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Original research article

To determine the efficacy of transforaminal selective nerve root block in patients with monoradicular pain due to lumbar disc herniation

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Abstract

Objective: To determine the efficacy of transforaminal selective nerve root block in patients with monoradicular pain due to lumbar disc herniation. Methods: It was prospective study which included 156 patients coming to Shyam Shah Medical College, Rewa. Patients with monoradicular pain coming to Out-patient department were evaluated with history, clinical examination, Spine radiographs and MR studies. Patients with acute onset pain, no neurological deficit, no instability in dynamic X-rays and single level disc herniation on MRI corresponding to the symptomatic nerve root were included in the study. After anaesthesia fitness transforaminal selective nerve root block were given by a single spinal surgeon. The patients were assessed in follow up after two weeks, three months and six months. Improvement in radicular pain was assessed by VAS scoring system. In case of persistent symptoms, patients were given the option of a repeat selective nerve root block or conventional microdiscectomy. Results: At six-month follow-up of the 156 patients, 106 patients had a favorable outcome (85 after one block and 21 after two blocks), and only 33 required surgery. Conclusion: Our study suggest a good efficacy of transforaminal selective nerve root block for the treatment of monoradicular pain in patients with lumbar disc herniation.
Keywords: Mono-Radicular pain; Lumbar disc herniation; Transforaminal selective nerve root block

Introduction

Low back pain and associated lower limb radicular pain is a very common reason for medical consultation worldwide. Fortunately most of them usually respond well to conservative treatment. Only few require further evaluation and surgical intervention.1 Intervertebral disc herniation produce a self-limiting inflammatory response in the surrounding area which, in association with mechanical compression, generates radicular pain.

Sciatica from disc herniation is a benign condition, having a favorable and auto-limiting natural history. But it can be highly symptomatic, causing pain with functional limitations.2,3 For this reason, pain control is very important in conservative treatment until spontaneous resolution.[4] The objective of this study was to report the efficacy of transforaminal block in patients with lumbar disc herniation in view of pain relief and reducing the rate of patient requiring surgery in this benign disease.

Mechanical lesions include various stages of disc prolapse, ligamentum flavum hypertrophy, facet hypertrophy and degenerative osteophytes causing foraminal stenosis, all leading to nerve root irritation [7] . Inflammatory response to exposed nucleus pulposus is also said to contribute to the nerve root pain [7] . The principle behind this technique is to reduce inflammation of the nerve root by injecting a steroid and thus reducing the intensity of pain. But the actual pathology causing the nerve root irritation remains and hence recurrence is expected.

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Our aim is to study the prognosis after single dose of SNRB over affected lumbar nerve roots and find out whether a window period of reduced pain be achieved before proceeding to next line of management.

Materials & Methods

It was prospective study which included 156 patients coming to Shyam Shah Medical College, Rewa. Patients with monoradicular pain coming to Out-patient department were evaluated with history, clinical examination, Dynamic spine radiographs and MR studies.Patients with acute onset pain, no neurological deficit, no instability in dynamic X-rays and single level disc herniation on MRI which corresponds to patient symptoms, were included in the study.

Inclusion criteria

- Unilateral radicular pain.
- Onset <6 week old.
- Failure of conservative treatment.
- Minimum follow up 6 months.

Exclusion criteria

- Bilateral radicular pain.
- Onset >8 week old.
- No conservative treatment.
- Associated severe lumbar canal stenosis.

Contraindication for block

- Cauda equina syndrome.
- Patients on blood thinners.
- Uncontrolled diabetes.
- Allergies.

Study was conducted at Shyam Shah Medical College and associated SGMH Hospital Rewa, Madhya Pradesh, India from August 2019 to June 2021. After anesthesia fitness transforaminal selective nerve root block were given. Under local anaesthesia. Prone position on radiolucent table. Appropriate C arm position madeto see the scotty dog image. Level identified, confirmed, double checked.

23G spinal needle inserted gradually, checked in both planes. At desired level, aspirated to rule out intravascular puncture. 1 cc radio-opaque dye (Iohexol) injected and seen in image to confirm proper needle position. After confirmation 2 ml methylprednisolone acetate (InjDepopred) injected. 5ml lignocaine (50%dilution)injected.

Fig 1: C-Arm image of selective nerve root block procedure

The patients were assessed in follow up after two weeks, three months and six months. Improvement in radicular pain was assessed by VAS scoring system. In case of persistent symptoms, patients were given the option of a repeat selective nerve root block or surgery (Microdiscectomy).

Observation and Results

- Study included 156 patients. Of these 85 male patient and 71 female patients.

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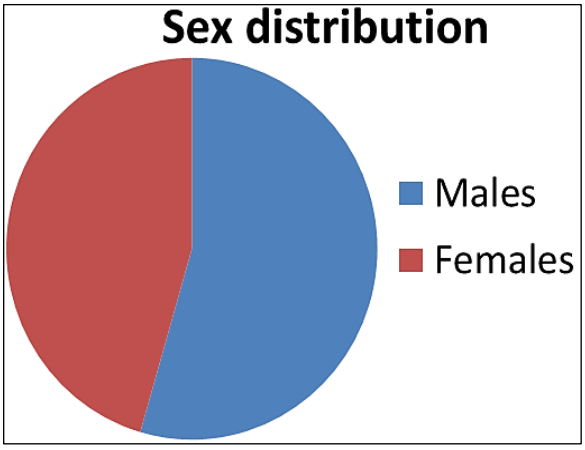


Fig 2: Pie chart of sex distribution of patients

- Age of the patients were ranging from youngest of 22 years to oldest being 78 years.

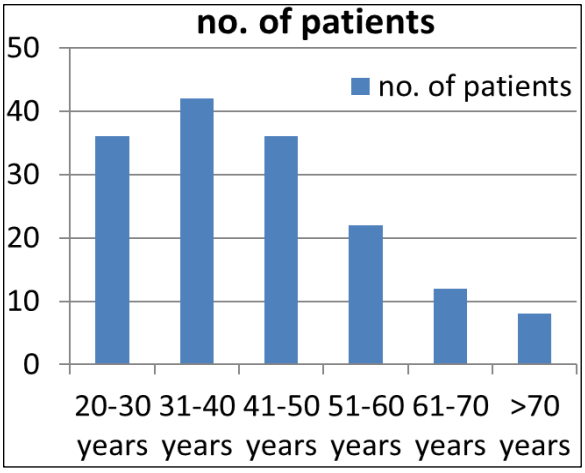
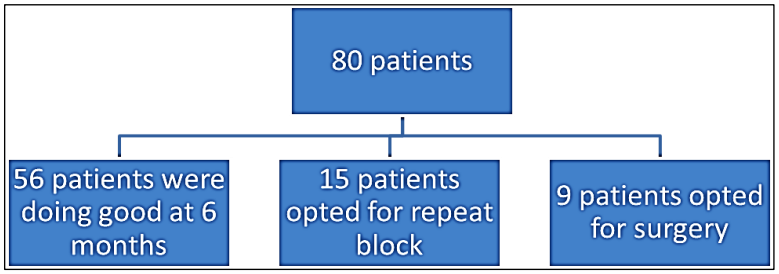


Fig 3: Bar diagram of patients age wise

The most common location of the PIVD was in the L4-L5 space, followed by the L5-S1 space. Primary end point of the study was pain good relief (VAS score <3). The patients were divided into three groups at two weeks following the procedure.

Group 1 included patients who had good pain relief (n = 80). These patients were followed up up to 6 months. Out of 80 patients, fifty six patients were having satisfactory pain relief at 6 months, Twenty four patients had recurrence of pain. Out of these 24, fifteen patients opted for second block while 9 patients had opted for surgery.



Group1: Good pain relief

- In Group 2, patients had partial pain relief (n = 41).
- Out of these 41 patients. 21 patients continued medicines and physiotherapy and were having fair results at 6 months. Eights patients opted for second block. 12 patients who were not satisfied opted for surgery.

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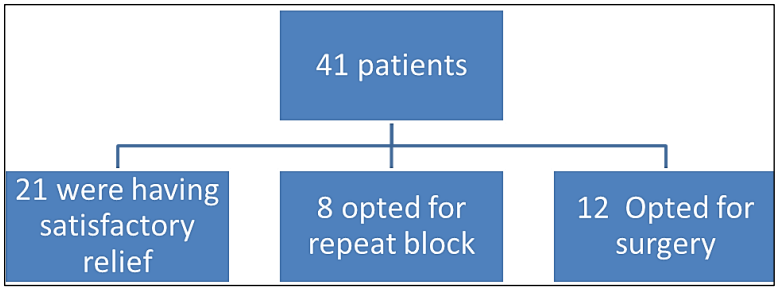
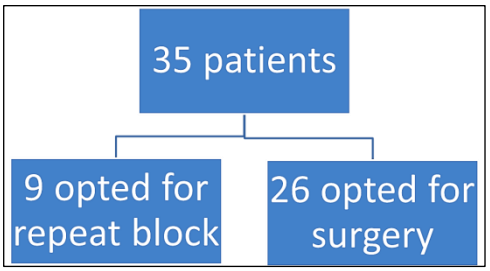


Group 2: Partial relief

- In Group 3 patients reported less satisfactory pain relief (n = 35).
- Of these 35 patients.26 patients underwent surgery and 9 decided to undergo a repeat block. Of these nine patients, two patients had good pain relief with second block at 6 months while seven ultimately undergone surgery.



Group 3: less satisfactory pain relief

Discussion

Lumbar radiculopathy is a very routinely encountered in orthopaedic clinic. There is increased trend in patients presenting with this problem. Treatment with Conservative mean is highly unpredictable in these patients. Most patients do not prefer surgery as first choice and in many patients with this diagnosis we also feel surgery is not indicated. Such patients wants some conservative means that will relieve their pain for a short duration. Transforaminal selective nerve root block plays an important therapeutic role in these patients. As the actual pathology causing the nerve root irritation remains, prognosis in these patients varies. Transforaminal steroid injections have proven to be a low-risk alternative in some patients for whom conservative treatments have not been effective.[5,6]. Our study also supports this, 102 satisfied patients and only 54 patients requiring surgery out of 156 who were not responding to conservative treatment in a disease which is having very favourable natural history.

Many authors have used methyl prednisolone based preparations for this purpose [7]. Triamcinolone and betamethasone based preparations are also in use [8].

As noted by few other authors, early response did not predict the effect after 2 weeks [9]. There were patients with severe pain during first follow up who gradually improved and there were also patients with good relief gradually worsen. 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 relief10. 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 and moderate prolapse showed similar results gaining them an interval period with reduced pain which allowed most of our patients to think about next line of management if their pain comes back[10].

The most recent National Institute for Heath and Care Excellence (NICE) guidance concluded that the evidence for both image guided and non-image guided injections for patients with acute and severe sciatica was mostly low or moderate[11]. However, the guidance recommends that an injection of local anaesthetic and steroid should be considered in acute, severe sciatica where patients would otherwise be offered surgery. The NErve Root Block VErsus Surgery (NERVES) randomised trial, which enrolled patients in 12 NHS hospitals, aimed to compare surgical microdiscectomy versus SNRB in patients with sciatica of at least 6 weeks' duration secondary to a prolapsed intervertebral disc[12]. The results of this trial, which is currently in follow-up, will elucidate the role of SNRB as a therapeutic but not diagnostic option. Hence, it is important that consideration is given to a trial of diagnostic SNRB as outlined above[12].

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Conclusion

Our study suggest a good efficacy of transforaminal selective nerve root block in pain management and treatment of monoradicular pain due to lumbar disc herniation not responding to conservative methods. This procedure can be effectively used as an intermediate procedure before going for surgery in those patients with inconclusive radiological indication for surgery. It does not alter the prognosis in those with severe disease where surgery is well indicated.

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