



International Journal of Orthopaedics Sciences

E-ISSN: 2395-1958
P-ISSN: 2706-6630
IJOS 2021; 7(1): 533-535
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www.orthopaper.com
Received: 05-11-2020
Accepted: 13-12-2020

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Retrospective study of effectiveness in transforaminal nerve root block in lumbar disc disease

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DOI: <https://doi.org/10.22271/ortho.2021.v7.i1i.2536>

Abstract

Introduction: Among chronic conditions, back problems are the most frequent cause of limitations of activity in persons less than 45 years of age. Sciatic neuralgia is a nerve root oedema because of the inflammatory, immunological, and mechanical factors. The lifetime prevalence of lumbar radiculopathy has been reported to be 5.3% in men and 3.7% in women. Steroid injections play an important role in the management of sciatic radiculopathy. Steroids act by reducing the oedema around the nerve roots and decreasing pain having the advantage of reduced dosage and targeted delivery around the nerve roots forming the basis of transforaminal nerve root block injections. In this study we want to study the effectiveness of transforaminal nerve root block in 30 patients post block and 3 months later.

Aims and objectives: Aims and objectives of the study are as follows:

1. To study the effectiveness in relief of symptoms in transforaminal nerve root block in lumbar disc disease.

Materials and Methods: The clinical and follow-up data of 30 patients having lumbar disc disease causing sciatic neuralgia were taken from May 2019 to December 2019 in MGM medical college and hospital Kamothe Navi Mumbai were retrospectively analysed in this study. Follow-up was conducted immediately after the administration of block, as well as 3 months post the administration of the root block. Preoperative VAS scoring and was done and same were repeated post block and at 3 months to observe the functional outcome of transforaminal root block.

Results: The average follow-up was 6 months. At 2 to 3 weeks' follow-up, 28 of 30 patients reported successful pain reduction. In 25 patients, this pain reduction was obtained immediately and in a further 3 patients within 4 days. In 2 patients, the nerve root block did not show a sufficient pain reduction. In total with 6 months of follow up 26 patients with pain relief after the first injection had a permanent and substantial pain reduction, 16 did not require surgery, 6 had disc herniation and the remaining 3 had foraminal stenosis for which operative procedures were planned.

Conclusion: From our study we can conclude that transforaminal Root block should be the first choice in treating and diagnosing patients with disc herniation. Root block is more effective in patients with disc herniation rather than canal stenosis. We also understand from our study that transforaminal Root block is more effective in early course of disease, within 6 weeks of onset of symptoms. So we conclude that larger discs should later be planned for an open or endoscopic decompression and mild and moderate disc can also be managed conservatively after a transforaminal root block. The patient's clinical course remains the most important determinant for treatment decision in disc herniation.

Keywords: Transforaminal nerve root block, lumbar disc disease, sciatic, disc prolapse

Introduction

Among chronic conditions, back problems are the most frequent cause of limitations of activity in persons less than 45 years of age ^[1]. Sciatic neuralgia is a nerve root oedema because of the inflammatory, immunological, and mechanical factors. The lifetime prevalence of lumbar radiculopathy has been reported to be 5.3% in men and 3.7% in women ^[2].

Since its first description by Mixter Barr in 1934, lumbar disc herniation is one of the few abnormality in the lumbar spine, were a clear relationship between the morphological alteration and pain seems to exist while pure mechanical compression was considered previously as a source of sciatica there is increasing evidence that chemical irritation of the nerve root plays an essential role perhaps even most important role ^[3].

Steroid injections play an important role in the management of sciatic radiculopathy. Steroids act by reducing the oedema around the nerve roots and decreasing pain having the advantage of reduced dosage and targeted delivery around the nerve roots forming the basis of transforaminal nerve root block injections.

In 1971, Macnab described selective nerve root blocks (SNRBs) first, which have become increasingly popular. SNRBs can be employed with diagnostic or therapeutic intent. The use of selective nerve root block has also been shown to provide permanent to temporary symptomatic relief in cases of both vertebral disc prolapse and spinal stenosis [4, 5, 6].

In this study we want to study the effectiveness of transformational nerve root block in 30 patients post block and 3 months later.

Aims and objectives

Aims and objectives of the study are as follows:

To study the effectiveness in relief of symptoms in transformational nerve root block in lumbar disc disease.

Materials and Methods

The clinical and follow-up data of 30 patients having lumbar disc disease causing sciatic neuralgia were taken from May 2019 to December 2019 in MGM Medical College and Hospital Kamothe Navi Mumbai were retrospectively analyzed in this study.

Follow-up was conducted immediately after the administration of block, as well as 3 months post the administration of the root block.

Preoperative VAS scoring and was done and same were repeated post block and at 3 months to observe the functional outcome of transforaminal root block.

Transformational nerve root block Procedure

All procedures will be done under local anesthesia with continuous monitoring of oxygen saturation, heart rate, and blood pressure. Parts are initially painted with povidone iodine and allowed to dry and draping to be done wide enough for a lateral entry point. The skin, subcutaneous tissue, fascia, and muscle layers to be infiltrated with 10ml lignocaine +10ml bupivacaine Skin entry point made about 10–14 cm lateral to the posterior midline. An 18-gauge aspiration needle (21-inch length) will be inserted such that the needle tip was positioned at the medial pedicular line in the anteroposterior (AP) projection and on the posterior vertebral borderline in the lateral projection. Once we reach the foramen through the kambins triangle the needle will then be advanced to the midline in the AP projection and the disc is entered which gives resistance depending on how degenerated the disc is. 40mg of kenacort along with 2ml of lignocaine is administered after the level is confirmed.

Inclusion criteria

- Age 20–60 years
- All patients with complaint of low backache pain with radiculopathy, unilateral or bilateral Cases refractory to conservative treatment for at least 3 months analgesics, rest or physiotherapy
- Lumbosacral, radicular pain because of prolapsed intervertebral disc, ligamentum flavum hypertrophy, lumbar stenosis
- Positive SLRT

Exclusion criteria

- Age more than 60 years
- Patients with motor weakness, rapidly progressing neurological deficits, cauda equina syndrome, claudication and with facet arthropathy
- Failed back syndrome
- Bleeding diathesis
- Pregnancy
- Systemic disease such as uncontrolled diabetes or any other source of infection; Organic diseases such as lupus, rheumatoid arthritis, cancers; Psychiatric disorders.

Results

The average follow-up was 6 months. At 2 to 3 weeks' follow-up, 28 of 30 patients reported successful pain reduction. In 25 patients, this pain reduction was obtained immediately and in a further 3 patients within 4 days.

In 2 patients, the nerve root block did not show a sufficient pain reduction.

In total with 6months of follow up 26 patients with pain relief after the first injection had a permanent and substantial pain reduction, 16 did not require surgery, 6 had disc herniation and the remaining 3 had foraminal stenosis for which operative procedures were planned.

Discussion

Lumbar radiculopathy is a quite common condition seen in our orthopaedic clinic. Conservative management in these patients is still not considered or proven to be a final management. If surgery in such patients is considered patients are sometimes still reluctant to undergo the procedure. Such patients require something that will relieve their pain at least for a short duration. Transforaminal root block plays an important therapeutic and diagnostic role in these patients. But since the pathology causing the nerve root irritation remains, prognosis in these patients varies.

Many authors have used methyl prednisolone based preparations for this purpose [7]. Triamcinolone and betamethasone based preparations are also in use. For our study we used Triamcinolone along with 5% Lidocaine. For obtaining therapeutic effect, we used 40 mg of steroid for one Transformational root block.

We used the Visual analogue scoring system for pre procedural and post procedural assessment of pain. The pain rating can be obtained by asking the patient to choose a number between 0 to 10 with 0 being no pain and 10 being severe pain.

Regarding the type of the disc prolapsed, natural history of disease suggests that majority of patients with acute disc herniation improve spontaneously by 3 months. The patients who continue to be symptomatic beyond 3 months are a distinct subset in whom the sciatic pain is related more to compression of the nerve root by herniated disc material rather than injury from inflammation.

As noted by few other authors, early response did not predict the effect after 2 weeks. There were 2 patients with severe pain during first follow up who gradually improved and there were patients with good relief gradually worsen. Those with severe disc prolapse who were not willing for surgery initially had a low VAS score post procedure but within 3 months of follow up had high VAS score and neither responded nor gained any interval period. This immediate relief is a very good diagnostic tool to confirm that the blocked root is the

affected one that needs to be decompressed. Ideally, it correlates with the amount of relief the patient will have if that particular nerve root is decompressed surgically. Patients with moderate to minimal disc prolapse gained a significant interval period and had relief of pain even in the 3rd month post procedural evaluation.

Conclusion

Transformational nerve root block being a less invasive procedure, combined with careful history, physical examination and quality radiographic studies, is an important tool in the diagnosis and treatment of patients with predominant lumbar radicular symptoms. Most importantly it severely reduced the pain score of the patient who was not responding well to oral medications for the same. Hence from our study we can conclude that transformational Root block should be the first choice in treating and diagnosing patients with disc herniation. Root block is more effective in patients with disc herniation rather than canal stenosis. We also understand from our study that transformational Root block is more effective in early course of disease, within 6 weeks of onset of symptoms. So we conclude that larger discs should later be planned for an open or endoscopic decompression and mild and moderate disc can also be managed conservatively after a transformational root block. The patient's clinical course remains the most important determinant for treatment decision in disc herniation.

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