

marcaine

Availability of Intradiscal Injection of Marcaine as a Pain Relief Test for Diagnosis of Internal Disc Disruption

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– Abstract –

Study Design: A retrospective study

Objectives: To investigate the availability of an intradiscal injection of marcaine as a pain relief test to enhance specificity in the diagnosis of IDD.

Summary of Literature Review: The diagnosis and treatment of IDD have been controversial. A discography, which has been widely used for the diagnosis of IDD, has many problems that might result in a faulty diagnosis.

Materials and Methods: Twenty nine patients, with an average age and duration of symptom of 36.9 years (22 to 46 years) and 5 years 1 month (6 months to 10 years), respectively, were reviewed. After the discography, the marcaine was injected. Based on the responses after the injection, the group was sub- divided into a further two groups.

Group A (n=19): transient pain relief and surgical treatment was performed.

Group B (n=10): no pain relief and conservative treatment was performed.

An analysis to examine the correlation between the response to marcaine and age, duration of symptom, subjective pain level, number of disc degeneration and high intensity zone was also performed, and the clinical results quantified.

Results: The agreement rate between the discography and response to marcaine was 55.2%. The longer the symptom duration, the more meaningful were the responses to the marcaine injection ($p < 0.05$). The result of surgical treatment was important statistically, as the pain was relieved from 8.6 ± 0.97 to 1.8 ± 0.42 points, and the ODI decreased from 68 ± 16.92 to $30 \pm 9.97\%$ ($p < 0.05$).

Conclusions: An intradiscal injection of marcaine, as the pain relief test, can enhance the specificity for the diagnosis of IDD.

Key Words: IDD, Pain relief test, Intradiscal injection of marcaine.

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가
(atypical pain)
(concordant pain) 3

가
0.25% marcaine(long-acting bupivacaine) 1.5 ml
12
16 A
13 B
MRI
(pain provocation MRI high
intensity zone(HIZ)
A B
가 가
6,7,8)
(pain relief test) 26.5 (12~56)
10 (10-point pain scale)
가
Oswestry 가
Oswestry disability index(ODI)

marcaine marcaine Fisher 's exact test Wilcoxon signed rank test SPSS v.11.0

1999 7 2003 3 29 L4-5가
20 (69%) 가 L5-S1 6 (20.7%), L3-4가 2
(6.9%), L2-3가 1 (3.4%)
(symptomatic single level)
29 marcaine
19 , 10 , 36.9 (22~46) 55.2%(16/29) A B
, 5 1 (6 ~10) marcaine
6
(p>0.05)(Table 1,3), mar-
caine 가
(p<0.05)(Table 2). MRI mar-
caine
(p>0.05)(Table 4). HIZ 11 (37.9%)
A 3 , B 8
(p>0.05)(Table 5). A
8.6 ± 0.97 1.8 ±
0.42 (1-2) , ODI 68 ± 16.92%
30 ± 9.97%
(p<0.05)(Table 6).
가 B 8.3 ± 1.58
가 4.9 ± 2.53 , ODI

59.4 ± 19.48%
가
(p>0.05)(Table 7).

29.4 ± 22.56%
가 9.

(sinuvertebral nerve)

가 stress pattern 가

Table 1. Correlations between age and response of marcaine

age	Group A	Group B	Total
-30	3	3	6
31-35	2	3	5
36-40	3	3	6
41-	8	4	12

* Group A : Marcaine(+), Group B : Marcaine(-) (p>0.05)

Table 2. Correlations between duration of symptom and response of marcaine

Duration of Sx	Group A	Group B	Total
Below 2 years	4	7	11
2-5 years	3	3	6
Above 5 years	9	2	11

* Group A : Marcaine(+), Group B : Marcaine(-) (p<0.05)

Table 3. Correlations between subjective pain and response of marcaine

10 point pain scale	Group A	Group B	Total
7	4	4	8
8	4	4	8
9	5	3	8
10	3	2	5

* Group A : Marcaine(+), Group B : Marcaine(-) (p>0.05)

Table 4. Correlations between No. of degenerative disc and response of marcaine

degenerative disc	Group A	Group B	Total
1 segment	6	7	13
2 segments	5	3	8
3 segments	3	2	5
4 segments	2	1	3

* Group A : Marcaine(+), Group B : Marcaine(-) (p>0.05)

Table 5. Correlations between HIZ and response of marcaine

	Group A	Group B	Total
HIZ (+)	3	8	11
HIZ (-)	13	5	18

* Group A : Marcaine(+), Group B : Marcaine(-) (p>0.05)

* HIZ = High-intensity zone

, Smith ²⁶⁾

40~60%
40~60%

6

가

가

²⁻⁴⁾, Kozak ²⁹⁾

80%
99%

69%

marcaine
가

가

marcaine

9

가 4

marcaine

가 5

marcaine

가

marcaine

가

가
가

, IDET,
Simmons ²⁷⁾

marcaine 9%
, 27%

marcaine

, Nelemans ²⁸⁾

가

marcaine

(pain relief test)

가

가

caine

55.2%

mar-

가

marcaine

marcaine

2

12

- 1) **Guyer RD, Ohnmeiss DD:** *Lumbar discography: Position statement from the North American Spine Society Diagnostic and Therapeutic Committee. Spine 1995; 20:2048-2059.*
- 2) **Lee CK, Vessa P, Lee JK:** *Chronic disabling low back pain syndrome caused by internal disc derangement. Spine 1995; 20:356-361.*

- 3) **Lee CK, Langrana NA:** *Lumbosacral spinal fusion: A biomechanical study. Spine 1984; 9:574-581.*
- 4) **Blumenthal SL, Baker J, Dossett A, and Selby DK:** *The role of anterior lumbar fusion for internal disc disruption. Spine 1988; 13:566-569.*
- 5) **Crock HV:** *A reappraisal of intervertebral disc lesions. Med. J. Aust. I 1970; 983-989.*
- 6) **Nachemson A:** *Lumbar discography-where are we today? Spine 1989; 14:555-557.*
- 7) **Schwarzer A, Bogduk N:** *Letter to Editor on "The Prevalence and Clinical features of internal Disk Disruption in patient with Low Back Pain." Spine 1996; 21:776.*
- 8) **Carragee EJ, Tanner CM, Yang B, et al:** *False positive findings on lumbar discography. Spine 1999; 24:2542-2547.*
- 9) **Crock HV:** *Internal disc disruption: A challenge to disc prolapse fifty years on. Spine 1988; 11:267-271.*
- 10) **Bogduk N, Tynan W, Wilson AS:** *The nerve supply to the human lumbar intervertebral discs. J Anat 1981; 132:29-36.*
- 11) **Yoshizawa H, O'Brien JP, Smith WT, et al:** *Neuropathology of intervertebral disc removed for low back pain. J Pathol 1980; 132:95-104.*
- 12) **Weinstein J, Claverie W, Gibson S:** *The pain of discography. Spine 1988; 13:1344-1348.*
- 13) **Saal JS:** *The role of inflammation in lumbar pain. Spine 1995; 20:1821-1827.*
- 14) **Osti OL, Fraser RD:** *MRI and discography of annular tears and intervertebral disc degeneration. A prospective clinical comparison. J Bone Joint Surg 1992; 74-B:431-435.*
- 15) **Birney TJ, White JJ Jr, Berens D, Kuhn G:** *Comparison of MRI and discography in the diagnosis of lumbar degenerative disc disease. J Spinal Disord 1992;5:417-423.*
- 16) **Gunzburg R, Parkinson R, Moore R, et al:** *A cadaveric study comparing discography, magnetic resonance imaging, histology, and mechanical behavior of the human lumbar disc. Spine 1992; 17:417-426.*
- 17) **Holt EP:** *The question of lumbar discography. J Bone Joint Surg 1968; 50: 720-726.*
- 18) **Simmons EH, Segil CM:** *An evaluation of discography in the localization of symptomatic levels in discogenic disease of the spine. Clin Orthop 1975; 108:57-69.*
- 19) **Walsh TR, Weinstein JN, Spratt KF, Lehmann TR, Aprill C, Sayre H:** *Lumbar discography in normal subjects. J Bone Joint Surg 1990;72-A:1081-1088.*
- 20) **Gibson MJ, Buckley J, Mawhinney R, Mulholland RC, Worthington BS:** *Magnetic resonance imaging and discography in the diagnosis of disc degeneration. A comparative study of 50 disc. J Bone Joint Surg 1986; 68-B:369-373.*
- 21) **Schneiderman G, Flannigan B, Kingston S, Thomas J, Dillin WH, Watkins RG:** *Magnetic resonance imaging in the diagnosis of disc degeneration: Correlation with discography. Spine 1987; 12:276-281.*
- 22) **Parfenchuck TA, Janssen ME:** *A correlation of cervical magnetic resonance imaging and discography / computed tomographic discograms. Spine 1994; 24:2819-2825.*
- 23) **Aprill C, Bogduk N:** *High-intensity zone: A diagnostic sign of painful lumbar disc on magnetic resonance imaging. The British Journal of Radiology 1992; 65:361-369.*
- 24) **Ricketson R, Simmons JW, Hauser BO:** *The prolapsed intervertebral disc. The high-intensity zone with discography correlation. Spine 1996; 21:2758-2762.*
- 25) **Schellhas KP, Pollei SR, Gundry CR, Heithoff KB:** *Lumbar disc high-intensity zone. Correlation of magnetic resonance imaging and discography. Spine 1996; 21:79-86.*
- 26) **Smith SE, Darden BV, Rhyne AL, Wood KE:** *Outcome of unoperated discogram-positive low back pain. Spine 1995; 15:20:1997-2000;discussion 2000-1.*
- 27) **Simmons JW, McMillin JN, Emery SF, et al:** *Intradiscal steroids: A prospective double-blind clinical trial. Spine 1992; 17:172-175.*
- 28) **Nelemans PL, deBie RA, deVet HCW, Sturmans F:** *Injection therapy for subacute and chronic benign low back pain. Spine 2001; 26:501-515.*
- 29) **Kozak JA, O'Brien JP:** *Simultaneous combined anterior and posterior fusion. An independent analysis of a treatment for the disabled low-back pain patient. Spine 1990; 15:322-328.*
- 30) **Slosar PJ, Reynolds JB, Schofferman J, Goldthwaite N, White AH, Keaney D:** *Patient satisfaction after circumferential lumbar fusion. Spine 2000; 25:722-726.*
- 31) **Albert TJ, Pinto M, Denis F:** *Management of symptomatic lumbar pseudarthrosis with anteroposterior fusion. A functional and radiographic outcome study. Spine 2000; 25:123-129;discussion 130.*

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