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Comparison of Conservative and Surgical Treatment Results in Lumbar Spinal Stenosis

Lomber Dar Kanalda Konservatif ve Cerrahi Tedavi Sonuçlarının Karşılaştırılması

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ABSTRACT

OBJECTIVE: The aim of this study was to compare the results of physical therapy combined with drug treatment and surgical intervention in patients with lumbar spinal stenosis.

METHOD: Patients with lumbar spinal stenosis who were diagnosed clinically and with magnetic resonance imaging were included in the study. Pre- and post-treatment pain severity was evaluated with VAS. Conservative approach consisted of four weeks of physiotherapy, exercises and drug therapy. Surgical intervention consisted of decompression with laminectomy and foraminotomy.

RESULTS: Eighteen of the 19 patients were treated with the conservative approach were followed for a mean period of 40.4 months (18-60 months) and 22 patients with surgical intervention were followed for a mean period of 18 months (4-32 months). One patient from the conservative therapy group did not come to outpatient clinic controls and was dropped out. The most frequent level of canal stenosis was L3–4 in the conservative therapy group and L4–5 in the surgical intervention group. Following treatment, pain was reduced significantly in both groups. There was a statistically significant increase in the walking distance of the surgical treatment group; however, the increase in the walking distance of the conservative treatment group was not statistically significant.

CONCLUSION: Both the conservative treatment and the surgical decompression in lumbar spinal stenosis are effective for long-term pain relief. Therefore the results of surgical treatment were found to be better in functional and symptomatic well being when compared to the results of conservative treatment.

KEY WORDS: Conservative treatment, Lumbar spinal stenosis, Surgical procedures

ÖZ

AMAÇ: Çalışmamızın amacı lomber spinal stenoz (LSS) olan hastalarda fizyoterapi ve medikal tedaviden oluşan konservatif tedavi ile cerrahi tedavi sonuçlarının karşılaştırılmasıdır.

METOD: Çalışmaya klinik ve görüntüleme yöntemleri ile (MRI) lomber spinal stenoz tanısı konulan hastalar alındı. Tedavi öncesi ve tedavi sonrası ağrı şiddeti VAS ile değerlendirildi. Konservatif tedavi 4 hafta süre ile fizyoterapi, egzersiz ve ilaç tedavisinden oluşuyordu. Cerrahi tedavide laminektomi ve foraminatomi ile dekompresyon uygulandı.

BULGULAR: Konservatif tedavi uygulanan 19 hastanın 18'i ortalama 40 ay (18-60 ay) süre ile cerrahi tedavi uygulanan hastaların 22'si ortalama 18 ay (4-32 ay) süre ile takip edildi. Konservatif tedavi grubundaki bir hasta poliklinik kontrollerine gelmediği için çalışma dışı bırakıldı. Kanal darlığının en sık görüldüğü seviye konservatif tedavi grubunda L3–4, cerrahi tedavi grubunda ise L4–5 idi. Tedaviden sonra her iki grupta da ağrı anlamlı olarak azaldı. Cerrahi tedavi uygulanan hastaların yürüme mesafelerinde istatistiksel olarak anlamlı artış bulundu. Yürüme mesafesi artışı konservatif tedavi uygulanan grupta istatistiksel olarak anlamlı bulunmadı.

SONUÇ: Lomber spinal stenozda konservatif ve dekompressif cerrahi tedavi uzun süre ağrı azalmasında etkindir. Cerrahi tedavi sonuçları fonksiyonel ve semptomatik olarak konservatif tedavi sonuçlarından daha iyidir.

ANAHTAR SÖZCÜKLER: Lomber spinal stenoz, Konservatif tedavi, Cerrahi tedavi

INTRODUCTION

Lumbar spinal stenosis (LSS) is a frequent cause of back and leg pain in patients over 50. Stenosis can be caused by congenital lesions or degenerative changes (3).Degenerative spinal stenosis may be due to intervertebral disk bulging, joint facet hypertrophy, and thickening of the ligamentum flavum or spondylolisthesis (15). Clinical findings in LSS may be mild, moderate or severe. In addition to back and leg pain, neurogenic claudication is characteristic for spinal stenosis (16). Neurogenic claudication is the result of vascular compression causing ischemia in the nerve roots (3,9). LSS may be located centrally, at the lateral recess or in the foramina.

Foraminal stenosis should be suspected in patients with degenerative spinal stenosis (4).

Currently the most objective method in diagnosing spinal stenosis is magnetic resonance imaging (3). However, no standard classification is yet available. The cross-sectional diameter of the spinal canal shows great variation among patients, although there is a correlation between central canal stenosis and severity of the symptoms (15). LSS is frequently encountered at the L4-5 and L3-4 levels (7).

LSS may be treated with conservative methods or with surgical intervention (1,2,6,11,12,14).

Non-surgical approach should be chosen in patients with less severe complaints. The aim of this study was to compare the results of a conservative approach and surgical intervention in patients with LSS.

MATERIALS AND METHOD

Patients with lumbar spinal stenosis diagnosed clinically and with imaging studies were included in the study. Patients with nerve root compression due to acute lumbar disk herniation, vertebral fractures, spinal infections, neoplastic processes, or with previous spinal surgery were excluded. All patients had back, buttock, or leg pain. Severity of pain was evaluated with VAS on a 10 cm ruler. Claudication distance was verified in meters. LSS level was determined on magnetic resonance imaging. Surgical decompression with laminectomy and foraminotomy was done in patients with neurological deficit or severe pain that could not be relieved with conservative treatment. Patients in the conservative approach group received three weeks of lumbar isometric and stretching exercises with physical therapy and NSAIDs. Patients continued to receive NSAIDs for one week. The treatment program was for five days each week. All patients were followed periodically for 6 months. The data was analyzed with the Student t test and Pearson correlation test using SPSS 11.5 for Windows.

RESULTS

There were 15 women and 4 men in the conservative treatment group and 14 women and 8 men in the surgical intervention group. One patient in the conservative treatment group was excluded from the study because she did not come to outpatient clinic controls. The clinical characteristics of these patients are given in Table I. The most frequent level of canal stenosis was the L3–4 level in the conservative treatment group at 78.4% and the L4–5 level in the surgical intervention group at 81.8%. Eighteen of the patients in the conservative approach group were followed for a mean period of 40.4 months and 22 patients in the surgical intervention group were followed for a mean period of 18 months. Pre- and post-treatment pain severity and walking distances are given in Table II.

After treatment, severity of pain decreased significantly and walking distances increased in both groups. The increase in the walking distance was not statistically significant in the conservative treatment

Table I: Clinical Characteristics

	Nonsurgical Group	Surgical Group	P Value
Age (years)	66.94 ± 11.53	65.55 ± 7.28	p > 0.05
Height (cm)	162.56 ± 9.98	162.14 ± 8.64	p > 0.05
Weight (kg)	73.28 ± 10.71	73.05 ± 12.97	p> 0.05
BMI (kg/cm2)	27.90 ± 4.71	27.80 ± 4.67	p> 0.05

BMI: body mass index

Table II: Walking Distance and Pain Severity (VAS)

		Before Treatment	After Treatment	P Value
Pain Severity (VAS)	NS	6.56 (±1.61)	4.72 (±2.8)	0.026
	S	8.68 (±1.08)	2.23 (±2.8)	0.000
Walking Distance	NS	96.39 (±101.9)	541.94 (±1264.3)	0.158
	S	92.41 (±215.51)	1322 (±1542.1)	0.001

(NS: Non surgical group, S: surgical group)

group. The walking distance increased in 44.4% of the conservative treatment group and 77.3% of the surgical decompression group. There were no important post-surgical complications.

DISCUSSION

In our study, severity of the pain in the patients with LSS decreased significantly after treatment in both the conservative therapy and surgical intervention groups. Amudsen et al have reported in their study that 64% of the patients in the conservative group and 89% of the patients in the surgical intervention group remained well one year after the procedure (1). Atlas et al. have reported that 70% of the surgical intervention group and 52% of the conservative therapy group showed significant improvement after four years. Symptoms were more severe and patients' conditions were poorer in the surgical decompression group but significant improvement was observed. Sixty-three percent of the patients in the surgical intervention group and 42% of the patients in the conservative therapy group had a satisfactory result (2).

In this study, pre-treatment pain severity was higher in the surgical management group than the conservative therapy group.

The increase in the walking distance after surgical decompression was statistically significant. Pain relief was more prominent in the surgical treatment group than the conservative treatment group. Simotas et al. have reported that 25% of the patients with lumbar spinal stenosis remained well 3 years after conservative treatment (14). In our study, patients in the conservative therapy group showed significant decrease in the pain intensity and an increase in the walking distances after 40.4 months. It has previously been reported that results of surgical intervention in a group of patients with lumbar spinal stenosis results were satisfactory four years later and that 98% of the patients were able to walk more than 15 minutes (8).

Iguchi et al. have reported that more than 50% of the patients with lumbar spinal stenosis treated by surgical intervention had good or excellent results (6). Ragab et al. have reported that 44% of the surgically treated LSS patients were able to perform their daily activities and 48% had to modify their activities after 7.5 years. Of these patients, 68% remained satisfied or felt good about their treatment. Age did not seem to have an effect on the results of lumbar spinal surgery (12). In this study, walking distance was increased in 44.4% of the conservative therapy group and in 77,3% of the surgical intervention group. Both the conservative therapy approach and surgical intervention results are satisfactory in lumbar spinal stenosis treatment. However, it has been suggested that the conservative approach is more suitable for the less severe clinical conditions and that surgical intervention should be reserved for the severe cases (1,2).

In conclusion, conservative approach and surgical intervention are acceptable methods for the treatment of lumbar spinal stenosis. Surgical management in severely symptomatic patients results in significant pain relief and functional improvement.

REFERENCES

1. Amundsen T, Weber H, Nordal H: Lumbar spinal stenosis: conservative or surgical management. Spine 25(11): 1424-1434, 2000
2. Atlas S, Keller R , Robson D: Surgical and nonsurgical management of lumbar spinal stenosis. Spine 25(5): 556-562, 2000
3. Borenstein D, Wiesel S , Boden S: Low Back and Neck Pain. 3rd ed. Philadelphia, Saunders: 267-277
4. Cinotti G, De Santis P, Nofroni I: Stenosis of lumbar intervertebral foramen. Spine 27(3): 223-229, 2002
5. Delport E, Cucuzzella A, Marley J: Treatment of lumbar spinal stenosis with epidural steroid injections: a retrospective outcome study. Arch Phys Med Rehabil 85: 479-484, 2004
6. Iguchi T, Kurihara A, Nakayama J: Minimum 10 year outcome of decompressive laminectomy for degenerative lumbar spinal stenosis. Spine 25(14): 1754-1759, 2000
7. Jin Goh K, Khalifa W, Anslow P: The clinical syndrome associated with lumbar spinal stenosis. Eur Neurol 52: 242-249, 2004
8. Kleeman T, Hiscoe A, Berg E: Patient outcomes after minimally destabilizing lumbar spinal decompression. Spine 25(7): 865-870, 2000
9. Leinonen V, Maatta S, Taimela S: Paraspinal muscle denervation , paradoxically good lumbar endurance and an abnormal flexion–extension cycle in lumbar spinal stenosis. Spine 28(4): 324-331, 2003.
10. Lois G. Jenis, Howard S: Spine update. Spine 25(3): 389-394,2000
11. Podichetty V, Segal A, Lieber M: Effectiveness of salmon calcitonin nasal spray in the treatment of lumbar canal stenosis. Spine 29(21): 2343-2349, 2004
12. Ragab A, Fye M, Bohlman H: Surgery of the lumbar spine for spinal stenosis in 118 patients 70 years of age or older. Spine 28(4): 348-353, 2003
13. Shapiro G, Taira G, Boachie O: Results of surgical treatment of adult idiopathic scoliosis with low back pain and spinal stenosis. Spine 28(4): 358-363, 2003
14. Simotas A, Dorey F, Hansraj K: Nonoperative treatment for lumbar spinal stenosis. Spine 25(2): 197-203, 2000
15. Speciale A, Pietrobon R, Urban C: Observer variability in assessing lumbar spinal stenosis severity on magnetic resonance imaging and its relation to cross-sectional spinal canal area. Spine 27(10): 1082-1086, 2002
16. Spivak JM: Degenerative lumbar spinal stenosis. J Bone Joint Surg Am 80:1053-1066, 1998