



COMPLEX CONSERVATIVE THERAPY OF PATIENTS WITH SPINAL CANAL STENOSIS

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Abstract. Clinical and paraclinical parameters were studied in 141 patients with secondary relative stenosis of the spinal canal, computed tomography, magnetic resonance imaging and electroneuromyographic studies were performed. The proposed method of basic therapy with the inclusion of spinal traction, electrophoresis with papain and lumbar massage led to a decrease in pain syndrome according to the VAS scale, a decrease in the index of muscular stenosis and intermittent claudication, an improvement in the condition according to the Swiss scale for assessing patients with spinal stenosis (Swiss Spinal Stenosis score – SSS). In addition, improvement of electroneuromyographic indices was noted in the groups of patients, although in the main group these changes were significantly better.

Key words: secondary spinal stenosis, degenerative-dystrophic diseases of the spine, electroneuromyography, complex treatment.

Аннотация. У 141 больного с вторичным относительным стенозом позвоночного канала изучены клиничко-параклинические показатели, провели компьютерную томографию, магнитно-резонансную томографию и электронейромиографические исследования. Предлагаемая методика базисной терапии с включением вытяжения позвоночника, электрофореза препаратом папаина и массажем поясницы привела к уменьшению болевого синдрома по шкале ВАШ, уменьшению индекса мышечного стеноза и перемежающей хромоты, улучшению состояния по Швейцарской шкале для оценки пациентов со стенозом позвоночного канала (Swiss Spinal Stenosis score – SSS). Кроме этого, отмечено улучшение электронейромиографических показателей в группах больных, хотя в основной группе эти изменения носили достоверно лучший характер.

Ключевые слова: вторичный стеноз позвоночного канала, дегенеративно-дистрофические заболевания позвоночника, электронейромиография, комплексное лечение.

Annotatsiya. Orqa miya kanalining ikkilamchi nisbiy stenozini bo'lgan 141 bemorda klinik va paraklinik ko'rsatkichlar o'rganildi, kompyuter tomografiyasi, magnit-rezonans tomografiya va elektroneuromiografik tadqiqotlar o'tkazildi. Orqa miya tortish, papain va lomber massaj bilan elektroforezni o'z ichiga olgan asosiy terapiyaning tavsiya etilgan usuli VAS shkalasi bo'yicha og'riq sindromining pasayishiga, mushaklarning stenozini va intervalgacha klaudikatsiya indeksining pasayishiga, Shveytsariya shkalasi bo'yicha holatning yaxshilanishiga olib keldi. Bundan tashqari, asosiy guruhda bu o'zgarishlar sezilarli darajada yaxshi bo'lsa-da, bemorlar guruhlarida elektroneuromiografik ko'rsatkichlarning yaxshilanishi qayd etildi.

Kalit so'zlar: orqa miya kanalining ikkilamchi stenozi, umurtqa pog'onasining degenerativ-distrofik kasalliklari, elektroneuromiografiya, kompleks davolash.

Introduction. One of the causes of chronic back pain syndrome is spinal canal stenosis (SC) [9]. According to various authors, stenosis is diagnosed in 5–65.2% of patients with long-term degenerative processes in the lumbar spine [7]. Patients with a narrow spinal canal traditionally undergo surgical treatment [4, 7]. However, unsatisfactory results of surgical treatment reach, according to various authors, up to 50% [13, 16].

In case of degenerative (secondary) spinal stenosis (DSCS), the use of traction therapy [2, 3, 5, 6] of the spine and the use of papain preparations in the form of electrophoresis or ultrasound therapy in complex treatment [1] seems interesting and promising.

The above led to the conduct of work devoted to the analysis of the effectiveness of various schemes in the treatment of patients with spinal stenosis.

The aim of the study is to develop and scientifically substantiate pathogenetically targeted drug-physiotherapeutic methods for lumbar spine osteoporosis based on their combined use.

Materials and methods

A total of 141 patients (80 women and 61 men) diagnosed with lumbar spinal stenosis were selected from the day hospital of the GlobalMedSystem neurological clinic. The patients' ages ranged from 19 to 82 years.

The study design included a clinical and neurological assessment of patients with a traditional objective examination, determination of the severity of pain using the VAS scale and the Swiss Spinal Stenosis Score (SSS) [15], the severity of the muscular-tonic syndrome (MTS), as well as electroneuromyography (ENMG) before and after treatment.

To confirm vertebral stenosis, various types of radiation diagnostics were performed. Based on the results of computed tomography and magnetic resonance imaging, the area of the spinal canal at an unchanged level (relative area of the SB) and the area of the SB at an altered level in the narrowest place (area of the standardized SB) were calculated. Based on the calculations, the degree of SB narrowing was determined.

When examining CT and MRI scans of our patients, we calculated the area of the spinal canal using the formula:

$$S = A \cdot B / 2,$$

where A is the frontal size of the spinal canal; B is the sagittal size of the spinal canal [10], which in all observations, regardless of the type of spinal canal stenosis, was from 100 mm² to 75 mm² (relative stenosis).

The subjects were divided into 4 treatment groups: three main groups and a control group. The control group (Group 4) received background therapy, including NSAIDs, muscle relaxants, B vitamins, anticholinesterase and vasoactive agents, and massage. Group 1 received background therapy, spinal traction, and electrophoresis (or ultrasound therapy) of caripazim 350 PE, Group 2 received background therapy and electrophoresis (or ultrasound therapy) of caripazim 350 PE, and Group 3 received background therapy and spinal traction.

Patients began physiotherapy with dry traction on a horizontal mechanical traction table lasting from ten to forty minutes. The course included 10 sessions. The scheme of traction treatment for osteochondrosis of the spine in a muscle-relaxing (soft) mode according to Drivotinov was adopted as a basis [5]. When conducting traction treatment, in addition to the patient's age and weight, the degree of severity of the muscular corset and the patient's gender were also taken into account [3,

6]. When conducting traction for women, the traction loads were reduced by 5-10 kg, and the exposure by 5-10 minutes, respectively.

Electrophoresis with a medicinal preparation of papaya extract (karipazim , papain, karipain 350 PE) was carried out using the Potok-1 apparatus (manufactured in the Republic of Uzbekistan).

The effectiveness of the treatment was assessed according to the following criteria:

1) intensity of pain syndrome according to the visual analogue scale (VAS – 10 points);
2) the degree of expression of MTS was determined by calculating the muscle syndrome index (MSI):

a) severity of spontaneous pain: 1 point – no pain at rest, appears under load; 2 points – pain is insignificant at rest, increases with movement; 3 points – pain at rest, sleep is disturbed, forced posture;

b) muscle tone: 1 point – the finger easily penetrates the muscle; 2 points – a certain amount of effort is required to penetrate; 3 points – the muscle is of rock-hard density;

c) muscle soreness: 1 point – upon palpation the patient reports pain; 2 points – response to palpation with a facial reaction; 3 points – response with a general motor reaction;

d) duration of pain: 1 point – pain stops immediately; 2 points – lasts up to 1 minute; 3 points – lasts more than 1 minute;

d) the degree of pain irradiation during palpation: 1 point – pain is localized at the site of palpation; 2 points – pain spreads to nearby tissues; 3 points – pain spreads to distant areas.

IMS is assessed based on the sum of points for the above-mentioned characteristics: I degree (mild) – IMS up to 5 points; II (average, moderate) – from 5 to 12 points; III (severe, pronounced) – more than 12 points [12];

3) Swiss scale for the assessment of patients with spinal stenosis (Swiss Spinal Stenosis score (SSS), where one scale collects information about the severity of spinal stenosis, the physical condition and activity of the patient, as well as the patient's satisfaction with the comprehensive treatment. The result is expressed as a percentage of the maximum possible score;

4) by the distance (in meters) at which neurogenic intermittent claudication appears;
to the neuromotor apparatus was assessed based on ENMG data . The study was carried out on a 4-channel computer electroneuromyograph (Neuro-EMG-4 by Neurosoft).

Results and discussion

In the groups we identified, the patients were comparable in age and gender. The patients were examined dynamically: upon admission to the clinic and after treatment. Degenerative relative stenosis was detected in all patients during the examination. The causes of stenosis in our patients were osteochondrosis of the spine (100%), hernias (90.3%) and protrusions (60.6%) of the intervertebral discs, hypertrophy of the yellow or interosseous ligament (52.1%), spondyloarthrosis (50.3%), spondylolisthesis (16.4%), compression fractures of the vertebral bodies (9.1%), and scoliosis of the spine (4.9%).

During the examination of the neurological status of patients, the following neurological symptoms were revealed: radiculopathy (in 63 patients – 44.7%), radiculoischemia (in 16 – 11.3%), myelopathy (in 10 – 7.1%), lumbago (in 22 – 15.6%). Sensory disturbances in the lower limbs were revealed in 99 (70.2%) patients, in 3 (2.1%) – in the anogenital area. Disorders of the pelvic organs function by the type of retention were diagnosed in 19 (13.47%) patients, periodic cramps in the calf muscles – in 12 (8.51%), neurogenic intermittent claudication – in 66 (46.8%).

To measure the intensity of the pain syndrome, we used a visual analog scale (VAS). At the initial visit, the pain intensity according to VAS was comparable in the groups. During the treatment, the pain intensity in all groups decreased. However, in patients of the 1st group, the pain intensity

according to VAS was significantly ($p > 0.001$) lower than in patients of the 2nd, 3rd and control groups (table). The dynamics of the decrease in pain severity as a result of treatment in the 1st group was 69.8%, in the 2nd - 46.6%, in the 3rd - 37.6%, in the 4th - 28.4%.

Table. Dynamics of clinical and instrumental indicators and scales as a result of treatment ($M \pm m$)

Clinical and instrumental indicators and scales		1st group, n=34 (FT+track+EF)	2nd group, n=35 (FT+EF)	3rd group, n=35 (FT+track)	4th group, n=37 (KG FT)
YOUR	Before treatment	7.18 $\pm$ 0.2	6.4 $\pm$ 0.1	6.23 $\pm$ 0.2	6.56 $\pm$ 0.1
	After treatment	2.17 $\pm$ 0.1 [#]	3.42 $\pm$ 0.1	3.89 $\pm$ 0.1	4.7 $\pm$ 0.1
Muscle Syndrome Index	Before treatment	11.24 $\pm$ 0.3	10.11 $\pm$ 0.2	10.09 $\pm$ 0.3	10.35 $\pm$ 0.2
	After treatment	3.76 $\pm$ 0.1*	4.63 $\pm$ 0.2	4.83 $\pm$ 0.2	5.7 $\pm$ 0.1
SSS scale	Before treatment	34.53 $\pm$ 1.2	34.06 $\pm$ 0.9	34.09 $\pm$ 1.3	34.53 $\pm$ 1.1
	After in points	47.88 $\pm$ 1.3 ^a	49.74 $\pm$ 1.1	50.6 $\pm$ 1.5	52.1 $\pm$ 1.3
	After in %	60.6%	62.96%	64.05%	65.94%
NPH, meters	Before treatment	263.0 $\pm$ 59.0	299.3 $\pm$ 34.8	256.6 $\pm$ 81.9	245.6 $\pm$ 92.8
	After treatment	426.5 $\pm$ 65.9	450.0 $\pm$ 38.4	342.3 $\pm$ 92.9	273.9 $\pm$ 91.6
ENMG, % of F-wave blocks	Before treatment	14.56 $\pm$ 1.1	14.6 $\pm$ 0.9	14.69 $\pm$ 1.1	14.95 $\pm$ 1.0
	After treatment	10.35 $\pm$ 0.7 ^a	11.74 $\pm$ 0.7	12.6 $\pm$ 0.9	13.86 $\pm$ 0.9

Notes: FT – background therapy, traction – traction therapy, EP – electrophoresis, CG – control group, NTC – neurogenic transient claudication; # – reliable significance of indicators between the 1st and 2nd, 1st and 3rd, 1st and 4th groups, $p < 0.001$; * – reliable significance of indicators between the 1st and 2nd, 1st and 3rd, 1st and 4th groups, $p < 0.05$; ^a – reliable significance of indicators between the 1st and 4th groups, $p < 0.05$.

Muscular-tonic manifestations (MTM) in the examined groups corresponded to the severity of the pain syndrome and were comparable. During the treatment, the MTM indices decreased in all

groups. However, in patients of the 1st group, these data were significantly ($p>0.05$) lower than in patients of the 2nd, 3rd and control groups. The dynamics of MTM reduction as a result of treatment in the 1st group was 66.6%, in the 2nd - 54.2%, in the 3rd - 52.1%, in the 4th - 44.9%.

Next, we analyzed the effectiveness of the treatment we proposed using the SSS scale. Thus, before treatment, the SSS scores in all groups were comparable. After treatment, it was found that the SSS scores in patients in Group 1 were significantly ($p>0.05$) lower than those in the control group, and insignificantly lower than those in patients in Groups 2 and 3.

The questionnaire contains data on the presence of neurogenic transient claudication (NTC) in patients, measured in meters. Thus, in patients of all 4 groups before treatment, the NTC distances were comparable. After treatment, in patients of the 1st group, this distance was unreliably greater than in patients of the other groups.

The ENMG studies conducted before and after treatment assessed the dynamics of the "F-wave block" index. After treatment, it was found that in patients of the 1st group, the "F-wave block" index was significantly ($p>0.05$) lower than in patients of the control group, and insignificantly lower than in patients of the 2nd and 3rd groups. In the 1st group, there was a decrease in the percentage of F-wave block loss by 28.9%, in the 2nd - by 19.6%, in the 3rd - by 14.2%, in the 4th - by 7.3%.

As shown by the comparative analysis of the dynamics of clinical manifestations, testing of the proposed scales and ENMG results, positive results were obtained in all study groups. However, the most significant positive dynamics were found in the 1st group of patients who received basic treatment using spinal traction and electrophoresis with papaya preparations. With the separate use of these treatment methods in the 2nd and 3rd groups, these indicators were much lower. The lowest treatment efficiency indicators were in the control group (the 4th group).

Taking into account the above, the efficiency of the conservative therapy proposed by us for spinal canal stenosis can be explained by the correct sequence of applied physiotherapeutic factors. The traction effect on the spinal motor segment performed at the beginning of the treatment leads to a slight retraction of the hernial protrusion (due to the vacuum effect) - in case of hernias and protrusions, an increase in the spinal space, a decrease in the compression of the spinal root, and a decrease in the compression of the radiculomedullary vessels. This, in turn, leads to a decrease in edema and restoration of microcirculation in the affected area. Restoration of microcirculation increases the bioavailability of drugs delivered by physiotherapeutic methods (electrophoresis with enzyme preparations) and administered enterally.

The effect of electric current during electrophoresis has anti-inflammatory, analgesic, anti-edematous, vasodilatory, muscle relaxant and secretory (production of biologically active substances) properties [11].

Papain has increased proteolytic activity, and therefore is especially effective for intervertebral hernias larger than 5 mm and for the treatment of keloid scars. Additionally, the drug has a powerful anti-inflammatory and anti-edematous effect due to its expanded enzymatic composition, promotes the regeneration of intervertebral discs and cartilaginous tissues, and improves microcirculation [8]. A solution of euphyllin, administered through a negative electrode during electrophoresis, normalizes the tone of the spinal cord veins and leads to complete or partial restoration of hemodynamics.

At the end of the treatment session, the massage performed enhances blood circulation, eliminates muscle defense and evens out muscle imbalance, thereby reducing pain. Such a cascade effect on the PDS, when each subsequent physiotherapeutic factor enhances the effect of the previous one, allows achieving the maximum therapeutic effect.

Conclusion

The complex of treatment measures we propose – medication (NSAIDs, muscle relaxants , B vitamins, anticholinesterase and vasoactive agents) in combination with physiotherapy (including spinal traction , electrophoresis with papaya extract drugs and massage) in a strict sequence of performing the procedures is an effective and pathogenetically substantiated method in the treatment of this category of patients.

References:

1. Abduvoyitov, B. (2025). FARMAKOREZISTENT EPILEPSIYA BILAN OG'RIGAN BEMORLARNING JARROHLIK DAVOLASH NATIJALARI VA QONIQARSIZ JARROHLIK NATIJALARINI BASHORAT QILUVCHI OMILLAR. Modern Science and Research, 4(2), 91-92.
2. Abduvoyitov, B. (2025). POLIMIKROGIRIYALI FARMAKOREZISTENT EPILEPSIYANI DAVOLASH NATIJALARI. Modern Science and Research, 4(2), 117-121.
3. Abduvoyitov, B. (2025). FARMAKOREZISTENT EPILEPSIYADA STEROIDLARNING AHAMIYATI. Medical Research Journal, 1(1), 244-250.
4. Abduvoyitov, B. (2025). MRT ASOSIDA FARMAKO REZITENT EPILEPSIYANI TASHXISLASH VA NATIJALARNI PROGNOZ QILISH: ZAMONAVIY YONDASHUVLAR. Medical Research Journal, 1(1), 215-219.
5. Мамадалиев, А. М., Алиев, М. А., Абдувойитов, Б. Б. У., Хайритдинов, Б. Б., Фарухова, М. Ф., Гаппарова, О. И., ... & Бурхонов, А. Ш. (2022). Клинический случай риносинусогенного абсцесса головного мозга и обзор литературы. Uzbek journal of case reports, 2(2), 7-11.
6. Bahodirovich A. B. et al. Approaches to intestinal decompression during different appendicular peritonitis in children //Достижения науки и образования. – 2018. – №. 18 (40). – С. 92-95.
7. Djalolov D. A. et al. Features of microflora in the etiological structure of diffuse appendicular peritonitis //Вопросы науки и образования. – 2018. – Т. 8. – №. 2. – С. 116.
8. Abduvoyitov Bobur Bahodirovich, Djalolov Davlatshokh Abduvokhidovich, Khasanov Aziz Batirovich, Abbasov Khojimuhammad Khabibullayevich The effect of ozone on the course and development of complications of peritonitis in children // Вопросы науки и образования. 2018. №29 (41).
9. Abduvoyitov B. B. et al. The effect of ozone on the course and development of complications of peritonitis in children //Вопросы науки и образования. – 2018. – Т. 29. – С. 110-113.
10. Bahodirovich A. B. et al. Immunological feature of the body in children with diffused appendicular peritonitis //Вопросы науки и образования. – 2019. – №. 2 (45). – С. 115-122.
11. Борисова Л.И. // Нейрохирургия. – 2012. – №4. – С.29–33.
12. Дривотинов Б.В. Физическая реабилитация при неврологических проявлениях остеохондроза позвоночника: Учеб. пособие / Б.В. Дривотинов, Т.Д. Полякова, М.Д. Панкова. – Минск, 2005. – 211 с.
13. Зиняков Н.Н., Зиняков Н.Т. // Вопр. курортол. – 2009. – №2. – С.13–15.