Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2015; 3(3C):1220-1223 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2015.v03i03.038

Research Article

Epidural Steroid Injection Guided by Fluoroscopy-CT: Report of the Technique in a Consecutive Patient Series and 3 Months Outcome Using the Numeric Rating Scale of Pain

Alejandro Rojas-Marroquín
Department of Neurosurgery, Medilaser Clinic, Florencia, Colombia; Endovascular Neurosurgeon, Universidad Nacional Autónoma de México, México DF, México

***Corresponding author**
Alejandro Rojas-Marroquín
Email: alejorojasm@gmail.com

Abstract: The purpose of this research is to describe the procedure and evaluate its efficacy in a series of 30 patients who underwent epidural steroid injection guided by CT. In this way, to report the results at: 1st week, 1st month, 2nd month and 3rd month after the procedure.
Keywords: Spinal stenosis, Steroids, Epidural injection, Fluoroscopy-CT.

INTRODUCTION

The epidural steroid injection can be performed blindly or guided by fluoroscopy. CT guided injections are used to insert the needle in the right place and searching the direct visualization of the same [1-3]. Using this technique reported a series of 30 patients and by tracking at 1st week, 1st month, 2nd month and 3rd month after the procedure to see how effective it is in improving pain.

METHODOLOGY

A prospective, observational, descriptive case research was conducted from March 1, 2014 until June 30, 2014, which included a total of 30 patients who were scheduled for outpatient neurosurgery, for performing epidural steroid injection with CT-guided diagnosis of lumbar spinal stenosis pain. In this way, the Numeric Rating Scaleof pain and Oswestry disability index were assessed pre and post procedure and efficacy of the procedure a week, a month, 2 months and 3 monthswas assessed too. The epidural injection was considered effective, considering that the pain intensity decreased 50 % or more, after the procedure.

The patient is placed in prone position; it proceeds to the identification of a small area on the spinouts apophysis which is scanned to objectify the site of the approach. Grid is placed and marked on the skin entry site for the needle (Fig. 1A, 1B and 1C), asepsis and antisepsis the area is made and locally anesthetized with Xylocaine with epinephrine 1%. A spinocath needle number 20 is partially advanced in the patient under fluoroscopy vision, like this periosteum and transverse processes is avoided and for this it is important to take into account the angle and the depth at which the needle is inserted.

The needle is advanced out of the yellow ligament between the spinous apophysis and the medial facet until the expiration of the resistance, always feels guided by fluoroscopy (Fig. 2A, 2B and 2C). Once it is on site, 1 ml of contrast medium is injected or if the patient is allergic 1 cc of air, then, a solution of 8 mg of betamethasone is instilled in epidural region [4-6] (Fig. 3A, 3B, 3C and 3D). Finally, the needle is removing and the gauze is placed in puncture site.

RESULTS

In the research 76.6 % of patients were men and 23.3 % were women, 100 % had pain intensity, before the procedure, between 6 and 10 measured by Numeric Rating Scale (Fig. 4). Thus, there was an efficiency process of 90% in the first week, 86.6 % in the first month, 80 % in the second month and 76% in the third month (Fig. 5). The Oswestry disability index averaged 68.2% previous to the procedure and 32.4% after 3 months epidural steroid injection (Fig. 6). None complications were presented during the procedure.

DISCUSSION

The epidural steroid injection guided by CT, it is a safe procedure that allows observing the proper site for insertion of the needle and is effective, too, in the management of lumbar spinal stenosis pain. Using this technique reported a series of 30 patients and by tracking at 1st week, 1st month, 2nd month and 3rd month after the procedure to see how effective it is in

improving pain. The Numeric Rating Scale of pain and Oswestry disability index were assessed.

The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability evaluators use to measure a patient's permanent functional disability. The test is considered the 'gold standard' of low back functional outcome tools [7]. This test evaluates 10 sections: Section 1 – Pain intensity, Section 2 – Personal care (washing, dressing etc), Section 3 – Lifting, Section 4 – Walking, Section 5 – Sitting, Section 6 – Standing, Section 7 – Sleeping, Section 8 – Sex life (if applicable), Section 9 – Social life, Section 10 – Travelling. For each section the total possible score is 5: if the first statement is marked the section score = 0; if the last statement is marked, it = 5. The interpretation of the score is as follows: 0% to 20%: minimal disability, 21%-40%: moderate disability, 41%-60%: severe disability,61%-80%: crippled, 81%-100%: (These patients are either bed-bound or exaggerating their symptoms) [8].

In this research, 9 out of 10 patients improved in the first week, and 3 out of 4 patients, continued to improve in the third month of the procedure (Fig. 7). There weren't complications related to the technique, in contrast to there was a marked improvement in reducing the Numeric Rating Scale and Oswestry disability index.

Fig. 1: A and B: Placing grid; C: Marking of the skin at the entry site for the needle, previous scanography identification

Fig. 2: A: Identification of entry site, angulation and depth; B: Asepsis and antisepsis, placement of surgical fields; C: Advance the needle by scanography vision

Fig. 3A: Proper placement of the needle is confirmed; B, C and D: 8 mg betamethasone is instilled and slowly proceed to perform epidural injection.

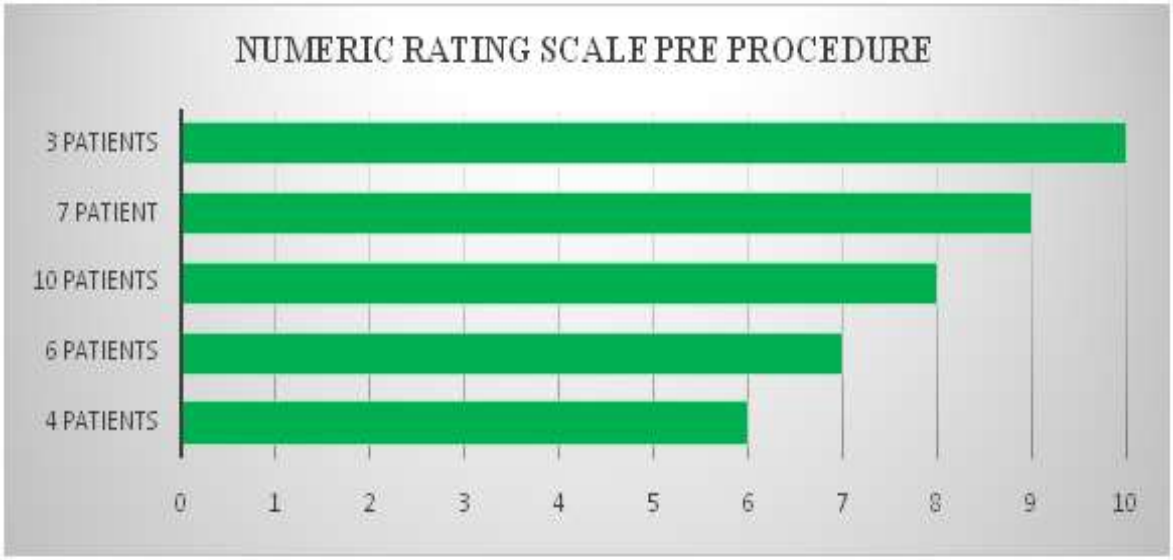

Fig. 4: Numeric Rating Scale of pain: Pain intensity before of the epidural steroid injection

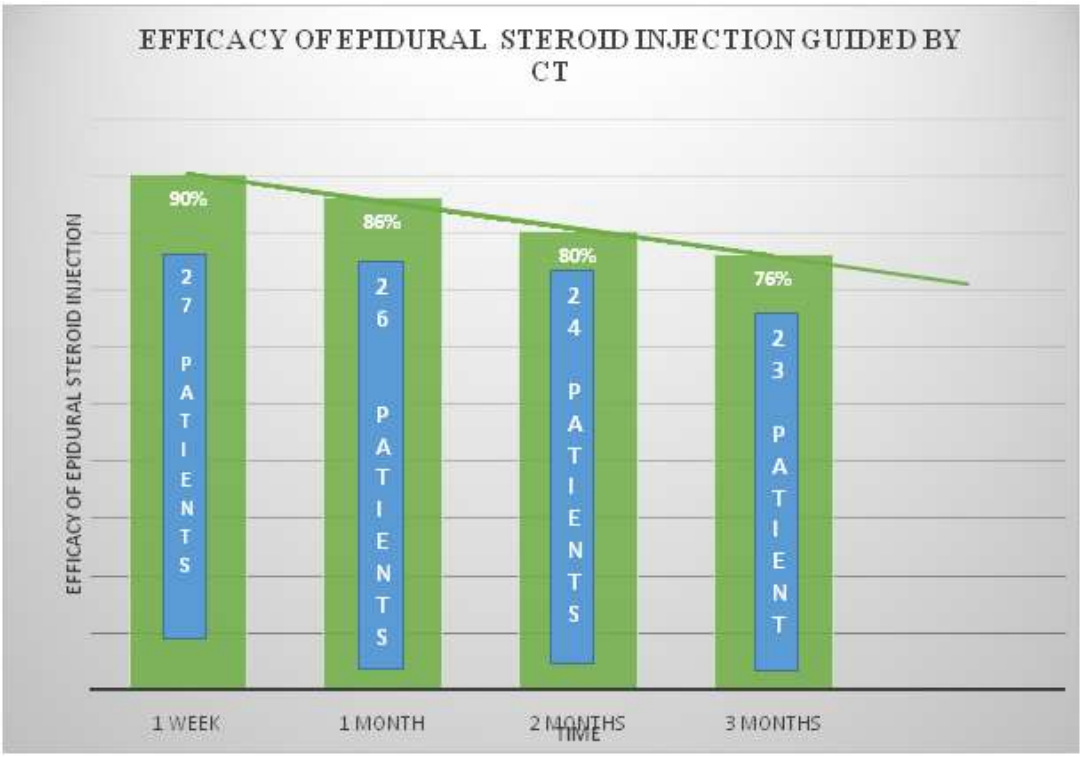

Fig. 5: Efficacy of Epidural steroid injection guided by CT: Percentage of patients who had decreased of pain intensity in 50% or more after of the epidural steroid injection

Table 1: Numeric Rating Scale of pain and Oswestry disability index pre procedure and 3 months later

	Pre Procedure	3 Months
Numeric Rating Scale (NRS)	7,9	4,2
Oswestry	68,2%	32,4%

Table 2: Summary of findings epidural steroid injection guided by CT: Numbers in bold indicate ineffectiveness of epidural steroid injection

Pat	Age	Sex	NRS PRE	NRS 1W	NRS 1M	NRS 2M	NRS 3M
1	43	F	8	4	4	4	4
2	51	M	9	4	4	**5**	**6**
3	64	M	8	3	3	3	4
4	58	M	7	3	3	3	3
5	40	M	9	3	3	3	4
6	62	M	6	2	2	2	3
7	57	F	8	2	2	2	3
8	68	M	10	**7**	**7**	**7**	**8**
9	61	M	7	2	2	3	3
10	50	F	9	**6**	**6**	**8**	**8**
11	47	M	6	2	2	3	3
12	44	M	8	3	3	3	3
13	59	M	7	2	3	3	3
14	55	F	9	3	3	4	4
15	46	M	6	2	2	2	2
16	49	M	6	3	3	3	3
17	41	F	8	4	4	**5**	**6**
18	70	M	7	2	2	2	2
19	69	M	8	3	3	3	4
20	66	M	7	3	3	3	3
21	57	M	9	2	2	3	3
22	60	M	8	3	4	4	**6**
23	59	M	9	3	4	4	4
24	67	M	7	3	3	3	3
25	63	F	8	2	2	3	3
26	50	M	10	4	4	5	5
27	58	M	8	4	**6**	**7**	**8**
28	70	F	10	3	3	3	4
29	63	M	8	2	2	2	3
30	61	M	9	**6**	**6**	**7**	**8**

M: Male, F: Female, NRS: Numeric Rating Scale

CONCLUSION

Epidural steroid injection guided by fluoroscopy-CT is a safe procedure and effective in the management of lumbar spinal stenosis pain. This technique is fast and highly accurate in proving appropriate needle placement. In our initial experience we found a marked improvement in pain intensity after the realization of CT-guidedepidural injection.

REFERENCES

1. Watanabe AT, Nishimura E, Garris J; Image-guided epidural steroid injections. Tech Vasc Interv Radiol., 2002; 5(4): 186–193.
2. Paulson EK, Sheafor DH, Enterline DS, McAdams HP, Yoshizumi TT; CT fluoroscopy-guided interventional procedures: techniques and radiation dose to radiologists. Radiology, 2001; 220(1): 161–167.
3. Wagner AL; Selective lumbar nerve root blocks using CT-fluoroscopic guidance: technique, results, procedure time, and radiation dose. AJNR Am J Neuroradiol., 2004; 25(9):1592–1594.
4. 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. N Engl J Med., 1997; 336(23):1634-1640.
5. Koes BW, Scholten RJ, Mens JM, Bouter LM; Efficacy of epidural steroid injections for low-back pain and sciatica: a systematic review of randomized clinical trials. Pain, 1995; 63(3): 279- 288.
6. Ng L, Chaudhary N, Sell P; The efficacy of corticosteroids in periradicular infiltration for chronic radicular pain: a randomized, double-blind, controlled trial. Spine, 2005; 30(8): 857-862.
7. Fairbank JC, Pynsent PB; The Oswestry Disability Index. Spine, 2000; 25(22): 2940-2952.
8. Oswestry Low Back Pain Disability Questionnaire. Available from http://www.rehab.msu.edu/_files/_docs/Oswestry_Low_Back_Disability.pdf