

## 추간판내 Prostaglandin E<sub>2</sub> 양의 임상적 의의\*

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= Abstract =

### Clinical Implication of Prostaglandin E<sub>2</sub> Content in Lumbar Disc Disease

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**O**bjective : A prospective biochemical assay of prostaglandin E<sub>2</sub> content in symptomatic lumbar disc materials was done in order to clarify the pathogenesis of lumbar radiculopathy.

**Patients and Methods** : Forty - eight disc specimens were purified by a standard solid - phase extraction procedure and analyzed by an enzymelinked immunosorbent assay for prostaglandin E<sub>2</sub>. Clinical and anatomic correlations were evaluated with analysis of variance and *t* - test.

**Results** : Acute herniated lumbar disc diseases tended to be associated with a higher prostaglandin E<sub>2</sub> content than degenerative lumbar disc disease. Sequestered discs tended to be associated with a higher prostaglandin E<sub>2</sub> content than extruded discs, which also showed higher prostaglandin E<sub>2</sub> content than protruded ones. A sciatica and positive straight leg raising test appeared to be associated with a higher prostaglandin E<sub>2</sub> content than a negative test.

**Conclusion** : This result suggests that the level of prostaglandin E<sub>2</sub> would be correlated with clinical symptom and sign in the inflammatory process of lumbar disc herniation.

**KEY WORDS** : Intervertebral disc herniation · Radiculopathy · Prostaglandin E<sub>2</sub>.

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2). 1934 Mixer

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prostaglandin E<sub>2</sub>

3cc methyl alcohol  
N<sub>2</sub> gas prostaglandin

## 대상 및 방법

### 1. 대 상

1996 3 1999 1  
350  
group 1 group 2  
Group 1 ( , )  
350 205 group 2  
( , ) 145  
group 1 13 , group 2 6 , 19  
group 1  
36  
group 2 12  
48 prosta-  
glandin E<sub>2</sub> (Table 1).

### 2. 방 법

prostaglandin E<sub>2</sub>  
Powell solid phase extraction  
17). mechanical tissue  
mincer  
100 μM indomethacin phosphate buffer  
solution 1cc  
4cc 100% ethyl alcohol 30  
1cc 1cc N<sub>2</sub> gas  
ethyl alcohol oc-  
tadecylsilyl silica column(Sep - Pak cartridges, Waters)

**Table 1.** Disease entities vs. intervertebral disc specimens

Disease entities	Disc specimens(No.)			Total (No. )
	AF	NP	RP	
Group 1 (13 cases)				
Protrusion(3 cases)	3	3	-	6
Extrusion(4 cases)	4	4	4	12
Sequestration(6 cases)	6	6	6	18
Group 2 (6 cases)				
Stenosis(2 cases)	2	2	-	4
Listhesis(4 cases)	4	4	-	8
Total(No.) 19 cases	19	19	10	48

Listhesis : Spondylolisthesis

AF : annulus fibrosus, NP : nucleus pulposus, RP : ruptured particle

prostaglandin E<sub>2</sub> ELISA kit(Bio-grak™, Prostaglandin E<sub>2</sub> competitive enzyme-immunoassay system, Amersham Pharmacia Biotech, Buckinghamshire, England)

prostaglandin E<sub>2</sub>  
( , , )  
ANOVA(analysis of variance) independent t test

## 결 과

19 14 5  
40 . Group 1 13 3 , 4  
, 6 , group 2 6 4  
, 2  
19 13 19  
17 . Group 1 35 ° 8 ,  
35 ° 5 (Table 2).

**Table 2.** Summary of results

Patient	Sex	Age	Group	Disease	LBP	Sciatica	SLR	PG E <sub>2</sub> (pg/gm)
1	M	30	1	P	-	+	2	13.31
2	M	34	1	P	-	+	2	15.93
3	F	39	1	P	+	+	2	16.09
4	M	23	1	E	+	+	1	18.22
5	M	21	1	E	+	+	1	17.08
6	M	56	1	E	-	+	2	17.00
7	M	25	1	E	+	+	2	16.52
8	F	48	1	S	-	+	1	31.82
9	M	26	1	S	-	+	1	17.95
10	M	25	1	S	-	+	1	27.10
11	M	35	1	S	+	+	1	24.76
12	F	40	1	S	+	+	1	31.71
13	M	53	1	S	+	+	1	16.69
14	M	65	2	lis	+	-	-	3.83
15	M	60	2	lis	+	+	-	19.98
16	M	65	2	st	+	-	-	9.61
17	M	44	2	st	+	+	-	15.29
18	F	54	2	st	+	+	-	10.63
19	F	49	2	st	+	+	2	19.76

1 : <35', 2 : >35'

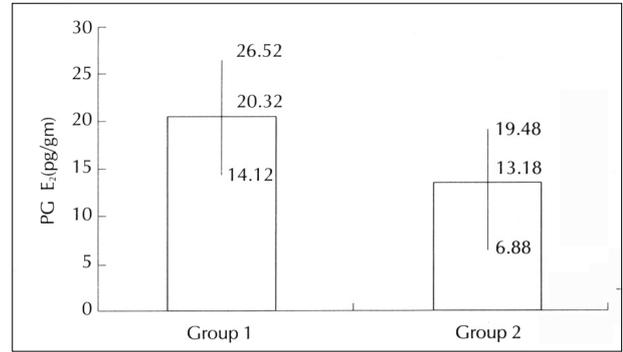
P : Protrusion, E : Extrusion, S : Sequestration, lis : Spondylolisthesis, st : Spinal stenosis, LBP : Low back pain, Sciatica : Radiating leg pain, LR : Straight leg raising test

Prostaglandin E<sub>2</sub>

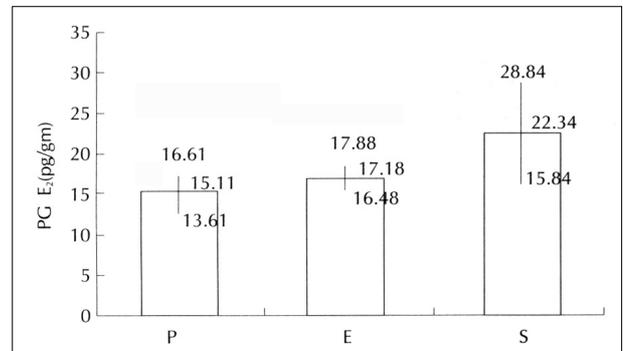
**Table 3.** Disc materials and prostaglandin E<sub>2</sub> content

No.	Group	Disease	Content	PG E <sub>2</sub> (pg/gm)
1	1	P	AF	9.06
2	1	P	NP	17.55
3	1	P	AF	15.53
4	1	P	NP	16.34
5	1	P	AF	15.54
6	1	P	NP	16.65
7	1	E	AF	10.45
8	1	E	NP	13.54
9	1	E	RP	30.68
10	1	E	AF	10.50
11	1	E	NP	16.12
12	1	E	RP	22.93
13	1	E	AF	14.75
14	1	E	NP	19.25
15	1	E	RP	16.65
16	1	E	AF	12.55
17	1	E	NP	19.30
18	1	E	RP	19.39
19	1	S	AF	6.13
20	1	S	NP	26.36
21	1	S	RP	41.79
22	1	S	AF	5.57
23	1	S	NP	20.79
24	1	S	RP	68.78
25	1	S	AF	5.91
26	1	S	NP	10.00
27	1	S	RP	31.51
28	1	S	AF	16.52
29	1	S	NP	7.36
30	1	S	RP	29.97
31	1	S	AF	5.56
32	1	S	NP	12.99
33	1	S	RP	31.51
34	1	S	AF	18.60
35	1	S	NP	10.62
36	1	S	RP	52.07
37	2	lis	AF	2.45
38	2	lis	NP	5.21
39	2	lis	AF	15.11
40	2	lis	NP	24.84
41	2	st	AF	9.66
42	2	st	NP	9.57
43	2	st	AF	17.32
44	2	st	NP	13.27
45	2	st	AF	20.59
46	2	st	NP	18.94
47	2	st	AF	12.50
48	2	st	NP	8.76

P : Protrusion, E : Extrusion, S : Sequestration, lis : Spondylolisthesis, st : Spinal stenosis, AF : Annulus fibrosus, NP : Nucleus pulposus, RP : Ruptured intervertebral disc

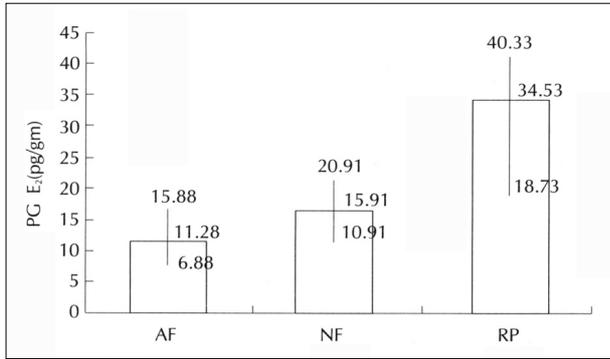


**Fig. 1.** Prostaglandin E<sub>2</sub> content in disc materials in each group. Group 1 : Patients with simple herniated intervertebral disc (n=13). Group 2 : Patients with chronic degenerative spinal disease (n=6).

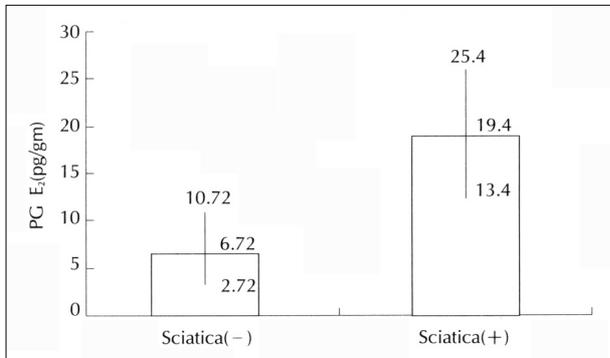


**Fig. 2.** Prostaglandin E<sub>2</sub> content in different types of intervertebral disc herniation among Group 1 (P : Protrusion, E : Extrusion, S : Sequestration).

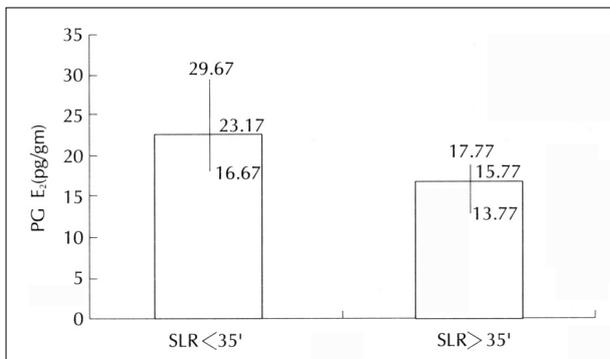
19 48 prosta-  
glandin E<sub>2</sub> 2.45 68.78pg/gm( : 17.85  
pg/gm) . Prostaglandin E<sub>2</sub> 5  
pg/gm (Table 3).  
Group 1 group 2 prostaglandin E<sub>2</sub> 가  
20.32 ± 6.2pg/gm 13.18 ± 6.3pg/gm  
(Fig. 1)(p<0.05). Group 1  
15.11 ±  
1.5pg/gm : 17.18 ± 0.7pg/gm : 22.34 ± 6.5pg/gm  
가  
(Fig. 2)(p<0.05), :  
: 11.28 ± 4.6 : 15.91 ± 5.0 : 34.53  
± 15.8pg/gm ,  
가 (Fig. 3)(p<0.05).  
prostaglandin E<sub>2</sub> 19.4 ±  
6.0 : 6.72 ± 4.0pg/gm  
(Fig. 4)(p<0.05), group 1 35 °  
35 ° 23.17 ± 6.5 : 15.77 ±



**Fig. 3.** Prostaglandin E<sub>2</sub> content by the site of herniated intervertebral disc in Group 1 (AF : annulus fibrosus, NF : nucleus pulposus, RP : ruptured intervertebral disc).



**Fig. 4.** Prostaglandin E<sub>2</sub> content by presence of sciatica.



**Fig. 5.** Prostaglandin E<sub>2</sub> content by the degree of straight leg raising test.

2.0pg/gm 35° (Fig. 5) ( $p < 0.05$ ).  
prostaglandin E<sub>2</sub>

### 고찰

6)10)19)

phospholipase A<sub>2</sub>

가 가

가 6)19) 1987  
McCarron

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phospholipase A<sub>2</sub>, cytokines, prostaglandin E<sub>2</sub>,  
nitric oxide, immunoglobulins 16)

1990 Saal phospho-  
lipase A<sub>2</sub> 20 10,000

19) 1992 Franson

phospholipase A<sub>2</sub>가

4) Phospholipase A<sub>2</sub>

arachidonic acid me-  
tabolites, prostaglandin leukotriens  
2 16) 1992 Saal

phospholipase A<sub>2</sub>가

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1994 Willburger Wittenberg  
kotriene 가 prostaglandin leu-  
, 1996 Kang

prostaglandin E<sub>2</sub> 가

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Phospholipase A<sub>2</sub> 2 pros-  
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C - fiber

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prostaglandin E<sub>2</sub>

. Prostaglandin E<sub>2</sub> 가

prostaglandin E<sub>2</sub>

prostaglandin E<sub>2</sub> 가 가

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prostaglandin E<sub>2</sub>

Prostaglandin E<sub>2</sub> 가

prostaglandin E<sub>2</sub>

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