ORIGINAL ARTICLE

Lumbar Interlaminar Epidural Steroid Injection - Experience at Mayo Hospital Lahore.

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ABSTRACT

Aim: To assess the improvement in pain and daily life style in patients with spinal stenosis managed with lumbar interlaminar epidural steroid injection using visual analogue pain score (VAS) and Oswestry Disability index (ODI).
Methods: The study was conducted from June 2017 to February 2018 at Orthopedic Department, Mayo Hospital Lahore.
Results: A total of 178 patients fulfilling inclusion criteria with spinal stenosis confirmed on MRI were included. 120 mg of Methylprednisolone along with Lignocaine 2% (2ml) was injected at L2 – L3 epidural space. Final follow-up was done at three months. The improvement (>40) in ODI was seen in 157 (88.20%) patients while the change in pain score of more than 50% was seen in 89.3% (159) patients. So it was concluded that interlaminar lumbar epidural injection of steroid is effective and shows good results in daily activities in treating patient with spinal stenosis.
Conclusion: Interlaminar Lumbar epidural injections are effective in treating pain and radiculopathy due to lumbar spinal stenosis in terms of reduction in pain and improvement in Oswestry disability index.
Keywords: Lumbar Interlaminar epidural injection, Oswestry Disability Index, Spinal Stenosis.

INTRODUCTION

Narrowing of spinal canal at Lumbar level causes a condition known as Lumbar spinal stenosis[1]. Spinal stenosis is the most common cause of low back pain especially in elderly patient and can cause significant impairment[2]. Spinal stenosis most commonly seen in cervical spine and lumbar spine.[3] There are two conditions of lumbar spinal stenosis i.e. relative lumbar spinal stenosis and absolute spinal stenosis and the prevalence is 23.6% (12mm limit) and 8.4% (10mm limit) respectively[4].
The management of moderate to severe symptoms includes both conservative and surgical management; however there is a lack in the effectiveness of conservative management[5]. Regardless of all the recent advances in treating spinal stenosis, medical treatment is ineffective and surgical management includes major procedure for the surgeons and is uncomfortable for the patients so injecting steroids in epidural space can be a safe remedy with shorter duration and with patient comfort.

Epidural injections of steroids are less invasive, cheaper, and safer than surgery so commonly practiced nowadays. Owing lack of data and no local published study to evaluate the effectiveness of lumbar interlaminar epidural steroid injections, we conducted this study to evaluate the effectiveness of lumbar interlaminar injection of steroids in managing the patients with low back pain, radiculopathy with lumbar stenosis in terms of pain score according to visual analog scale (VAS) and betterment in Oswestry Disability Index in treating the patients with lumbar spinal stenosis with interlaminar lumbar epidural injection, as only few international studies has been there but with smaller sample size[6]. We on the other hand with a larger number of patients (n=178) are determined to achieve more better results in treating patients with lumbar spinal stenosis with lumbar interlaminar epidural injection of steroids reducing unnecessary surgeries and burden of doctors and hospitals.

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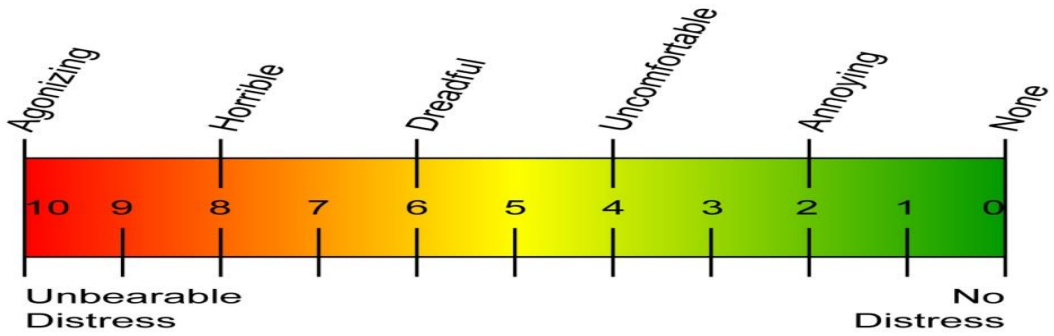
METHODOLOGY

Using non-probability purposive sampling technique this descriptive case series was carried out from June 2017 to March 2018 in Mayo Hospital Lahore (Orthopedic department). Taking 79% expected improvement with steroid epidural injection, 95% confidence level and 06% margin of error a total of 178 patients were calculated. All patients with age ranged from 18 -80 years of either gender with having lumbar spinal stenosis clinically later confirmed on MRI were included. All of them were having initial pain score of 04 or more on VAS. Patients with history of local infection, ischemic cardiac disease, uncontrolled hypertension, head injury, vertebral tumors and fractures, and history of previous lumbar surgery were excluded from study.
Procedure: The procedure was performed in operation theatre. After pre injection evaluation and informed consent, patient was asked to sit on the operation table and needle puncture site was draped under aseptic measures. L2 and L3 space was identified and was anesthetized with 2% lignocaine injection. An 18G epidural needle was introduced in the L2 and L3 epidural space. The presence of needle in epidural space is confirmed by injecting air in the space and by loss of resistance. Then 3ml of Methylprednisolone and 2ml of lignocaine was then injected in the space. A final follow-up was done at three months after injection.

RESULTS

Out of 178, 98 were males (55.1%) and 80 were females (44.9%). The age ranged from 18 to 78 years with a mean of 43.77±14.26 years. The duration of disease ranged from 01 to 60 months with a mean duration of 8.87±6.55 months. The pre injection mean pain measured on visual analog scale (VAS) was 6.48±0.67 while it improved to 2.11±0.88 at 3rd month after injection. The pain score on VAS ranged from 05 to 08 pre injection and improved to 01 to 06 after injection at 3rd month. There was more than 50% improvement in pain observed in 159(89.33%). The initial average ODI in patients was 47.71±11.12 which improved to 13.52±6.72 at 3rd month. The initial Oswestry indices ranged from 30 to 76 which improved to 8 and 42 at 3rd month. The improvement in ODI of more than 40% was seen in 157 patients (88.20%). Out of these 157 patients, 77(49%) patients were in 18-40 years age group, 60 (38.2%) were in 41-60 years group while 20(12.7%) were of 61-80 years of age group. There is no significant role of age in overall improvement (P=0.093). More over out of 157 patients 87(54.70%) were males and 70(44.6%) were females. Statistically the role of gender on improvement is not significant (P=0.973). Out of 157 patients 102(06%) patients had disease of more than 6 months but less than 12 months where as 44(28%) patients had disease less than 6 months while 11 (07%) had disease of more than a year. Hence statistically duration of disease has no significant role in overall improvement (p=0.09). 59 patients (37.6%) out of 157 had initial pain score on VAS of 5-6 whereas 98 patients (62.4%) had VAS of 7-8 pain score before injection. So statistically significant role in terms of overall improvement was seen with the baseline pain score (p<0.001).

Figure: VAS pain score scale



DISCUSSION

Spinal stenosis has been known to be more than 190 years however exact definition of the disease has not been recognized.[7] According to literature lumbar stenosis can be congenital or acquired and the commonest cause of acquired lumbar spinal stenosis is degenerative disease of spine but it mostly involves adults and elder persons.[8] Usually lumbar spinal stenosis occurs more in males than in females. However occupation, body physique and gender have no significant role in pathogenesis of spinal stenosis[7].

Low back pain with radiculopathy (radiating in lower limbs, buttocks) occurs most commonly due to Lumbar Spinal Stenosis (LSS). Stenosis of lumbar canal can be lateral recess stenosis or central canal stenosis. However central canal stenosis may increase the compression due to engorged venous plexus which may cause nerve root ischemia resulting in severe symptoms. To overcome these symptoms, physiotherapy of spine (back extension exercises, abdominal strength exercises) has been exercised. But these physiotherapy exercises alone may not be adequate to cure the pain due to spinal stenosis[9,10].

Patients with radiculopathy not going for surgery can be managed with injecting corticosteroids in epidural space. Corticosteroid reduces inflammation resulting in relieving compression at nerve roots. Apart from controversy of the efficacy of steroid injection, the use of epidural injections is increasing day by day and declared minimally invasive management and safe. [11, 12]

Locally, such studies have not been reported so far to assess the effectiveness and outcome of epidural injections. So we carried out this study to evaluate the efficacy of lumbar interlaminar epidural steroid injection in treating spinal stenosis in terms of improvement of ODI and pain scores. In current study the patient's age ranged from 18 to 78 years with a mean of 43.77±14.26 years. 98 (55.1%) were male while 80(44.9%) were females and the duration of disease ranged from one to 60 months with a mean duration of 8.87±6.55 months.

In 2010 Smith CC. et. al., published a study in which he compared the effect of transforaminal epidural injection of steroids with lumbar interlaminar epidural injections. In his study 19 patients were identified retrospectively who received steroids injection either transforaminal or interlaminar route in treating radiculopathy due to lumbar spinal stenosis. They concluded significant improvement in VAS in both groups after the injections. Surgery was performed in a very low number of patients in both groups i.e., 11% in interlaminar group and 15% in transforaminal group. (p=0.63). Still no statistically significant difference was seen in both groups in terms of improvement in VAS (p=0.919). Hence it is cleared from their study that epidural injections of steroids either through interlaminar or

transforaminal approach has significant role in treating pain in lumbar spinal stenosis[13].

Swezey RL in 1996 in a study reported the outcome of lumbar spinal stenosis in patients with neurological claudication. 47 patients were selected retrospectively who were treated five years back and reassessed telephonically. 20 out of 47 patients (43%) were symptoms free while 14(30%) were having the symptoms. They were treated with epidural injection of steroids. 08 patients out of 13(61.5%) improved after 01- 03 epidural injections of steroids. So the study concluded that treating spinal stenosis with epidural injections of steroids showed good results and improves symptoms of spinal stenosis significantly[14].

In 2008 another study evaluated the effectiveness of epidural injections with and without steroids in treating spinal stenosis. In this study group I received epidural injection with local anesthetics without steroids while group II received local anesthetic with steroid. In 55% to 60%, patients had more than 50% pain relieved while improvement upto 40% in ODI was seen in 80% of the patients. So the study concluded that epidural injection with and without steroids is effective in treating low back pain with radiculopathy due to spinal stenosis in 60% of patients[15].

Tagowski et.al in 2019 published a study in which he compared pain relief in patients in which he injected lumbar epidural steroids injection under CT guidance comparing effectiveness of both triamcinolone and dexamethasone. That was an observational study in which they included 806 patients retrospectively with lumbar radiculopathy. Patients were divided randomly in two groups. 209 in each group pain was assessed before injection using VAS and reevaluated at four weeks after injection. They concluded that triamcinolone showed better results as compared to dexamethasone in treating lumbar radiculopathy due to spinal stenosis[16]. This study also correlates and favors our study that lumbar interlaminar injection of steroids are effective in treating low back pain due to spinal stenosis.

CONCLUSION

We conclude from our study that Interlaminar Lumbar epidural injections are effective in treating pain and radiculopathy due to lumbar spinal stenosis in terms of reduction in pain and improvement in Oswestry disability index.

Conflict of interest: No conflict of interest to declare

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REFERENCES

1. Hirata Y. [Diabetes, with special reference to food exchange lists]. Nihon rinsho Japanese journal of clinical medicine. 1966;24(7):1242-8
2. Friedly JL, Bresnahan BW, Comstock B, Turner JA, Deyo RA, Sullivan SD, et al. Study Protocol-Lumbar Epidural Steroid Injections for Spinal Stenosis (LESS): a double-blind randomized controlled trial of epidural steroid injections for lumbar spinal stenosis among older adults. BMC musculoskeletal disorders. 2012;13(1):48.
3. Hsiang JK. Spinal Stenosis. [Online available from]: http://emedicine.medscape.com/article/1913265-overview. Medscape. Retrieved on April 2014.
4. Kalichman L, Cole R, Kim DH, Li L, Suri P, Guermazi A, et al. Spinal stenosis prevalence and association with symptoms: the Framingham Study. The Spine Journal. 2009;9(7):545-50.
5. Steurer J, Nydegger A, Held U, Brunner F, Hodler J, Porchet F, et al. LumbSten: The lumbar spinal stenosis outcome study. BMC musculoskeletal disorders. 2010;11(1):254.
6. Manchikanti L, Cash KA, McManus CD, Pampati V, Abdi S. Preliminary results of randomized, equivalence trial of fluoroscopic caudal epidural injections in managing chronic low back pain: Part 4. Spinal stenosis. Pain physician. 2008;11(6):833-48.
7. Martinelli T, Wiesel S. Epidemiology of spinal stenosis. Instructional course lectures. 1991;41:179-81.
8. Amundsen T, Weber H, Nordal HJ, Magnaes B, Abdelnoor M, Lilleås F. Lumbar spinal stenosis: conservative or surgical management?: A prospective 10-year study. Spine. 2000;25(11):1424-36.
9. Ciol MA, Deyo RA, Howell E, Kreif S. An assessment of surgery for spinal stenosis: time trends, geographic variations, complications, and reoperations. Journal of the American Geriatrics Society. 1996;44(3):285-90.
10. Jane Jr JA, diPierro CG, Helm GA, Shaffrey CI, Jane Sr JA. Acquired lumbar stenosis: topic review and a case series. Neurosurgical focus. 1997;3(2):E11.
11. Jespersen SM, Hansen ES, Hôy K, Christensen KÔ, Lindblad BE, Ahrensberg J, et al. Two-level spinal stenosis in minipigs: hemodynamic effects of exercise. Spine. 1995;20(24):2765-73.
12. Armon C, Argoff CE, Samuels J, Backonja M-M. Assessment: Use of epidural steroid injections to treat radicular lumbosacral pain Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Neurology. 2007;68(10):723-9.
13. Smith CC, Booker T, Schaufele MK, Weiss P. Interlaminar versus transforaminal epidural steroid injections for the treatment of symptomatic lumbar spinal stenosis. Pain Medicine. 2010;11(10):1511-5.
14. Swezey RL. Outcomes for lumbar stenosis. Journal of clinical rheumatology: practical reports on rheumatic & musculoskeletal diseases. 1996;2(3):129-34.
15. is a Nursing MM, Manchikanti L. Preliminary results of a randomized, equivalence trial of fluoroscopic caudal epidural injections in managing chronic low back pain: part 4—spinal stenosis. Pain Physician. 2008;11(6):833-48
16. Tagowski M, Lewandowski Z, Hodler J, Spiegel T, Goerres GW. Pain reduction after lumbar epidural injections using particulate versus non-particulate steroids: intensity of the baseline pain matters. European radiology. 2019 Jul 1;29(7):3379-89.