

Disc Herniations with Spontaneous Regression

Spontan Regresyon Gösteren Disk Herniasyonları

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ABSTRACT

Aim: Vertebral disc hernias are a common clinical condition. There are reported cases of recovery without surgery. However, no collective study has yet been conducted to reveal spontaneously regressing disc hernias statistically significant. Our aim is to determine the cases of spontaneous regression disc herniation and to reveal statistically significant and to reveal the chance of spontaneous regression without surgery.

Methods: For this purpose, a retrospective cohort was made from the files of 2,700 patients who came to our clinic during a period of 4.5 years. Surgical indication was determined in 341 patients and 323 patients were operated on. Physical and drug therapy as well as rest were recommended to 18 patients. These 18 patients who did not receive surgical treatment, it was determined that the disc hernias had spontaneous regression. Incidence, relative risk (RR), attributable risk (AR), and rate of protection were calculated. Comparison of the means in the SPSS and Chi-square test.

Results: The most spontaneously regressed disc herniation was determined as L5S1 level. In those treated surgically, surgical intervention as a positive factor was found to provide complete recovery in 94% of patients. Surgery indication determined that 94.42% of those who had surgery were indicated and those who did not undergo surgery and went to spontaneous regression, represented 5.57%. Spontaneous regression of disc hernias without surgery was found to be statistically significant ($p<0.05$).

Conclusion: It is important to consider the possibility of spontaneous regression before surgical treatment in disc herniations. In disc herniation, time should be allocated for the body's inflammatory response to heal.

Key Words: Disc herniation, Spontaneous regression, Cohort, Retrospective

ÖZET

Amaç: Vertebral disk hernileri sık görülen bir klinik durumdur. Cerrahiye gitmeden iyileşen vakalar vardır. Spontan regresyon gösteren disk hernilerini istatistiksel olarak anlamlı şekilde ortaya koyan bir toplu çalışma yapılmamıştır. Amacımız, cerrahi endikasyona rağmen, spontan regresyon gösteren disk hernisi vakalarını belirleyip istatistiksel olarak anlamlı şekilde ortaya koymaktır.

Yöntemler: Bu amaçla, 4,5 yıldır beyin cerrahisine gelen 2700 hastanın dosyalarından retrospektif kohort yapıldı. 341 hastaya cerrahi endikasyon kondu. 323 hasta opere edildi. Cerrahi endikasyona rağmen ameliyat olmayan 18 hastaya fizik tedavi, ilaç tedavisi, istirahat önerildi. 18 hastanın kontrol MRG sonuçlarına göre disk hernilerinin spontan gerilediği belirlendi. İnsidans, rölatif risk (RR), atfedilen risk (AR) ve korunabilirlik hızı hesaplandı. Demografik değerler için SPSS'de ortalamaların karşılaştırılması kullanıldı. Ki-kare testi yapıldı. $P<0,05$ istatistiki olarak anlamlı kabul edildi.

Bulgular: Disk hernisi spontan regresyon gösterenlerin yaş ortalaması 46,4 idi. Yaş olarak iki grupta istatistiki olarak anlamlı bir fark yoktu ($P>0,05$). En fazla spontan regresyon Lumbal 5 Sakral 1'de görüldü. 4,5 yıl için vertebral disk hernisi insidansı % 12,62 bulundu. Rölatif risk, 1,06 bulundu. Cerrahi uygulananlarda, pozitif etken olarak cerrahi girişimin % 94 hastada tam iyileşme olduğu belirlendi. Negatif etken olarak, cerrahi endikasyon olduğu halde cerrahi yapılmayan, istirahat, medikal ve fizik tedavi uygulananlarda tam iyileşme %100'dü. Cerrahi endikasyonu olup, cerrahi yapılanlar %94,42, cerrahisiz spontan regresyona gidenler %5,57 bulundu. Cerrahi gitmeyenlerin tüm hastalar içindeki yüzdesi % 0,66 idi. Disk hernilerinde, cerrahisiz spontan regresyon düşünülmesi istatistiki olarak anlamlı bulundu ($p<0,05$).

Sonuç: Uygun klinik takipteki disk hernilerinde cerrahi tedaviden önce spontan regresyon ihtimalinin göz önünde bulundurulmalı, vücudun iyileşme yönünde inflamatuvar yanıtına zaman verilmelidir.

Anahtar Kelimeler: Disk herniasyonu, Spontan regresyon, Kohort, Retrospektif

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Introduction

The first report of spontaneous regression of lumbar disc herniation was made in 1984 [1]. Many case reports continued to be published afterwards. Today, although spontaneous regression in disc herniation is a well-known and frequently reported phenomenon, the exact healing mechanism has not been fully explained [2-13]. Patients were evaluated together with clinical and radiological findings, and recovery was demonstrated according to clinical and radiological findings. Studies to date have definitively demonstrated that there is spontaneous regression in disc hernias. However, it has not yet been revealed whether spontaneous regression can be an alternative to the surgical approach in disc hernias, nor the statistically significant value of the definitive recovery chance, when surgical treatment is not chosen despite the surgical indication. Ultimately, opting for spontaneous regression has not been established as a definitive evidence-based treatment. Analytical examination on this subject has not been done yet. In the simplest instances, when the spontaneous regression case reports of disc herniation are examined, the recovery times determined by clinical and imaging methods can vary from two to twenty-four months. In retrospective and prospective epidemiological studies on spontaneous regression of disc hernias, the causality criteria of strength of the relationship, consistency of the relationship, temporality of the relationship, biological acceptability of the relationship and compatibility with all information (biologic plurality and coherence) has not been set. In this sense, the advantages and disadvantages of disc herniation in the choice between surgical treatment and recovery, or spontaneous regression and recovery, have not been scientifically revealed. In our study, a statistically significant advantage of spontaneous regression over surgical intervention was shown, in disc herniation.

Material and Methods

For our purpose, a retrospective cohort was constituted from the files of 2,700 patients who came to our neurosurgery clinic during a period of 4.5 years. It was observed that surgical indication was ascertained with the diagnosis of vertebral disc herniation in 341 patients, according to the clinical conditions of the patients determined by basic physical examination and magnetic resonance imaging (MRI) methods. 323 patients were operated. Physical therapy, drug therapy or rest were recommended to eighteen patients who did not have surgery for various reasons, although the decision for surgical indication was provided. Spontaneous regression of disc hernias was observed according to the control physical examination and control MRI results of these eighteen patients who did not receive surgical treatment (Table 1).

Statistical analysis

Incidence, relative risk (RR), attributable risk (AR) and rate of protection were calculated. Comparison of the means in the SPSS program was used for demographic values. The Chi-square test was performed; $P < 0.05$ was considered statistically significant.

Results

2,700 patients were equally split between males (50%) and females (50%) in gender. When comparing the two groups' ages, there was no statistically significant difference ($P > 0.05$). Patients who experienced spontaneous disc herniation regression on average were 46.4 years old (Table 1, graph 1). The most spontaneously regressed disc herniation was determined as right lumbar 5 sacral 1 level and left lumbar 5 sacral 1 level. In addition, it was observed that one cervical and one thoracic disc hernia went into spontaneous regression (Table 1, graph 1-2, figure 1). The incidence of vertebral disc hernia for 4.5 years was 12.62%. The relative risk was determined as 1.06. In terms of the relationship between relative risk surgical treatment and spontaneous regression, the two treatment approaches were nearly of equal value in terms of ultimately complete recovery. In those treated surgically, surgical intervention as a positive factor was found to provide complete recovery in 94% of patients. As a negative factor, complete recovery was found to be 100% in patients who did not undergo surgery for various reasons although surgery was indicated, and were given rest, medical treatment or physical therapy. The attributed risk was 6%. In other words, while there was a 6% risk of non-healing in patients who went to surgery, there was no risk of no recovery in patients who went into spontaneous regression. In the absence of surgery for herniated disc, the recovery rate was close to 100%. Surgery indication was found in 12.62% of all patients. It was found that 94.42% of those who had surgery were indicated and those who did not undergo surgery and went to spontaneous regression were 5.57%. The percentage of non-surgical patients among all patients was 0.66%. Considering spontaneous regression in disc hernias without surgery was found to be statistically significant ($p < 0.05$) (Table 2).

Discussions

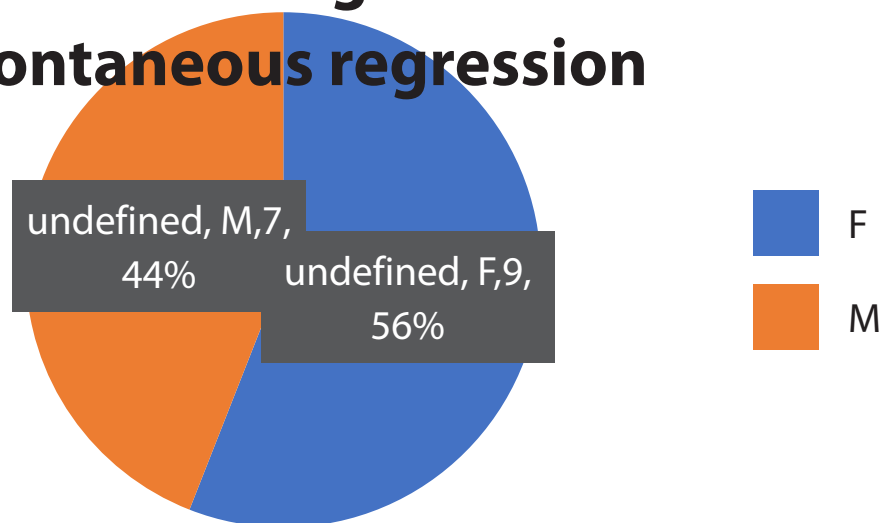
Lumbar and cervical disc herniation is one of the most typical spinal diseases. Although thoracic hernias are rare, the surgery in these cases is challenging. One of the most important factors affecting the outcome in disc surgery is the selection of the appropriate patient [1-3]. Only 1 to 2% of all patients with lumbar discopathy refer to surgeons. Cauda syndrome is seen in approximately

Table 1. In neurosurgery, patients with regression of disc herniation without surgery, although two thousand patients were screened within two years and had surgery indications.

sex	age	level of disk hernia	type of hernia	neurologic deficit	laseq test	physical therapy	resting	medical therapy	time for regression in hernia
m	60	R L4-5	protrusion	+	35	+	+	+	3 months
m	51	L L5-S1	extrude	_	10	_	+	+	2 months
f	53	R L5-S1	p/e	-	70	_	+	+	2,5 months
f	30	R L4-5	p/e	-	45	_	+	+	3 months
m	51	R L5-S1	extrude	-	55	_	+	+	15 months
f	37	L L5-S1	protrusion	mild neurologic deficit	60	+	+	+	12 months
f	52	R L4-5	protrusion	_	25	+	+	+	5 months
f	49	L L2-3/R L5-S1	extrude	_	65	_	+	+	2 months
m	70	R L5-S1	protrusion	_	45	+	+	+	6 months
m	39	L L4-5	extrude	_	35	+	+	+	3 months
f	36	L L4-5	extrude	_	10	_	+	+	6 months
f	36	L L5-S1	extrude	_	25	+	+	+	1 months
f	36	R L5-S1	protrusion	_	40	_	+	+	4 months
f	46	R L4-5	extrude	_	70	_	+	+	6 months
f	25	L L5-S1	extrude	_	35	_	+	+	18 months
f	71	L L5-S1	extrude	_	55	_	+	+	6 months
m	46	R TH12- L1	protrusion	_		_	+	+	8 months
m	48	L C5-6	protrusion	_		+	+	+	24 months

m; MALE, f; FEMALE, R; RIGHT, L; LEFT, L5; LUMBAL 5 VERTEBRAE, S; SACRAL VERTEBRAE, C; CERVICAL VERTEBRAE, TH; THORACAL VERTEBRAE, +; present, -; absent, p/e; protrusion/extrude

Distrubition of gender with spontaneous regression



m; MALE, f; FEMALE

Graph 1. Distribution of gender with spontaneous remission

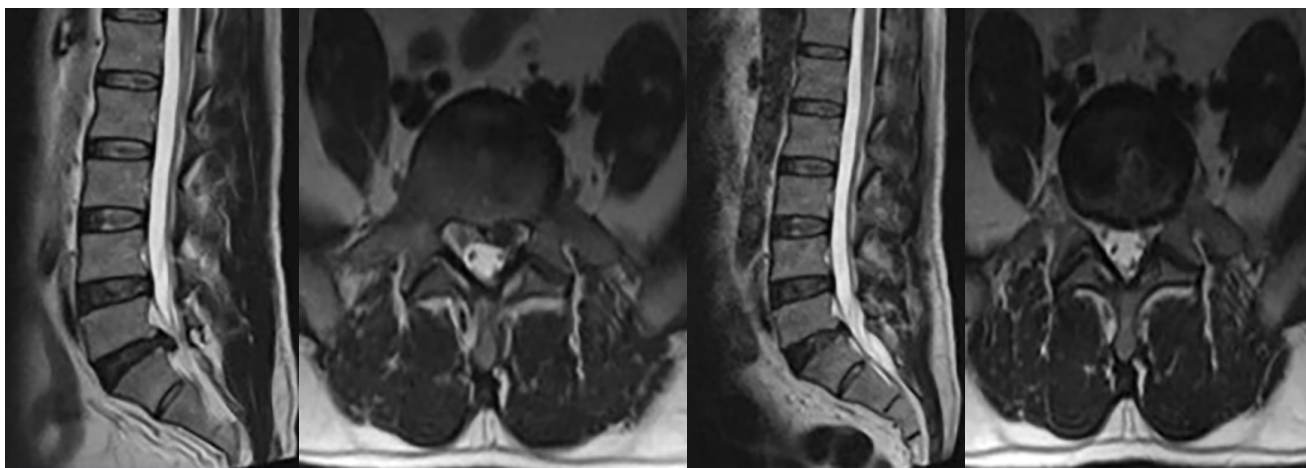
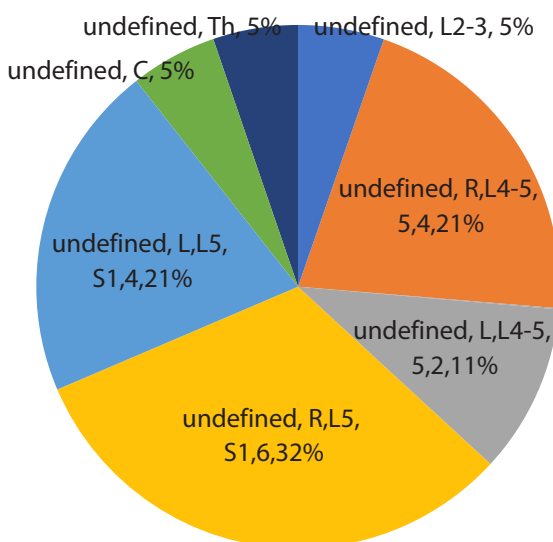


Figure 1. T2-weighted MRI showed caudal migration of the herniated nucleus pulposus and complete spontaneous regression of the herniated nucleus pulposus at the L5/S1 level (her complaints were resolved 12 weeks later)

Table 2. A retrospective cohort was made from the files of 2700 patients who came to our neurosurgery clinic for 4.5 years.

Incidence of vertebral disc herniation for 4.5 years	12.62 %
Those who have a surgical indication and undergo surgery	94.47 %
Those who did not undergo surgery and went to <u>spontaneous regression</u>	5.57 %
Relative risk (RR)	1.06
Recovery from surgery	94 %
Recovery from spontaneous regression	100 %
Attributed risk (AR)	6 %
Recovery rate without surgery for disc herniation	100 %
Spontaneous regression of disc hernias without surgery was found to be statistically significant	P<0.05

Distribution of disc herniation with spontaneous regression



R; RIGHT, L; LEFT, L5; LUMBAL 5 VERTEBRAE, S; SACRAL VERTEBRAE, C; CERVICAL VERTEBRAE, TH; THORACAL VERTEBRAE

Graph 2. Distribution of disc herniation with spontaneous regression

0.0004% of all patients with low back pain [4]. Especially in the majority of patients with lumbar disc herniation, there is a chance to regress in the clinic and return to their daily lives with medical treatment, without the need for a surgical intervention [5], and it improves by 85% in approximately six weeks [3]. This can be seen in cervical disc herniation, specifically in soft discs. With many medical and physical therapy programs performed today, there are studies in which full recovery is achieved even in extruded discs. When we look at the literature, there are many previous and recently published studies on the spontaneous regression of herniated nucleus pulposus, primarily in the lumbar region, cervical region and thoracic region [1,6-10]. In the literature on spontaneous regression, three hypotheses are accepted to a greater extent. The first of these is retraction of the disc into the intervertebral space, the second is the shrinkage of the sequestered part due to dehydration, whereas the third and most widely accepted is regression due to inflammatory and phagocytic processes [11,12]. It has been suggested by in vitro studies that vascular endothelial growth factor (VEGF) is produced in the surgically removed disc material, VEGF increases when macrophages are added, and in another study, matrix metalloproteinases (MMP) released from macrophages are effective in disc resorption [10,11]. It is thought that vascularization plays a serious role in disc resorption [12].

Ninety percent of patients with lumbar disc herniation can recover without surgery. The painful phase of recovery can be made tolerable by using pain relievers such as muscle relaxants, short-term steroids, and bed rest [4,14-15]. A manuscript on the partial or complete regression of lumbar disc herniation has been published, where the L4-5 area is the most commonly affected, regression occurs more quickly in younger patients and the rate of recovery is greatest between the ages of 41 and 50 [14]. Another finding is that discs that are protruding or detached regress quickly: if large and sequestered discs are located laterally by craniocaudal migration, they tend to regress more readily than smaller and protruding discs [15-18]. Numerous uncertain factors contribute to the causes of spontaneous disc herniation. Age of the patient, dehydration of the nucleus pulposus, hematoma resorption, revascularization, HNP, PLL, cartilage and annulus fibrosus, are some of these factors [19]. In disc herniation, macrophages, B lymphocytes, and CD 68 (+) are observed. On the first day, TNF-alpha and IL-1 are synthesized, and MCP-1 is produced on the third day [4].

The question of whether or not spontaneous regression in disc herniation can be considered as an alternative to surgical intervention should be the main topic of discussion. Surgical intervention in disc herniation may pose a risk for recurrence, postoperative fibrosis as well as serious com-

plications, such as nerve injury and dural injury. In cauda equina syndrome and disc herniation that impairs quality of life surgical intervention may be considered. However, since spontaneous regression due to macrophage phagocytosis is common in cases of sequestered disc herniation, a chance for spontaneous regression may be considered by saving time with medical treatment.

As stated above, spontaneous regression brings many advantages over surgical treatment and it is a method that should be considered for patients, in light of the available information. However, in our study, the fact that the number of patients undergoing surgery for disc herniation was approximately fifteen times higher than the number of patients left to spontaneous regression, is statistically debatable. Cases for study samples in studies conducted at present have been selected from clinics in the hospital. This may result in the "Berkson error", which is well known in epidemiology. In our study, the sample group was selected from patients admitted to the hospital, allowing for potential bias. Therefore, it ensues that future studies should include samples from the whole population.

Limitations This study had limitations, including a single-center design, a shorter study period and a smaller sample size. The principal limitation of this study was the retrospective design.

Conclusions

When the literature is investigated, the presence of spontaneous regression in disc herniation is highlighted with all its features. In our study, we examined regression disc herniation from another angle and concluded that the possibility of spontaneous regression should not be ruled out before surgical treatment.

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