

## Research Article

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# Outcomes of Lumbar Disc Herniation Treatment using Medication Method Coupled with Epidural Hydrocortisone Injection

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### Abstract

**Background:** Evaluation of lumbar disc herniation treatment outcome using medication method coupled with epidural hydrocortisone injection.

**Methods:** Description, clinical experiment with the control group, supervision, and evaluation on 62 patients before treatment, 15 days after surgery and 30 days after treatment, in 7A Military Hospital (Ho Chi Minh City, VietNam) from November 2015 to June 2016. Group I (control) included 31 patients treated with essential medication. Group II (experiments) included 31 patients treated with essential medication plus lumbar epidural injection.

**Results:** At 30 days after treatment 48.4% experiment patients reported no pain (in comparison with 32.3% control ones), 67.7% experiments reported improvement in lumbar flexion (38.7% controls), 64.5% experiments reported great improvement in Lasegue test (38.7%). Flexion, extension, adduction, and rotation were significantly better improved in experiments than in controls. Daily function improvement in experiments (58.1%) was sharply better than controls (19.4%). In general, 80.7% experiments got “very good” treatment outcome, compared with 67.7% controls.

**Conclusions:** The experiment group got significantly better treatment outcomes than the control group.

**Keywords:** Disc herniation; Lumbar spinal cord; Epidural injection

## **1. Introduction**

Disc herniation is a situation when the spinal disc nucleus is pushed out of the annulus due to a tear or rupture in the annulus and presses on spinal nerves. Herniation in the lumbar causes 63-73% of back pain cases and 72% of sciatica, which seriously affects life quality, social and labor activities of the patients [1-6]. Sciatica with or without lumbar pain makes up 11.5% cases treated at the Department of Musculoskeletal System in Bach Mai Hospital (Ha Noi, Viet Nam) from 1991 to 2000 [7]. Epidural hydrocortisone injection was mentioned in 1952 as a pain relief for lumbar herniated disc sciatica patients [8, 9]. The clinical protocol applied in the 7A Military Hospital for this situation was medication coupled with epidural steroid injection; no detailed research was done to evaluate treatment results, though. Therefore this study was carried out for evaluation of lumbar disc herniation treatment outcome using medication coupled with epidural hydrocortisone injection.

## **2. Methods**

### **2.1 Research targets**

Sixty-two patients diagnosed with lumbar disc herniation at the Department of Orthopaedics, 7A Military Hospital.

#### **2.1.2 Chosen criteria**

- Patients with typical clinical sciatic nerve pressure.
- Subclinical: Patients with lumbar disc herniation MRI images.

#### **2.1.2 Rejection criteria**

- Disc herniation patients treated with surgery.
- Patients with structural scoliosis.
- Patients being allergic to palliative or anti-inflammatory drugs.
- Migrated disc herniation patients.
- Patients with cauda equina syndrome.
- Non-volunteers or patients did not follow the treatment protocol.

### **2.2 Research methods**

Descriptive research method coupled with clinical experiments with a control group.

#### **2.2.1 Data collection**

Case-by-case prospective analysis research.

#### **2.2.2 Random and simple sampling**

Diagnosed lumbar herniated disc patients were divided into two groups with similar age, sexes, careers, geography:

- Group I (control) included 31 patients treated with basic medication (Nivalin 2.5mg x 2 vials/day, IM injection; Nucleoforte 1 vial/day, IM injection. Methycobal x 1 vial/2 days. Mobic 7.5mg x 2 tablets/day, P.O.. Myonal 50mg x3 tablets/day, P.O.. Paracetamol 0.5g x 2 tablets/day, P.O.).
- Group II (experiment) included 31 patients treated with essential medication coupled with NMC CSTL injection (Hydrocortisone 125mg x 1 vial/injection, three injections, one injection every five days).

### **2.3 Research contents**

Patient medical history, clinical examination results, health development from before treatment to 15 days, and 30 days after surgery were recorded in a standard form.

#### **2.3.1 The traits of researched patients are list as follow**

- Age was divided into four categories (below 30, 30 to 49, 50 to 69 and above 70 years old).
- Sexes: male and female groups.
- Career: heavy workload (workers, farmers ...) and light workload groups (officials, pensioners...).
- Contraction duration: under one month, 2 to 5 months, over six months.
- Causes: (1) natural causes, (2) post-trauma, and (3) excessive movement in the wrong posture.

#### **2.3.2 Treatment outcomes were evaluated based on criteria of Nguyễn Văn Thông (1993) [10].**

- Back pain and sciatica level based on patient declaration using VAS scale (no pain: 0 point, slight pain: 1-2.5 points, moderate pain: 2.5- 5 points, severe pain: > 5 points).
- Measurement of lumbar flexion using Schober test (Very good/4 points  $\geq$  14/10cm, Good/3 points  $\geq$  13/10-14/10cm, Average/2 points  $\geq$  12/10-13/10cm, Poor/1 point < 12/10cm).
- Measurement of pressure on sciatic nerve roots using Lasegue test (Very good/4 points > 80<sup>0</sup>, Good/3 points  $\geq$  60-80<sup>0</sup>, Average/2 points  $\geq$  30-60<sup>0</sup>, Poor/1 point < 30<sup>0</sup>).
- Movements of the lumbar spinal cord (Flexion, extension, adduction toward pain and non-pain sides, rotation toward pain, and non-pain sides).
- Daily functional activities: using “Oswestry low back pain disability questionnaire” to evaluate activities of personal care, heavyweight lift, walking and standing (Very good: 4 points, Good: 3 points, Average: 2 points, Poor: 1 point).
- Total accumulated scores assessment: Very good: 36-40 points, Good: 30-35 points, Average: 20-29 points, Poor: <20 points.

### **2.4 Data analysis**

Using SPSS 16.0. Software.

### 3. Results

#### 3.1 General traits of patients

- Average ages are 57.26 (control) and 58 (experiment). Thirty-six patients belonged to age 50-69 (58%), most of them in age 60-69 (35.5%) and 50-59 (22.5%).
- Females made up of 80.65% of the patients, four times higher than males (19.35%).
- The light workload group took accounted for 65.5% of the patients, 1.8 times higher than the heavy workload (35.5%).
- Early treatment (within the first month of illness) took 33.8%, the ones begin treatment at 2<sup>nd</sup> to 5<sup>th</sup> month took 41.9% and 6<sup>th</sup> to 12<sup>th</sup> month gained 24.3%.
- Natural cause accounted for the most significant percentage, then excessive movement and wrong posture. Trauma accounted for no investigated case.
- Moderated herniated disc took the most considerable portion of 88.7%; light one took 11.3%.
- Herniation occurred mostly at disc L4-L5 L5-S1, then were the case of multilevel herniation.

#### 3.2 Treatment outcomes

The pain level decreased remarkably in both control and experiment groups at 1 and 3 months after treatment. Slight pain and no pain percentage in the experiment group were significantly higher than in the control group ( $p < 0.05$ ) (Table 1).

Group	Controls (n=31)						Experiments (n=31)					
	Pre-treatment		15 days after treatment		30 days after treatment		Pre-treatment		15 days after treatment		30 days after treatment	
	n	%	n	%	n	%	n	%	n	%	n	%
Severe pain	20	64.5	0	0	0	0	18	58.1	0	0	0	0
Moderate pain	10	32.3	18	58.1	6	19.4	11	35.5	10	32.3	3	9.7
Slight pain	1	3.2	10	32.3	15	48.4	2	6.5	14	45.2	13	41.9
No pain	0	0	3	9.7	10	32.3	0	0	7	22.6	15	48.4

**Table 1:** Pain relief after treatment (using the VAS scale).

Lasegue sign was remarkably improved in both groups after treatment ( $p < 0.05$ ), and improvement in experiments was significantly higher than in controls ( $p < 0.05$ ) (Table 2).

Extent	Controls (n=31)						Experiments (n=31)					
	Pre-treatment		15 days after treatment		30 days after treatment		Pre-treatment		15 days after treatment		30 days after treatment	
	n	%	n	%	n	%	n	%	n	%	n	%

Very good	0	0	11	35.5	12	38.7	0	0	18	58.1	20	64.5
Good	9	29	11	35.5	13	41.9	11	35.5	8	25.8	8	25.8
Average	5	16.1	9	29	6	19.4	4	12.9	5	16.1	3	9.7
Poor	17	54.8	0	0	0	0	16	51.6	0	0	0	0

**Table 2:** Lasegue sign improvement after treatment.

Lumbar flexion was remarkably improved in both groups after treatment ( $p < 0.05$ ), and improvement in experiments was significantly higher than in controls ( $p < 0.05$ ) (Table 3).

Extent	Controls (n=31)						Experiments (n=31)					
	Pre-treatment		15 days after treatment		30 days after treatment		Pre-treatment		15 days after treatment		30 days after treatment	
	n	%	n	%	n	%	n	%	n	%	n	%
Very good	1	3.2	11	35.5	12	38.7	1	3.2	20	64.5	20	67.7
Good	9	29	8	25.8	11	35.5	8	25.8	5	16.1	5	16.1
Average	7	22.6	10	32.3	8	25.8	8	25.8	6	19.4	6	19.4
Poor	14	45.2	2	6.5	0	0	14	45.2	0	0	0	0

**Table 3:** Lumbar flexion after treatment (Schober test).

Daily functions in both groups remarkably improved after treatment ( $p < 0.05$ ), and improvement in experiments was significantly higher than in controls ( $p < 0.05$ ) (Table 4).

Extent	Controls (n=31)						Experiments (n=31)					
	Pre-treatment		15 days after treatment		30 days after treatment		Pre-treatment		15 days after treatment		30 days after treatment	
	n	%	n	%	n	%	n	%	n	%	n	%
Very good	0	0	2	6.5	6	19.4	0	0	7	22.6	18	58.1
Good	2	6.5	17	54.8	18	58.1	1	3.2	19	61.3	9	29
Average	7	22.6	10	32.3	6	19.4	8	25.8	5	16.1	4	12.9
Poor	22	7.1	2	6.5	1	3.2	22	71	0	0	0	0

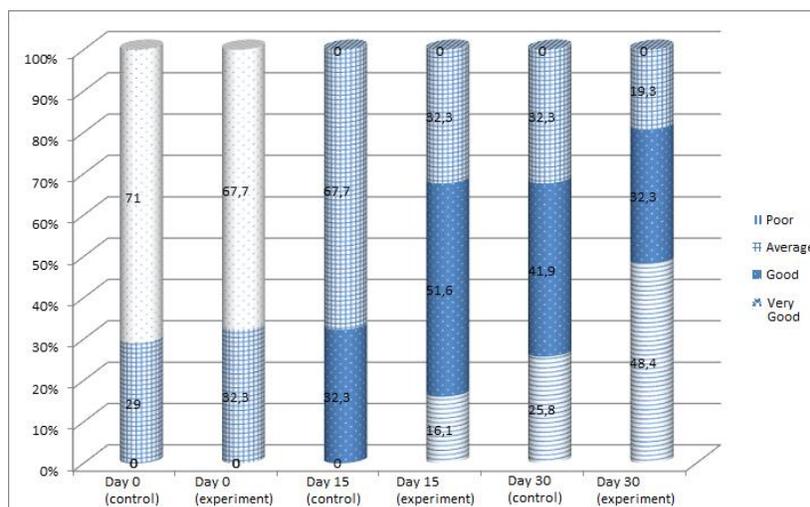
**Table 4:** Daily functions improvement after treatment.

After 15 days, both groups achieved good results and no patient had a poor outcome. Treatment outcome in experiments was significantly higher than in controls ( $p < 0.05$ ). After 30 days, operations also get substantially better result than controls ( $p < 0.05$ ) (Table 5+6) and (Figure 1).

OUTCOME (15 days)	Controls (n=31)		Experiments (n=31)		P
	n	%	n	%	
Very good	0	0	5	16.1	<0.05
Good	10	32.3	16	31.6	
Average	21	67.7	10	32.3	
Poor	0	0	0	0	
Very good	31	100	31	100	

OUTCOME (30 days)	Controls (n=31)		Experiments (n=31)		p
	n	%	n	%	
Very good	8	25.8	15	48.4	<0.05
Good	13	41.9	10	32.3	
Average	10	32.3	6	19.3	
Poor	0	0	0	0	
Very good	31	100	31	100	

**Table 5 and 6:** General treatment outcome (based on criteria of Nguyễn Văn Thông) [10] 15 days and 30 days after treatment.



**Figure 1:** Treatment outcome by time.

## **4. Discussion**

### **4.1 General traits of investigated patients**

The average patient age in this study was  $58.16 \pm 13.7$ , suitable with the work of Nguyen et al. (2016) [11], ( $54 \pm 11.04$ ) and higher than other authors such as Davis (1994) (42 years old) [12]. The illness was at a higher rate in females due to heavy workload, and due to, in most cases, menopause age which caused various changes in hormone level lead to spinal disc degeneration and osteoporosis, increased herniation rate. Light workload patients took a majority in this study, different from other studies such as of Nguyen et al. (2016), [11] where 60.0% of the patients did heavy labor. Most patients in our study are in patients hospitalized in the Department of Orthopaedics of the 7A Military Hospital and are mainly pensioners. In this study, the early treatment (within the first month of illness) took 33.8% of the total patients; the ones begin treatment at 2<sup>nd</sup> to 6<sup>th</sup> month took 41.9% later than 6<sup>th</sup> month took 13.3% and at least from the 6<sup>th</sup> month took 24.3%. Natural causes accounted for the most significant part of investigated patients (47 people, 75.8%), which meant constant work/movements in several limited postures, chronic trauma, osteoporosis and degenerated body structure together contributed to the natural cause of this illness. MRI results of the herniated disc in this study also similar to other researches.

### **4.2 Treatment results of investigated patients**

Nguyen and Phan and until 1997 treated 1390 sciatica cases caused posteriorly herniated disc at semi acute-chronic stage using spinal reduction, anti-inflammatory drugs, and painkillers, epidural injection; 80% cases yielded good and fair results, 13% yielded an average, 4% yielded poor and 3% yielded none result [13]. Riew et al. (2000) reported that one prospective study on severe sciatica cases caused by spinal stenosis or lumbar disc herniation treated with lumbar NMC steroid injection yielded success rate of 77 % [14]. Runu et al. (2005) made a prospective study on treatment of sciatica patients caused by lumbar disc herniation using NMC steroid injection, showed that 72.54% of patients got better [15]. This study result was believed to be similar to the abovementioned works.

## **5. Conclusion**

The studied treatment method did improve spinal range of motion, daily functions, and relieving pain as:

- 48.4% experiment patients no longer feel pain after treatment (32.3% in the control group).
- Lumbar flexion was significantly improved in 67.7% experiment patients (38.7% in the control group).
- Lasegue score was very good in 64.5% experiment patients (38.7% in the control group).
- Flexion, extension, adduction, and rotation were significantly better improved in experiments than in controls.
- Daily functions were improved at a “very good” extent in 58.1% of experiment patients (19,4% % in the control group).
- General assessment after 30 days: 80.7% of patients received epidural injection got “very good” outcome compared with 67.7% in the control group.

## **Funding**

None

### **Conflict of Interest**

None declared

### **Ethical approval**

Not required

### **References**

1. Ament J, Thaci B, Yang Z, et al. Cost-effectiveness of a bone-anchored annular closure device versus conventional lumbar discectomy in treating lumbar disc herniations. *Spine* 44 (2019):5-16.
2. Deyo RA, Cherkin D, Conrad D, et al. Cost, controversy, crisis: low back pain and the health of the public. *Annu Rev Publ Health* 12 (1991): 141-156.
3. Engel-Yeger B, Keren A, Berkovich Y, et al. The role of physical status versus mental status in predicting the quality of life of patients with lumbar disk herniation. *Disabil Rehabil* 40 (2018): 302-308.
4. Legrand E, Bouvard B, Audran M, et al. Spine Section of the French Society for Rheumatology. Sciatica from disk herniation: medical treatment or surgery? *Joint Bone Spine* 74 (2007): 530-535.
5. Patel SA, Wilt Z, Gandhi SD, et al. Cost-effectiveness of treatments for lumbar disc herniation. *Seminars in Spine Surgery* 28 (2016): 53-56.
6. Sardaru D, Boldureanu D, Andruseac G, et al. Paralytic Lumbar Disc Herniation. A Four Years Social and Economic Impact Study for North-East Region of Romania. *Rev Cercet Interv So* : 67-77.
7. Tran N.A and Nguyen TNL. Đau thần kinh tọa do thoát vị đĩa đệm cột sống thắt lưng. In: *Bệnh học Nội khoa Tập 1, Nhà xuất bản Y học 2004: 456-460.*
8. Botwin K, Brown LA, Fishman M, et al. Fluoroscopically guided caudal epidural steroid injections in degenerative lumbar spine stenosis. *Pain Physician* 10 (2007): 547-558.
9. Collighan N, Gupta S. Epidural steroids. *Contin Educ Anaesth Crit Care Pain* 10 (2009): 1-5.
10. Nguyen VT, Góp phần nghiên cứu và đánh giá xoa bóp nắn chỉnh cột sống điều trị thoát vị cột sống thắt lưng, Luận văn Tiến sỹ khoa học Y học, Học viện Quân Y (1993).
11. Nguyen TNL, Đào XT, Đo VA, et al. Đánh giá hiệu quả điều trị đau thần kinh tọa do thoát vị đĩa đệm bằng phương pháp tiêm corticosteroid ngoài màng cứng. *Tạp chí Nội khoa Việt Nam* 16 (2013): 12-19.
12. Davis RA. A long-term outcome analysis of 984 surgically treated herniated lumbar discs. *J Neurosurg* 80 (1994): 415-421.
13. Chu TTL and Phạm KL. Đặc điểm lâm sàng và hình ảnh chụp cắt lớp vi tính lồng ngực ở bệnh nhân giãn phế quản tại bệnh viện trung ương Thái Nguyên. *Trường Đại học Y Dược Thái Nguyên, Bản tin Y Dược học miền núi số 4 năm 2016, tr. 3-8.*
14. Riew KD, Park JB, Cho YS, Gilula L, Patel A, Lenke L, Bridwell K. Nerve root blocks in the treatment of lumbar radicular pain. A minimum five-year follow-up. *J Bone Joint Surg Am* 88 (2006): 1722-1725.

15. Runu R, Sinha NK, Pai R, Shankar PR, Vijayabhaskar P. Our experience with epidural steroid injections in management of low back pain and sciatica. *Kathmandu Univ Med J* 3 (2005): 349-354.

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