

. # . # . # . # . #
#

The short term results of selective nerve root block in herniated lumbar disc patients

**Dong-Ho Lee, M.D., Sung Ho Hahn, M.D.#, Bo Kyu Yang, M.D.#,
Seung Rim Yi, M.D.#, Shun Wook Chung, M.D.#, Min Seok Kim, M.D.#**

*Department of Orthopedic Surgery, Seoul National University Boramae Hospital, Seoul, Korea
Department of Orthopedic Surgery, National Police Hospital, Seoul, Korea#*

– Abstract –

Study Design: A prospective study

Objectives: To analyze the serial results of selective nerve root blocks in herniated lumbar disc patients.

Literature Review Summary: To our knowledge there has been no study demonstrating the serial efficacy of root blocks for patients with a herniated lumbar disc only.

Materials and Methods: Selective nerve root blocks were performed in 36 patients who had a lumbar disc herniation only, with radiculopathy, between November 2002 and April 2003. The diagnoses were made by CT or MRI, which agreed with the symptoms and physical examinations. There were 31 men and 5 women, with a mean age of 28.2 years. The mean interval between the onset and procedure was 7.6 weeks, ranging from 1 to 26 weeks. Mono- and double-segment injections were used in 18 cases, respectively. The straight leg raising angle, visual analogue pain scale, and motor and sensory functions were investigated before, immediately, 2 days, and 1 and 3 months after the procedure.

Results: The mean straight leg raising angle improved significantly, from $28 \pm 9^\circ$ to $53 \pm 18^\circ$; immediately, and was maintained until 3 months after the procedure ($P < 0.001$). The visual analogue pain scale was also improved, from 4.6 ± 0.9 to 2.0 ± 1.5 , immediately, and was maintained until 3 months after the procedure ($P < 0.001$). Two of ten patients with motor weakness, and six of eighteen with sensory deficit were improved. There was no procedure related complication; however, surgical treatment was performed in two patients who showed no improvement until 3 months.

Conclusions: Selective nerve root block is a safe and effective treatment method to obtain a rapid and remarkable improvement of radiculopathy in herniated lumbar disc patients.

Key Words: Lumbar spine, Disc herniation, Selective nerve root block

Address reprint requests to

Seung Rim Yi, M.D.

Department of Orthopaedic Surgery, National Police Hospital,
58, Karak-dong, Songpa-gu, Seoul, Korea

Tel: 82-2-3400-1246, Fax: 82-2-449-2120, E-mail: ysr@nph.go.kr

*

2003

(61%) , 4-5 15 , 5 - 1
7 . 14 (39%)
3-4-5 2 , 4-5 - 1 12
. (protruded type) 32
(64%), (extruded type) 16 (32%),
(sequestrated type) 2 (4%) .

가
가

1-4). 1971 Macnab⁵⁾ , 4-5 15 3
, 5 - 1 7 1
4 , 5
가 ⁶⁻¹⁰⁾ 가 5 1
가 13 (36%) 가 ,
¹¹⁻¹⁴⁾ 5 가 12 (33%), 1
가 6 (17%), 4, 5
가 5 (14%) .

1
2.
3 Kikuchi ¹⁵⁾, Tajima ¹⁴⁾
. (prone position)

1. , 1 1
1/4 . 8 cm, 22
2002 11 2003 4 (spinal needle)
1 cm
10 .
1
3 가 가 36 , 1 가
가 가 가
. 가
. 31 , 5 , 1 1
28.2 (19 72) . 0.5 cc (Isovist)
7.6 (1 26)
, 5.5 (3 8) 2% Lidocaine 1cc Triamcinolone 40 mg
가 3
. 가 22 30

3.

가 , 5 ,
2 , 1 , 3 ,
visual analogue pain
scale 가
0 , 10
analogue 가
0 10
Weber¹⁹⁾가
2 , 1 3

(Table 1),

가

ANOVA

paired t-test

28 ± 9 °
53 ± 18 °
2 (55 ± 18 °), 1 (48 ± 17 °) 3 (49 ± 18 °)
(P<0.001)(Table 2).
36 가 20
가 25 (69%), 2 23 (64%), 1
22 (61%), 3 19 (53%) (Fig. 1).
visual analogue pain scale 4.6 ± 0.9
2.0 ± 1.5
(2.3 ± 1.5), 1 (2.5 ± 1.4) 3 (2.6 ± 1.5)
(P<0.001)(Table 2).

Table 1. Criteria of subjective satisfaction

Criteria	
Excellent	Completely satisfied
Good	Satisfied, lesser complaints
Fair	Not satisfied, partly incapacitated
Poor	Completely incapacitated for work due to chronic back pain or sciatica

가
2 28 (78%), 1 3 25
(69%) (Table 3)(Fig. 2). 가
10 2 , 1 ,
1 3 가
18 6

Table 2. Changes of SLR (straight leg raising) angle and VAPS (visual analogue pain scale)

	Preop.	Immed. postop.	PO 2D	PO 1M	PO 3M
SLR	28 ± 9 *	53 ± 18 **	55 ± 18 **	48 ± 17 **	49 ± 18 **
VAPS	4.6 ± 0.9 [#]	2.0 ± 1.5 ^{##}	2.3 ± 1.5 ^{##}	2.5 ± 1.4 ^{##}	2.6 ± 1.5 ^{##}

* Vs. **: P<0.001 # Vs. **: P<0.001

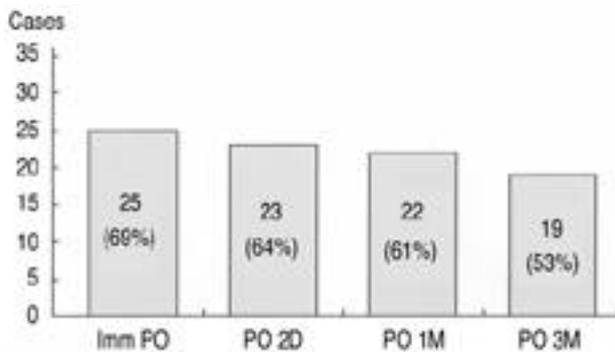


Fig. 1. Sixty-nine percents of patients showed improvement of straight leg raising angle more than 20 degrees immediately after injection. At 3 months, this improvement was maintained in 53 percents of patients.

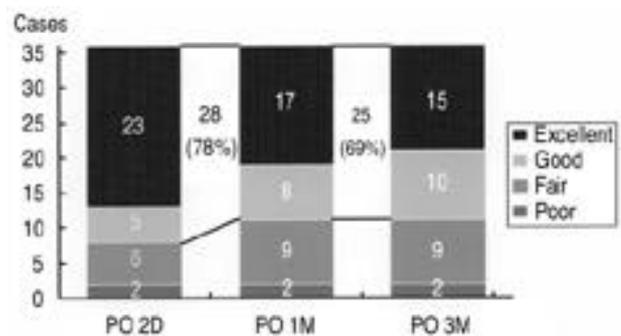


Fig. 2. Seventy-eight percents of patients represented satisfactory result at 2 days. Even though some of them was aggravated, 69 percents showed satisfactory result at 3 months.

mechanical etiology) phospholipase A₂ (bio-
 (biochemical etiology)가 corticosteroid
 (nociceptive axon) , 가
 Kikuchi¹⁵⁾ corticosteroid가 가
 Arnhoff²⁵⁾ 가 Riew
 (lumbar radicular pain) cor-
 ticoseroid 29 가
 Weber¹⁹⁾ 가 60% 3 Hong⁶⁾
 40% 가 3 Shim¹⁰⁾ 1
 96% 가 3.8 Saal¹⁸⁾ 가 19.4%
 Deyo
 Jacobs²⁶⁾ corticosteroid
 corticosteroid가
 Mac-

Table 3. Results of subjective satisfaction

	Number of cases		
	PO 2D	PO 1M	PO 3M
Excellent	23	17	15
Good	5	8	10
Fair	6	9	9
Poor	2	2	2

- duration of radicular pain as predictors of surgical outcome. *Spine* 1992;17(suppl):176-183.
- 4) **Van Tulder, MW, Koes BW, Bouter LM:** Conservative treatment of acute and chronic nonspecific low back pain. A systematic review of randomized controlled trials of the most common interventions. *Spine* 1997;22:2128-2156.
 - 5) **Macnab I:** Negative disc exploration. An analysis of the causes of nerve root involvement in sixty-eight patients. *J Bone Joint Surg* 1971;53-A:891-903.
 - 6) **Hong YG, Sa SJ, Kim JD:** Selective spinal nerve root block for the treatment of Sciatica. *J Korean Orthop Assoc* 1997;32(4):1056-1062.
 - 7) **Krempen JF, Smith BS:** Nerve root injection. *J Bone Joint Surg* 1974, 56-A:1435-1444.
 - 8) **Riew KD, Yin Y, Gilula L, Bridwell KH, Lenke LG:** The effect of nerve-root injection on the need for operative treatment of lumbar radicular pain. A prospective, randomized, controlled, double blind study. *J Bone Joint Surg* 2000;82-A:1589-1593.
 - 9) **Shim DM, Kim TK, Chae SU, Kim SS, Kim YJ, Jeung UO:** Long term results of the selective spinal nerve root block for the herniated lumbar intervertebral disc. *J Kor Spine Surg* 2003;10:30-35.
 - 10) **Shim DM, Kim TK, Song HH, You SS, Cho JD:** The usefulness of selective spinal nerve root block. *J Kor Spine Surg* 2004;11:48-54.
 - 11) **Dooley J, McBroom R, Taguchi T:** Nerve root infiltration in the diagnosis of radicular pain. *Spine* 1988;13:79-83.
 - 12) **Shim DM, Kim SS, Han HJ, Lee BC, Shin JH:** Selective spinal root block method used for testing lumbar spinal disease. *J Kor Spine Surg* 1994;1:293-299.
 - 13) **Shim DM, Song HH, Kim TK, et al:** The selective spinal nerve root block as predictors of outcome of operative treatment in the lumbar spine. *J Kor Spine Surg* 2001;8:527-533.
 - 14) **Tajima T, Furukawa K, Kuramochi E:** Selective lumbar sacral radiculography and block. *Spine* 1980;5:68-77.
 - 15) **Kikuchi S, Hasue M, Nishiyama K, Ito T:** Anatomic and clinical studies of radicular symptoms. *Spine* 1990;9:23-30.
 - 16) **Deyo RA, Loeser J, Bigos S:** Herniated lumbar intervertebral disc. *Ann Intern Med* 1990;112:598-603.
 - 17) **Hakelius A:** Prognosis in sciatica: A clinical follow-up of surgical and non-surgical treatment. *Acta Orthop Scand* 1970;129(suppl):1-76.
 - 18) **Saal JA, Saal JS:** Nonoperative treatment of herniated lumbar intervertebral disc with radiculopathy: An outcome study. *Spine* 1989;14:431-437.
 - 19) **Weber H:** Lumbar disc herniation: A controlled, prospective study with ten years of observation. *Spine* 1983; 8:131-140.
 - 20) **Buchner M, Zeifang F, Brocai DR, Schiltenswolf M:** Epidural corticosteroid injection in the conservative management of sciatica. *Clin Orthop* 2000;375:149-156.
 - 21) **Carette S, Leclaire R, Marcour S, et al:** Epidural corticosteroid injections for sciatica due to herniated nucleus pulposus. *N Engl J Med* 1997;336:1634-1640.
 - 22) **Delaney TJ, Rowlingson JC, Carron H, Butler A:** Epidural steroid effects on nerves and meninges. *Anesth Analg* 1980;58:610-614.
 - 23) **Stanton-Hicks M:** Nerve blocks in chronic pain therapy are there any indication left? *Acta Anaesthesiol Scand* 2001;45:1100-1107.
 - 24) **Johansson A, Hao J, Sjolun B:** Local corticosteroid application blocks transmission in normal nociceptive C-fibers. *Acta Anaesthesiol Scand* 1990;34:335-338.
 - 25) **Arnhoff FN, Triplett HB, Pokorney B:** Follow-up study of patient treated with nerve blocks for low-back pain. *Anesth Analg* 1977;46:170-178.
 - 26) **Jacobs S, Pullan PT, Potter JM, Shenfield GM:** Adrenal suppression following extradural steroids. *Anesthesia* 1983;38:953-956.

:
 :
 : 2002 11 2003 4
 , 3 가 가 36
 CT MRI ,
 31, 5 28.2 (19 72)
 7.6 (1 26) 2 18
 가 , , 2 , 1 , 3 , visual analog pain scale,
 : 28 ± 9 ° 53 ± 18 °
 2 (55 ± 18 °), 1 (48 ± 17 °) 3 (49 ± 18 °) (P<0.001). Visual analogue
 pain scale 4.6 ± 0.9 2.0 ± 1.5 , 2 (2.3 ± 1.5), 1 (2.5 ±
 1.4) 3 (2.6 ± 1.5) (P<0.001). 가 10 2
 , 18 6
 , 2 3
 :
 : , ,

:

가 58

Tel: 82-2-840-2658 Fax: 82-2-449-2120 E-mail: ysr@nph.go.kr