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SPINAL STENOSIS;

COMPARISON OF THREE DOSES WITH SINGLE DOSE OF EPIDURAL STEROID INJECTION WITH SINGLE DOSE OF LUMBAR RADICULAR PAIN

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ABSTRACT… Introduction: Spinal stenosis causing lower back pain and radiculopathy and it is the most common cause of patient admission at Spine centre as compared to other spine pathologies. Most common complaint in the Spine outpatient department or hospital admissions Different modalities have been applied with time for its management. Among them Epidural steroid injection is also. **Objectives:** "To Compare three doses of epidural steroid injection with single dose of epidural steroid injection for Lumbar Radicular pain in spinal stenosis patients." **Study Design:** Prospective study. **Setting:** Ghurki Trust Teaching Hospital, Lahore, Pakistan. **Period:** Jan 2016 to Dec 2016. **Materials and Methods:** 95 patients with lumbar radicular pain due to spinal stenosis were randomly allocated into 2 groups. In Group A, 42 patients were given 120 mg of Depo-medrol (40 mg per day for 3 days) along with local anesthesia and in group B, 43 patients were given 40 mg of Depo-medrol with local anesthesia as a single dose. Both Group A and Group B were matched in terms of age and gender. On visual analogue scoring, pain was assessed after 2 weeks, 3 months and 6 months. **Results:** In Group A (3 doses of depomedrol) VAS improvement at 2 weeks, 3 months and 6 months were more than group B (single dose of depomedrol) which was statistically significant ($p < 0.05$). There were no major complications like epidural hematoma or abscess formation in both groups. The overall minor complications like flushing, transient hyperglycemia and headache due to CSF hypotension were more in Group A than Group B but statistics shows no significant difference. All the adverse events resolved within few days without any significant morbidity and subsequent hospitalizations. **Conclusion:** Epidural steroid injection is excellent modality in the treatment of lower back pain with radiculopathy. Moreover 3 doses have greater effect in relieving pain as compared to single dose. There is no increase risk of complications by increasing dose.

Key words: Epidural, Steroid, Radicular Pain, Depomed

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INTRODUCTION

World wide, Lower back pain with radiation to one or both legs is among one of the leading causes of absenteeism from work.[1] Different surgical and non surgical modalities had been tried for its management. Among the non operative management, Epidural steroid injection are most valuable. Epidural steroid injections are advised to patients having sign and symptoms of nerve root involvement.[2] Operative management are advised to patients in whom conservative measurements failed to respond.[3] Steroid injections can be given epidurally alone or along with local anesthetics. The efficacy of this injection increases with given with local anesthetics.[4] The controversy exists among doses of steroid injection and still exact dose is under debate.

Riew et al in their study found that epidural injections in patients with chronic pain with radiculopathy should having local anesthetics epidural injections with or without steroid and it having effective role in relieving pain.[5] Lutz et al tried transforaminal epidural steroid injections under image intensifier and found that it is excellent modality before going to surgical intervention in patients who having failed conservative management.[6] There are several

complications after this epidural steroid injections like headache, increase in intensity of back pain, increase radiculopathy, facial redness, vasovagal reaction, hyperglycemia and hypertension. However, these complications are for time being and resolved.[7] Carette S et all did a comparative study of using methypredinisolone and saline injections. He found that steroid injections are far better than saline injections but the draw back is that, it didn't decrease the risk of surgeries.[8] Pasqualucci A et al found that the physiotheraphy should be considered along with steroid injection and local anesthesia in managing pain in patients with radiculopathy.[9] Ohtori S et all found tried Etanercept injection as given epidurally and found that etanercept is far better than steroids for leg pain, lower back pain and numbness.[10] Spaccarelli et all in their meta analysis found that the efficacy of these injections are good from 2 weeks to 3 months.[11] Manchikanti L compared the efficacy of local anesthetic alone and with steroids and found that except for disc herniations, almost all patients with spinal problem got pain relieve when either local anesthesia or combination of local anesthesia and steroid given. In disc herniations local anesthesia must be given with steroid.[12]

The main aim of this study was to compare the efficacy of single dose of depomedrol with 3 doses of depomedrol in our set up using its combination with Bupivacaine.

METHODOLOGY

This prospective study was conducted from Jan 2016 to Dec 2016 after approval from the hospital ethical committee and informed consent from the patients. 95 patients of either gender and any age who presented with lower back pain radiating to one or both legs and having disc herniation as evident on MRI were included in the study while patients with associated multiple co morbidities, previous epidural injection given, spinal deformity, breast feeding mothers, on warfarin therapy or using other blood anticoagulant medicines, body mass index >30, poorly controlled psychiatric conditions were excluded from the study. Each patient were examined thoroughly after complete history and were included in the study after fulfilling the inclusion criteria. The patients were divided into two groups using probability sampling technique. Group A included all those patients who received three doses of Depomedrol at 24 hours interval while Group B include all those patients who received only single dose of Depomedrol. 3 ml of Bupivacaine hydrochloride 0.25% were added to each injection of Depo medrol. Group A patients were admitted for 3 days while Group B patients were admitted for 1 day. All epidurals were given by senior anesthetist using epidural kit. All the patients were given antibiotics for 3 days to avoid any infection only. The patients were regularly followed at 2 weeks, 3 months and 6 months. Pre injection and post injection the Visual Analogue scoring were noted. All the data were initially entered on a preformed Performa and later on SPSS 17.0 Version were used for data analysis.

RESULTS

Among 95 patients, 45(47.36%) were male and 50(52.67%) were females with male to female ratio of 0.9:1 and with mean age of 45.6 ± 1.6 years. Group A include 42 patients, in which 22 were male and 20 were female while in Group B, there were 23 males and 20 females. The mean duration of radiculopathy were 6.3 ± 1.5 months.15(15.79%) patients were below 30 years, 60(63.16%) patients were between 31- 60 years and remaining 20 (21.05%) were above 60 years.

The pre injection and post injection, visual analogue scoring are summarized in Table-I; Statistically significant difference were found in both groups at 6 months interval of follow up. There were no major complications like epidural hematoma or abscess formation in both groups. The overall minor complications like flushing, transient hyperglycemia and headache due to CSF hypotension were more in Group A than Group B but statistics shows no significant difference. All the complications resolved without any morbidity and no patient required further hospitalization.

Visual Analogue Score	Group A	Group B
Pre injection	8.5 ± 1.7	8.3 ± 1.8
After 2 weeks	6.5 ± 1.5	7.0 ± 1.3
After 3 months	5.3 ± 1.2	6.7 ± 1.5
After 6 months	4.0 ± 2.5	6.5 ± 1.5

Table-I. Visual analogue scoring of both groups;

DISCUSSION

Back pain especially lower side associated with radiculopathy is common in our society and the leading cause of discomfort. Different modalities had been adopted with time for its management because of the high occurrence of this condition. One of them is management with epidural steroid injections. Mostly these injections contain steroid with local anesthetics, which are thought to relieve nerve root inflammation and ischemia. These injections having far better results when given under image intensifier.[13] Mostly two types of steroid injections are given i-e dexamethasone and triamcinolone. It has been that triamcinolone injections having longer effect as compared to dexamethasone. Transforaminal epidural corticosteroid injections are an effective treatment for acute radicular pain due to disc herniation, and frequently only require 1 or 2 injections for symptomatic relief.[14]

In our study, we found that 3 doses of 80mg Depomedrol along with Bupivacaine is more effective in relieving pain than single dose of 80mg of Depomedrol with Bupivacaine. However, Owlia M et al compared single 40mg dose of Depomedrol with 80mg dose of Depomedrol and found statistically no significant difference between the two doses.[1] Horlocker et al found that there is little or no risk of major complications with epidural steroid injection especially in patients using antiplatelet medications.[15] Karaman H et al like our study found that there is no major complications with these epidural injections. Minor complications occurred but these resolved without any serious event.[16]

Kang S-S et al in their study found that a minimal effective dose of corticosteroid (triamcinolone 10 mg) for immediate pain relief in TFESI for patients with lumbosacral radicular pain due to a herniated disc.[17] McGrath JM et al in their study regarding the complications after epidural injections found that there are no major complications with it. However there were 103 minor complications. The most common complications were increased pain, pain at injection site, persistent numbness, and few other. Complications were less common in transforaminal injections, than in interlaminar injections.[18]

Lee S-H et all in their meta analysis found that the epidural steroids with sodium chloride solution or bupivacaine may not be effective, whereas, either lidocaine alone or lidocaine with steroid have shown significant evidence of efficacy both in radiculopathy and spinal stenosis[19] Davis N et all found that after 2 years of follow up ,almost half of the patients were satisfied with transforaminal injection and didn't require further treatment, one fourth of the patients need further injection and others required surgery.[20] Similarly Natarajan S et al study showed that significant improvement in the VAS score during their regular follow up when compared to their pre injection levels. Patient satisfaction was the high at 2 weeks post operatively slightly declining over time.[21]

Friedly JL et al found that the epidural injections of corticosteroid plus lidocaine haven't any significant role after 6 weeks. The injection type have no role in relieving pain earlier or late. Moreover, in patients in whom first injection didn't relieve pain within 6 weeks have no role in relieving pain with subsequent injections.[22] Vorobeychik Y et all found that the efficacy of epidural injections without using image intensifier lies for just 6 weeks which is much lower than our study.[23] Kamble PC did a study on Outcome of single level disc prolapse treated with transforaminal steroid versus epidural steroid versus caudal steroids and found that the pain was significantly low at 6 months interval in transforaminal steroid group as compared to others two.[24]

There are few limitations in our study. The sample size was low and the patients were not followed for more than 6 months. In our study the comparison was done between only one and three doses of steroids using them as epidural while the comparison was not done with other modalities

of injecting steroids. Moreover the patients need to be admitted for dosage and to see any complications which increases the burden on the patient. So, further studies should be carried out for better results.

CONCLUSION

Lower back pain with radiculopathy always affect the social life. Depomedrol injection should always be considered as option for it beside, other modalities of treatment. Moreover 3 doses are more effective as compared to single dose without any adverse effects.

REFRENCES

1. Owlia M, Salimzadeh A, Alishiri G, Haghighi A. **Comparison of two doses of corticosteroid in epidural steroid injection for lumbar radicular pain.** Singapore medical journal. 2007; 48(3):241.

2. Benzon HT. **Epidural steroid injections for low back pain and lumbosacral radiculopathy.** Pain. 1986; 24(3):277-95.

3. Igarashi T, Hirabayashi Y, Seo N, Saitoh K, Fukuda H, Suzuki H. **Lysis of adhesions and epidural injection of steroid/local anaesthetic during epiduroscopy potentially alleviate low back and leg pain in elderly patients with lumbar spinal stenosis.** British Journal of Anaesthesia. 2004; 93(2):181-7.

4. Riew KD, Yin Y, Gilula L, Bridwell KH, Lenke LG, Lauryssen C, et al. **The effect of nerve-root injections on the need for operative treatment of lumbar radicular pain: A prospective, randomized, controlled, double-blind study.** JBJS. 2000; 82(11):1589.

5. Manchikanti L, Cash KA, McManus CD, Pampati V, Fellows B. **Fluoroscopic caudal epidural injections with or without steroids in managing pain of lumbar spinal stenosis: One-year results of randomized, double-blind, active-controlled trial.** Clinical Spine Surgery. 2012; 25(4):226-34.

6. Lutz GE, Vad VB, Wisneski RJ. **Fluoroscopic transforaminal lumbar epidural steroids: an outcome study. Archives of physical medicine and rehabilitation.** 1998; 79(11):1362-6.

7. Botwin KP, Gruber RD, Bouchlas CG, Torres-Ramos FM, Freeman TL, Slaten WK. **Complications of fluoroscopically guided transforaminal lumbar epidural injections.** Archives of physical medicine and rehabilitation. 2000; 81(8):1045-50.

8. Carette S, Leclaire R, Marcoux S, Morin F, Blaise GA, St.-Pierre A, et al. **Epidural corticosteroid injections for sciatica due to herniated nucleus pulposus.** New England Journal of Medicine. 1997; 336(23):1634-40.

9. Pasqualucci A, Varrassi G, Braschi A, Peduto VA, Brunelli A, Marinangeli F, et al. **Epidural local anesthetic plus corticosteroid for the treatment of cervical brachial radicular pain: Single injection versus continuous infusion.** The Clinical journal of pain. 2007; 23(7):551-7.

10. Ohtori S, Miyagi M, Eguchi Y, Inoue G, Orita S, Ochiai N, et al. **Epidural administration of spinal nerves with the tumor necrosis factor-alpha inhibitor, etanercept, compared with dexamethasone for treatment of sciatica in patients with lumbar spinal stenosis: A prospective randomized study.** Spine. 2012; 37(6):439-44.

11. Spaccarelli KC, editor **Lumbar and caudal epidural corticosteroid injections.** Mayo Clinic Proceedings; 1996: Elsevier.

12. Manchikanti L, Nampiaparampil DE, Manchikanti KN, Falco FJ, Singh V, Benyamin RM, et al. **Comparison of the efficacy of saline, local anesthetics, and steroids in epidural and facet joint injections for the management of spinal pain: A systematic review of randomized controlled trials.** Surgical neurology international. 2015; 6(Suppl 4):S194.

13. Manchikanti L, Benyamin RM, Falco FJ, Kaye AD, Hirsch JA. **Do epidural injections provide short-and long-term relief for lumbar disc herniation? A systematic review.** Clinical Orthopaedics and Related Research «. 2015; 473(6):1940-56.

14. Kennedy DJ, Plastaras C, Casey E, Visco CJ, Rittenberg JD, Conrad B, et al. **Comparative effectiveness of lumbar transforaminal epidural steroid injections with particulate versus nonparticulate corticosteroids for lumbar radicular pain due to intervertebral disc herniation: A prospective, randomized, double-blind trial.** Pain Medicine. 2014;15(4):548-55.

15. Horlocker TT, Bajwa ZH, Ashraf Z, Khan S, Wilson JL, Sami N, et al. **Risk assessment of hemorrhagic complications associated with nonsteroidal antiinflammatory medications in ambulatory pain clinic patients undergoing epidural steroid injection.** Anesthesia & Analgesia. 2002;95(6):1691-7.

16. Karaman H, Kavak GÖ, Tüfek A, Yldrm ZB. **The complications of transforaminal lumbar epidural steroid injections.** Spine. 2011;36(13):E819-E24.

17. Kang S-S, Hwang B-M, Son H-J, Cheong I-Y, Lee S-J, Lee S-H, et al. **The dosages of corticosteroid in transforaminal epidural steroid injections for lumbar radicular pain due to a herniated disc.** Pain Physician.

2011;14(4):361-70.

18. McGrath JM, Schaefer MP, Malkamaki DM. **Incidence and characteristics of complications from epidural steroid injections.** Pain Medicine. 2011;12(5):726-31.

19. Lee S-H, Kim K-T, Kim D-H, Lee B-J, Son E-S, Kwack Y-H. **Clinical outcomes of cervical radiculopathy following epidural steroid injection: a prospective study with follow-up for more than 2 years.** Spine. 2012;37(12):1041-7.

20. Davis N, Hourigan P, Clarke A. **Transforaminal epidural steroid injection in lumbar spinal stenosis: an observational study with two-year follow-up.** British journal of neurosurgery. 2017;31(2):205-8.

21. Natarajan S, Krishnamurthy AV, Kalanithi R, Ilavarasan M. **Study on the functional outcome of fluoroscopically guided transforaminal epidural steroid injections in patients suffering from lumbar disc herniation.** International Journal of Research in Orthopaedics. 2017;3(3):607-13.

22. Friedly JL, Comstock BA, Turner JA, Heagerty PJ, Deyo RA, Bauer Z, et al. Long-Term Effects of Repeated Injections of Local Anesthetic With or Without Corticosteroid for Lumbar Spinal Stenosis: A Randomized Trial. Archives of Physical Medicine and Rehabilitation. 2017.

23. Vorobeychik Y, Sharma A, Smith CC, Miller DC, Stojanovic MP, Lobel SM, et al. **The Effectiveness and Risks of Non–Image-Guided Lumbar Interlaminar Epidural Steroid Injections: A Systematic Review with Comprehensive Analysis of the Published Data.** Pain Medicine. 2016;17(12):2185-202.

24. Kamble PC, Sharma A, Singh V, Natraj B, Devani D, Khapane V. **Outcome of single level disc prolapse treated with transforaminal steroid versus epidural steroid versus caudal steroids.** European Spine Journal. 2016;25(1):217-21.

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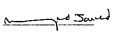
6	Shahzad Javed	Critical Review	
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