

Methylprednisolone Acetate Versus Triamcinolone Acetonide for Pain Relief in Spinal Nerve Root Block for Low Back Pain

Ganesan G Ram*, S. Sundar, P. Kunal, J.K. Giriraj and P.V. Vijayaraghavan

*Department of Orthopaedics, Sri Ramachandra Medical Collage,
Chennai, Tamilnadu, India*

*Corresponding author e-mail: ganesangram@yahoo.com

ABSTRACT

Objective: The aim of the present study is to compare the effectiveness (pain relief) of two largely used steroids methylprednisolone acetate (Depomedrol) and Triamcinolone acetonide (Kenacort) in spinal nerve root block for low back pain management.

Method: Prospective randomized study of fifty patients with low back pain done in Sri Ramachandra Medical College from June 2012 to June 2014. The inclusion criteria were lumbar radicular pain with a disc herniation or central, foraminal stenosis without neurological deficit, in patients who have completed their 6 week trial of non-operative management and had no relief and with minimal follow up of 1 year. Patients were evaluated using VAS score.

Result: All patients had immediate relief following the first block (to varying degrees).

Conclusion: There is no significant difference whether depomedrol or Kenocort was used for spinal nerve root block. Both the steroids gives equally good results.

Keywords: Depomedrol, Kenacort, Spinal nerve, Foraminal stenosis.

INTRODUCTION

The term lower back usually refers to the Lumbar region of the spine which extends from L1 vertebra to the S1 vertebra¹. The exact cause of low back and leg pain may be difficult to diagnose. The distinction between radiculopathy and other types of referred lumbar spine pain is crucial for treatment planning. In carefully selected patients, decompressive lumbar surgery (e.g.

discectomy) is more effective than conservative care in rapidly relieving leg pain and reducing disability². On the basis of recent concepts of pain generation in sciatica, it is assumed that it is not the mechanical compression alone but rather a concomitant chemical irritation of the nerve root caused by disc material that is the decisive factor for the development of

severe sciatica³⁻⁵. Therefore, local application of corticosteroids in the area of the compressed and inflamed nerve root appears to be a reasonable treatment option. Among the steroids available in the market both depomedrol and kenacort were maximally used. Till now there is no study available in the literature comparing the effectiveness of these steroids. In this article we are going to compare the effectiveness (pain relief) of two largely used steroids depomedrol and kenacort.

METHOD

Prospective randomized study of fifty patients with low back pain done in Sri Ramachandra Medical College from June 2012 to June 2014. The inclusion criteria were patients over the age of 21, lumbar radicular pain with a disc herniation or central, foraminal stenosis without neurological deficit, in patients who have completed their 6 week trial of non-operative management and had no relief and with minimal follow up of 1 year. The exclusion criteria were pediatric patients, patients with cauda Equina Syndrome, neurological deficit patients, infective causes, acute trauma, hypersensitivity of patient to the drug used, lack of radiologically detectable abnormality, lack of substantial radicular pain as the presenting symptom and patients who have already undergone surgery on their lumbar spine. We had thirty disc patients and twenty canal stenosis patients in our study. The patients were evaluated using VAS score⁶.

Two types of steroid therapy agents used are Depomedrol (Methyl prednisolone acetate) and kenacort (Triamcinolone acetonide). Patients are randomized on entry to the study to either receive Depomedrol and kenacort. A process of simple randomization using computer generated allocation done. Following consent, patients are allocated the next available number on

the trial. The patients are then assigned to the treatment group based on their trial number by the surgeon at the dedicated injection clinic. The outcome investigators are blinded for the treatment received by the patient. All injections are performed using the default blind technique by the same surgeon, who did not participate in the evaluation of the patients.

The level of SNRB was decided by spine surgeon. During the discussion, all queries by the patients were answered and if the patient is still willing to pursue the proposed line of treatment and shows willingness to be included in our study, a written consent is obtained from the patient and his/her attenders. An ethical committee clearance to proceed with the study has also been obtained.

Patient is placed in the floppy lateral position with the painful side upwards or prone position with C-arm in 45 degree rotation. Confirmation of proper positioning of the subject is done by taking a C-arm shot which shows the characteristic "Scotty dog" appearance. 1% xylocaine is infiltrated 10cm lateral to the midline and just above the level of the transverse process of the appropriate vertebra. After confirming the correct placement of 22 gauge x 4.75 inch spinal needle with a short bevel with the help of contrast, a solution of 2ml of 0.5% sensorcaine with 2 ml of Inj. Kenacort or Inj. Depomedrol is injected. While injecting, the patient is asked about the similar radicular pain which they get because of nerve root compression. Patient is observed for the next 2 hours for any weakness or any side effects of the injection. Patient is discharged on the same day.

Analgesia consumption is strictly monitored. After the Spinal nerve root block, all patients are advised to avoid non steroidal anti inflammatory drugs (NSAID) for 6months. Paracetamol (<2000mg/day) is allowed for 'break-thru' pain, and Aspirin

(<300mg/day) is allowed as a platelet inhibitor. All patients received standardized physical therapy. All the patients are prospectively reviewed by independent assessors who are blinded for the treatment at pre injection, 6 weeks, 3, 6 months.

RESULTS

The results of mean visual analogue score for the patients who took depomedrol and kenacort were tabulated in table 1.

DISCUSSION

Lumbosacral selective nerve root blocks is used for the diagnosis and treatment of different disorders causing low back and lower extremity pain; however, a clear consensus on the use of selective nerve root injections as a diagnostic or therapeutic tool does not currently exist⁷. Pain relief after local anesthetic injection around a nerve root is also difficult to interpret. Pain relief should theoretically not occur unless the local anesthetic gets proximal to the pain generator (that is proximal to where the nerve root is being irritated by disc material, bone spurs, or scar tissue). However, North *et al*⁸ showed that peripheral sciatic nerve blocks could relieve pain originating more centrally in the lumbosacral spine. Loh *et al*⁹ have shown that even central thalamic pain can be improved by injecting local anesthetic distally in the area where the pain is being perceived. The implication is that many patients are said to have a positive result after SNRB.

The diagnostic selective nerve root block, when performed by experienced spine physicians, is a safe and effective diagnostic tool. It can be used as a part of the diagnostic algorithm in the management of radicular pain when non- invasive measures have failed to provide a diagnosis¹⁰. It can be used in conjunction with therapeutic selective nerve root blocks with a goal of

lasting pain relief or as part of pre-surgical evaluation in the patient with multiple abnormalities on imaging or non-corroborative imaging. Selective nerve root block is effective and less invasive intervention, and serves as an adjunct to non operative treatment. Selective nerve root blocks give a short term relief and not a long term effect because of the benign natural history of the disease. The block is more accurate and less amount of corticosteroid is required because of fluoroscopic guided target point during delivery as compared to conventional epidural steroid injection.

Selective nerve root blocks are similar to epidural injections, as the preparation and approach is identical. A smaller quantity of steroid in association with an anesthetic, such as lidocaine, is sufficient for SNRB in comparison to epidural steroid. The patient registers any changes in his/her pain levels at different intervals after the procedure. A physical examination and this register allow the physician to observe the response. Because the dose is so small, only one nerve root is affected by the numbing agent, which helps to diagnose which nerve is causing pain, and can also help relieve pain and inflammation. Also, the drawback of ESI is the verification of the correct epidural application of the steroids unless the injection is performed with the help of a contrast medium under the guidance of an image intensifier. On the contrary SNRB is always performed under image intensifier control and the correct application to the target nerve root is documented by the injection of contrast medium¹¹.

In our study disc herniations and lumbar canal stenosis we found that all our patients had immediate relief following the first block (to varying degrees), and 87% had a substantial pain reduction throughout the 6 month period that they were followed up .There is an improvement in mean visual

analogue score of both groups patients. From table 1 it is evident that there is no significant difference using either of the two steroids depomedrol or kenacort. The results of the study showed that that selective nerve root blocks are an effective and less invasive intervention, and serve as an adjunct to non-operative treatment. However long term relief following SNRB is as yet inconclusive for which further studies and trials would be required.

Common complications of spinal nerve root block are increased back pain, radicular pain, nonpositional headaches, vasovagal reaction, intraoperative hypertension, nausea, dizziness, facial flushing, and transient leg paresis. There were no major complications such as death, paralysis, spinal nerve injury, infection or allergic reaction during the study. In our series side effects that occurred during the procedure included lightheadedness and nausea in less than 2% of the subjects.

CONCLUSION

The selective nerve root blocks are an effective and less invasive intervention, and serve as an adjunct to non-operative treatment. However long term relief following SNRB is as yet inconclusive for which further studies and trials would be required. There is no significant difference whether Depomedrol or Kenacort was used for spinal nerve root block. Both the steroids gives equally good results.

REFERENCES

1. Cassidy JD, Carroll LJ, Cote P. The Saskatchewan health and back pain survey: The prevalence of low back pain and related disability in Saskatchewan adults. *Spine*. 1998; 23:1860-1866.
2. Beynon R, Hawkins J, Laing R, *et al*. The diagnostic utility and cost-effectiveness of selective nerve root blocks in patients considered for lumbar decompression surgery: a systematic review and economic model. Southampton (UK): NIHR Journals Library; 2013 May. (Health Technology Assessment, No. 17.19.).
3. Pfirrmann, Christian WA, *et al*. "Selective Nerve Root Blocks for the Treatment of Sciatica: Evaluation of Injection Site and Effectiveness-A Study with Patients and Cadavers 1." *Radiology*. 221.3 (2001):704-711.
4. Olmarker K, Rydevik B *et al*. Pathophysiology of sciatica. *Orthop Clin North Am*. 1991; 22:223-234.
5. McCarron RF, Wimped MW, Hudkins PG, Laros GS. The inflammatory effect of nucleus pulposus: a possible element in the pathogenesis of low-back pain. *Spine*. 1987; 12:760-764.
6. Jensen MP, Chen C, Brugger AM. Interpretation of visual analog scale ratings and change scores: a reanalysis of two clinical trials of postoperative pain. *J Pain*. 2003 Sep; 4(7):407-14.
7. Datta S, Manchikanti L, Falco FJE, Calodney AK, Atluri S, Benjamin RM, Buenaventura R, Cohen SP. Diagnostic utility of selective nerve root blocks in the diagnosis of lumbosacral radicularpain: Systematic review and update of current evidence. *Pain Physician*. 2013; 16:SE145-SE172.
8. North R, Kidd D, Zahurak M *et al*. Specificity of diagnostic nerve blocks: A prospective, randomized study of sciatica due to lumbosacral spine disease. *Pain*. 1996; 65:77-85.
9. Loh L, Nathan P, Schott G. Pain due to lesions of the central nervous system removed by sympathetic block. *Br Med J*. 1981; 282:1026.
10. Kibler R, Nathan P. Relief of pain and paresthesiae by nerve block distal to a lesion. *J Neurol Neurosurg Psychiatr*. 1960; 23:91-98.
11. Christian. W.A Pfirrmann, Patrick. A. Obehozer *et al*; Selective nerve root blocks for the treatment of sciatica: Evaluation of injection site and effectiveness- A study with patients and cadavers. *Radiology*. 2001; 221:704-711.

Table 1. Visual analogue score

Study period	Mean VAS in Kenacort group	Mean VAS in Depomedrol group
Pre Injection	6.6	6.6
6 weeks	5.8	5.7
3 Months	4.5	4.8
6 Months	3	2.9