at 1 month 65.66 at 2 months 64.59, at 3 months 62.74. It is comparable to studies such as Karpinnen et al.

Discussion:

Lumbar radiculopathy is a very common condition seen in our setup. There is an increase in incidence of patients presenting with this condition due to sedentary lifestyle, wrong posture and activities like bending, twisting and lifting heavy weight among other causes? "Conservative management in these patients is highly unpredictable." Most patients do not accept surgery in first place and there are circumstances where we feel surgery is not yet indicated. Such patients require something that will relieve their pain at least for a short duration. Selective Nerve Root Block (SNRB) plays an important therapeutic role in these patients. But as the actual pathology causing the nerve root irritation remains, prognosis in these patients varies. Many authors have used methyl prednisolone based preparations for this purpose. Triamcinolone and betamethasone based preparations are also in use. In our study for obtaining therapeutic effect, we used 40 mg of steroid (methyl-prednisolone) for one SNRB. To be more precise, we always looked for paresthesia when the needle touched the nerve root and then withdrew the needle slightly before injecting the dye. We used the Numeric pain rating scale (NPRS) and Straight leg raise test (SLRT) for pre procedural and post procedural assessment of pain. But our main aim was to assess the improvement in disability following treatment with this procedure and hence we used the Oswestry Disability index (ODI) which is the gold standard scoring system to assess disability due to low back ache. As noted by few other authors, early response did not predict the effect after 3 weeks. There were patients with severe pain during first follow up who gradually improved and there were also patients with good relief initially but gradually worsened. Those with severe disc prolapse who were not willing for surgery neither responded nor gained any interval period with reduced pain except for the immediate post procedural relief. This immediate relief can be considered as a diagnostic tool to confirm that the blocked root is the affected one that needs to be decompressed.

CONCLUSION:

Prolapsed intervertebral disc is very common among population who are engaged in manual labour and in activities which involve abnormal load on and movements of the lumbar spine. The most common level involved are L4-L5 & L5-S1 (L4/5>L5/S1). The radiculopathy associated with the pain further worsens the disability. As such a study was undertaken to assess the effect of selective nerve root block in lumbar prolapsed intervertebral disc with radiculopathy. From our study we have come to the conclusion that this procedure, prior to operative intervention in patients with lumbar radiculopathy due to prolapsed intervertebral disc is an important therapeutic and diagnostic tool. Although the effect is typically short lasting in majority of patients yet it gains a valuable interval period of reduced pain and radiculopathy in patients with mild to moderate pathology. Those with severe disc prolapse who were not willing for surgery neither responded nor gained any interval period with reduced pain except for the immediate

post procedural relief. This immediate relief can be considered as a diagnostic tool to confirm that the blocked root is the affected one that needs to be decompressed. It correlates with the amount of relief the patient will have if that particular nerve root is decompressed surgically. Those with mild to moderate prolapse showed similar results gaining them an interval period with reduced pain. There were patients with severe pain during first follow up who gradually improved and there were also patients with good relief initially but gradually worsened. Early response did not predict the effect after 3 weeks or further.

Limitations:

There were a few limitations to our study like difference in duration of conservative treatment among the study participants, inclusion of all grades of prolapse, and a small sample size. Therefore, further multicentered, randomized controlled studies on larger sample size with long term followup needs to be implemented to conclusively ascertain the outcomes.

Recommendations:

SNRB can be effectively used as an intermediate intervention before going for surgery in those patients with inconclusive radiological indication for surgery. However it does not alter the prognosis in those cases where surgery is well indicated.

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Competing Interest:

There is no Competing interest

Authors contribution:

All authors in our study contributed to the data collection of the patients

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