

Clinical Characteristics of the Category of the International Classification of the Functioning of the “Structure of the Body”

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Abstract: According to studies, pain syndrome at the level of the lumbar back from 77% to 93% is due to damage to the intervertebral discs (IVD), and in 20–30% of cases, it is disc herniations that cause neurological manifestations. However, observations show that the cause of chronic pain at the level of the lumbar back in 63.5% can be myofascial pain syndrome (1,2,10,11,12,13).

Keywords: herniations, rehabilitation, vertebrogenic pain, Oswestry Standing Questionnaire, vertebrogenic lumbosacral radiculopathy, lumbosacral region.

1. Introduction

According to the literature, conservative and surgical approaches to the treatment of patients with vertebrogenic pain syndromes cannot fully solve the tasks. Surgical methods show conflicting results, and the likelihood of a favorable outcome with repeated interventions is reduced against the background of postoperative complications. At the same time, conservative therapy is not characterized by a complex effect (3,4,5,7).

Increasingly, treatment failures are associated with insufficient individual approach, incomplete multidisciplinary assessment of pathological changes, psychological status, depending on age, gender, localization of spinal lesions, motivation and functionality of patients, as well as the lack of a unified view of the etiopathogenesis of pain, leading to the need to search for promising treatments (6,8).

In our opinion, such a search cannot be based solely on a symptomatic approach. Achieving positive results in the treatment and rehabilitation of chronic dorsopathy of the spine in females is possible when determining an adequate rehabilitation potential and rehabilitation prognosis, which will contribute to more effective therapy results at any stage, acquire preventive and social significance, and participate in restoring the proper quality of life.

Aim of the research. To scientifically substantiate and test in practice the effectiveness of the application of the international classification of functioning in patients with vertebrogenic lumbosacral radiculopathy

2. Material and research methods

The study included 125 patients aged 24 to 67 years (mean age 38.7 ± 9.2 years) with moderate to severe vertebrogenic lumbosacral radiculopathy (VCR), from 5 to 9 points on the visual analog scale (VAS).

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All patients were divided into groups (depending on gender) and subgroups (depending on the nature of the course). The main group (MG) consisted of women - 69 (55.2%) people; .8%), the ratio of the number of women to the number of men was 1.2:1.0. Each group was divided into three subgroups depending on the nature of the flow. OG-1 were 17 women (24.6%) with acute LBP, OG-2 were 23 women (33.3%) with subacute LBP and OG-3 were 29 women (42.0%) with chronic LBP . GS-1, GS-2 and GS-3 were 26 (46.4%), 17 (30.4%) and 13 (23.2%) men, respectively (Table 1)).

Table 1 Distribution of patients by groups and subgroups

course of LBP	subgroups	OG women, n= 69		HS-men, n= 56		Total, n= 125	
		a6c	%	a6c	%	a6c	%
Acute LBP (up to 6 weeks)	1	17	24,6%	26	46,4%	43	34,4%
Subacute LBP (6 to 12 weeks)	2	23	33,3%	17	30,4%	40	32,0%
Chronic LBP (more than 12 weeks)	3	29	42,0%	13	23,2%	42	33,6%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

In our work with patients with vertebrogenic lumbosacral radiculopathy, we used the International Classification of Functioning (ICF), which allows us to assess the level of functioning and the dynamics of changes as a result of rehabilitation measures in patients in the following domains: activity and participation, body functions and structures, as well as environmental factors [9]. In this article, the category of the IFF “STRUCTURES OF THE ORGANISM” was chosen.

Statistical processing of the results of clinical and instrumental studies of our patients was carried out using the methods of variation statistics in the Microsoft Office Excel-2019 software package with the determination of the mean and mean arithmetic errors by the method of moments ($M \pm m$), standard deviation (σ).

Statistical significance of the results was assessed using Student's test of significance (t) for parametric distribution and Fisher's test (F) for nonparametric data distribution. Differences were considered significant at 95% confidence interval ($P \leq 0.05$).

3. Results

In accordance with modern international recommendations, the clinical characteristics of patients with LBP are presented taking into account the provisions of the International Classification of Functioning (ICF), disability and health. Using the set of ICF domains we have chosen to describe patients with LBP, together with generally accepted tests, scales and questionnaires, presenting the clinical characteristics in this way simplifies the subsequent assessment of the quality of the medical rehabilitation performed.

The degree and severity of disorders of the caudal spinal cord and related structures (spinal roots, peripheral nerves of the lower extremities) (s12002 according to the ICF) in patients with LBP before treatment was assessed taking into account the section of the ICF “Nuclear Cider Syndrome” of the Five-Point Assessment Scale for Vertebro-neurological Symptoms.

Due to the fact that the patients included in this study did not have neural (sensory, motor, reflex) lesions, no disturbances in this domain were detected both before and after the rehabilitation.

Disturbances in the domain of the pelvic girdle muscle (s7402 according to the ICF) (BMU, MFTS, etc.) were recorded taking into account the Muscular-Tonic Syndrome section of the Five-Point Assessment Scale for Vertebro-neurological Symptoms. The data are presented in table 2.

Among 100% of the examined patients with BNS, disorders in the muscles of the lumbosacral and gluteal regions were detected, represented by myofascial trigger zones (MFTZ) of weak, moderate, pronounced intensity within one to three anatomical regions. The most pronounced disorders (s7402.4) - MFTD within several anatomical regions, severely painful on palpation - occurred in 10.8% of all examined patients. Weak, moderate and severe disorders - s7402.1 (25.8%), s7402.2 (30.1%), s7402.3 (33.3%), respectively, were detected approximately equally among all examined patients, statistical significance did not have. This circumstance indicates the comparability of all patients participating in the study on this basis.

Table 2 Assessment of the structure of the muscles of the pelvic girdle in patients with pain in the lower back from the positions of the ICF

ICF code /Points	Groups / subgroups (abs./%)						Total
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
s7402.0 0	0	0	0	0	0	0	0
s7402.1 1	11/22,9	6/26,1	8/22,9	3/18,7	14/31,8	6/30,0	48/25,8
s7402.2 2	13/27,1	7/30,4	10/28,6	7/43,7	13/29,6	6/30,0	56/30,1
s7402.3 3	18/37,5	8/34,8	14/40,0	5/31,3	10/22,7	7/35,0	62/33,3
s7402.4 4	6/12,5	2/8,7	3/8,5	1/6,3	7/15,9	1/5,0	20/10,8
p	0,94		0,76		0,55		

The severity of disorders in the structure of the lumbar spine (s76002 according to the ICF), represented by the degree of degenerative-dystrophic changes in the lumbosacral spine in patients with LBP before treatment, was assessed based on the results of imaging methods of examination (X-ray, MRI). The most diagnostically significant indicator that allows clinical measurement is the degree of protrusion of the fibrous ring of the intervertebral disc. This criterion was evaluated according to the scheme proposed by O.S. Levin (2006).

Table 3. Assessment of structures of the lumbar spine in patients with low back pain based on the ICF

ICF code / Degree of violation	Groups / subgroups (abs./%)						Total
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
s76002.0 0	10/20,8	6/26,1	6/17,1	2/12,4	2/4,5	1/5,0	27/14,5

s76002.1 I	21/43,8	8/34,8	13/37,2	7/43,8	15/34,1	6/30,0	70/37,6
s76002.2 II	17/35,4	9/39,1	16/45,7	7/43,8	27/61,4	13/65,0	89/47,9
s76002.3 III	0	0	0	0	0	0	0
s76002.4 IV	0	0	0	0	0	0	0
p	0,75		0,86		0,94		

The analysis of the obtained results of the examination of patients with BNS led to the conclusion that there is no significant relationship between the severity of the protrusion of the fibrous ring and the clinical manifestations of the pain syndrome. 14.5% of all examined patients with a rather severe pain syndrome (7-9 points according to VAS) did not have protrusions and hernias of the intervertebral discs of the lumbar spine. Protrusions of the fibrous ring of small and medium sizes were recorded in 37.6% (s76002.1) and 47.8% (s76002.2) of cases. However, they were not clinically significant, since the patients did not have motor, sensory and reflex neurological disorders characteristic of the corresponding dermatomes or myotomes. The results are presented in table 3.

Clinical characteristics of the category ICF “activity and participation”

The ability to be in a sitting position (d4153 according to the ICF) by patients with LBP before treatment was assessed taking into account the response to section 5 of the Oswestry “Sitting” questionnaire and was encoded into the ICF domain in accordance with Table 4.

Due to the current high prevalence of professions that require a long stay in a sitting position, the assessment of this ICF domain is important in a general clinical study, since one of the leading causes of disability, in addition to severe pain, is the inability to stay in a familiar professional position. 88.2% (164 people) of all examined patients had mild (d4153.1) - 13.4%, moderate (d4153.2) - 23.7%, significant (d4153.3) - 28.0% and absolute (d4153.4) - 23.1% violation of this function, there were no significant differences in the groups. However, there was a certain tendency to improve this indicator with an increase in the duration and a decrease in the severity of the pain syndrome, which may be the result of the emergence of compensatory capabilities of the body.

Table 4 Assessment of sitting position in patients with low back pain based on ICF.

ICF code	Groups / subgroups (abs./%)						Total
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
d4153.0	05.10.2004	0	8/22,9	1/6,3	7/15,9	1/5,0	22/11,8
d4153.1	4/8,3	6/26,1	5/14,3	3/18,7	3/6,8	4/20,0	25/13,4
d4153.2	9/18,8	4/17,4	4/11,4	5/31,2	14/31,8	8/40,0	44/23,7
d4153.3	13/27,1	8/34,8	11/31,4	6/37,5	9/20,5	5/25,0	52/28,0
d4153.4	17/35,4	5/21,7	7/20,0	1/6,3	11/25,0	2/10,0	43/23,1

p	0,05	0,21	0,24	
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The assessment of being in a standing position (d4154 according to the ICF) in patients with LBP before treatment was assessed taking into account the response to section 6 of the Oswestry Standing Questionnaire. The results are presented in table 5.

Table 5 Evaluation of standing in a standing position in patients with pain in the lower back from the positions of the ICF

ICF code	Groups / subgroups abs./%						Total
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
d4154.0	5/10,4	2/8,7	9/25,7	1/6,3	9/20,5	2/10,0	28/15,1
d4154.1	7/14,5	2/8,7	6/17,2	7/43,7	8/18,2	5/25,0	35/18,8
d4154.2	13/27,1	10/43,5	9/25,7	5/31,3	14/31,8	9/45,0	60/32,3
d4154.3	20/41,7	7/30,4	11/31,4	3/18,7	12/27,2	4/20,0	57/30,6
d4154.4	3/6,3	2/8,7	0	0	1/2,3	0	6/3,2
p	0,66		0,11		0,62		

In comparison with the previous indicator (d4153), the examined patients could stay in the standing position for a longer time. 6 people (3.2%) of all examined could not stand for more than 5-10 minutes.

Table 6 Evaluation of the ability to lift objects in patients with low back pain based on the ICF

ICF code	Groups / subgroups (abs./%)						Total
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
d4300.0	0	0	0	0	0	0	0
d4300.1	7/14,6	0	6/17,1	0	8/18,2	1/5,0	22/11,8
d4300.2	9/18,7	6/26,1	8/22,9	7/43,7	8/18,2	6/30,0	44/23,7
d4300.3	8/16,7	12/52,2	10/28,6	8/50,0	19/43,2	10/50,0	67/36,0
d4300.4	24/50,0	5/21,7	11/31,4	1/6,3	9/20,4	3/15,0	53/28,5
p	0,003		0,01		0,4		

Most patients (81.7%) could stand within 30-60 minutes. Patients of the main group with an acute course (IA) had the most pronounced impairment in this indicator in comparison with other groups - 41.7% could not be in a standing position for more than 30 minutes. There were no disorders in this domain (d4154.0) in 15.1% of all examined patients.

The ability to lift objects in patients (d4300 according to the ICF) with BNS before treatment was assessed taking into account the response to section 3 of the Oswestry questionnaire "Lifting objects" in accordance with Table 6.

Violations in this indicator were the most pronounced among all the selected ICF domains. Absolutely all examined patients with BNS noted difficulty in lifting even light objects to one degree or another.

of the control group (IIIB) could only lift light objects, conveniently located (d4300.3), which also indicates the development of adaptive abilities due to the duration of the disease.

The walking function (d4508 according to the ICF) of patients with LBP before treatment was assessed taking into account the response to section 4 of the Oswestry Walking Questionnaire in accordance with the table 7.

Significant walking limitations due to LBP were found in 10.8% (20 people) of all examined patients, among which there were mainly patients with an acute course. Chronic pain syndrome caused dysfunction of walking in all patients from the main (IIIA) and control (IIIB) subgroups. In the subgroup with subacute BNS, the maximum number of patients (IIA - 34.3%, IIB - 68.7%) could walk no more than 250 meters without stopping.

Pain syndrome and limited mobility did not allow 50.0% (24 people) of patients with acute course of the main group (IA) and 21.7% (5 people) of patients in the control group (IB) to lift objects in household and professional activities (d4300.4). 43.2% (19 people) of patients with a chronic course of the main group (IIIA) and 50.0% (10 people) of patients.

Table 7 Evaluation of walking function in patients with pain in the lower back from the positions of the ICF

ICF code	Groups / subgroups (abs./%)						Total
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
d4508.0	3/6,2	0	2/5,7	0	0	0	5/2,7
d4508.1	8/16,7	3/13,0	7/20,0	1/6,3	6/13,6	3/15,0	28/15,1
d4508.2	14/29,2	10/43,5	12/34,3	11/68,7	16/36,4	10/50,0	73/39,2
d4508.3	11/22,9	7/30,5	14/40,0	4/25,0	18/40,9	6/30,0	60/32,2
d4508.4	12/25,0	3/13,0	0	0	4/9,1	1/5,0	20/10,8
p	0,41		0,08		0,71		

Table 8 presents the results of statistical data on the assessment of the possibility of using vehicles (d4708 according to the ICF) for movement by patients with LBP before treatment, which were assessed taking into account the response to section 10 of the Oswestry questionnaire "Travel"

Table 8 Evaluation of the ability to use vehicles in patients with low back pain based on the ICF.

ICF code	Groups / subgroups abs./%						Total (n=186)
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
d4708.0	3/6,3	0	5/14,3	0	7/15,9	0	15/8,1
d4708.1	6/12,5	0	4/11,4	1/6,3	8/18,2	1/5,0	20/10,7
d4708.2	9/18,7	11/47,8	13/37,2	11/68,7	6/13,6	10/50,0	60/32,3
d4708.3	11/22,9	8/34,8	7/20,0	4/25,0	9/20,5	8/40,0	47/25,3

d4708.4	19/39,6	4/17,4	6/17,1	0	14/31,8	1/5,0	44/23,6
p уровень	0,01		0,02		0,001		

Travel additionally significantly increased pain in 23.6% (44 people) of the examined patients, in 25.3% (47 people) of patients were limited within 1 hour. 32.3% (60 people) of patients could drive no more than 2 hours (d4708.2). 10.7% (20 people) of patients coped with any duration of the trip, and only 8.1% (15 people) did not notice a violation in this parameter. The ability to dress independently (d5408 according to the ICF) in patients with BNS before treatment was assessed taking into account the response to section 2 of the Oswestry self-care questionnaire (dressing, washing, etc.). The results are presented in table 9.

Table 9 Assessment of self-service function (dressing) in patients with pain in the lower back from the positions of the ICF

ICF code	Groups / subgroups (abs./%)						Total
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
d5408.0	0	0	0	1/6,3	4/9,1	1/5,0	6/3,2
d5408.1	15/31,3	2/8,7	13/37,1	2/12,5	19/43,2	7/35,0	58/31,2
d5408.2	12/25,0	12/52,2	8/22,9	8/50,0	11/25,0	9/45,0	60/32,3
d5408.3	17/35,4	9/39,1	14/40,0	5/31,2	8/18,2	3/15,0	56/30,1
d5408.4	4/8,3	0	0	0	2/4,5	0	6/3,2
p	0,03		0,05		0,51		

The absence of violations in this type of self-service among the examined patients with BNS was recorded in patients with a chronic course (4 people - 9.1% in group IIIA, 1 person - 5.0% in group IIIB) and in 1 patient (6.3 %) from the control group with subacute course (IIB).

In subgroups with acute (IA, IB) and subacute (IIA, IIB) course, self-service disorders were noted approximately equally. In the subgroups with a chronic course (IIIA, IIIB), despite the similar intensity of the pain syndrome, most patients did not need outside help when dressing and undressing, however, they noted an increase in pain at this moment.

Table 10 Assessment of temporary disability in patients with low back pain based on the ICF

ICF code / Disability days	Groups / subgroups (abs./%)						Total
	OG -1	abs./%	OG -3	HS -1	HS -2	HS -3	abs./%
d8500.0 0	16/33,3	8/34,8	11/31,4	3/18,8	10/22,7	2/10,0	50/26,9
d8500.1 less than 1 week	13/27,1	6/26,1	13/37,2	8/50,0	8/18,2	1/5,0	49/26,4
d8500.2	13/27,1	8/34,8	7/20,0	5/31,2	7/15,9	11/55,0	51/27,4

1-2 weeks							
d8500.3 2-3 weeks.	6/12,5	1/4,3	4/11,4	0	11/25,0	5/25,0	27/14,5
d8500.4 more than 3 weeks.	0	0	0	0	8/18,2	1/5,0	9/4,8
p	0,71		0,19		0,01		

The complexity of performing the usual professional work (d8500 according to the ICF) of patients with LBP before treatment was assessed taking into account the number of days of disability. Table 10 survey results. The complexity of performing the usual professional work (d8500 according to the ICF) of patients with LBP before treatment was assessed taking into account the number of days of disability. Table 10 survey results.

73.1% (136 people) of all examined patients were temporarily disabled due to significant limitation of mobility and severity of pain. Professionally active, despite the pain syndrome, remained 33.3% of patients in IA and 34.8% of patients in IB groups. Disability for more than 3 weeks was established only in patients with chronic pain syndrome (18.2% in IIIA and 5.0% in IIIB subgroups).

The fastest possible restoration of professional activity - the ability to perform the usual activities at work - was one of the main tasks of medical rehabilitation.

Difficulties in social life (d9108 ICF) due to LBP in the examined patients before treatment were assessed taking into account the response to section 9 of the Oswestry questionnaire "Public life". The results are presented in table 11

Table 11 Assessment of the quality of social life in patients with pain in the lower back from the standpoint of the ICF

ICF code	Groups / subgroups abs./%						Total
	OG -1	OG -2	OG -3	HS -1	HS -2	HS -3	
d9108.0	03.06.2003	0	5/14,3	0	7/15,9	0	15/8,1
d9108.1	11/22,9	2/8,7	4/11,4	0	7/15,9	1/5,0	25/13,4
d9108.2	7/14,5	11/47,8	5/14,3	10/62,4	6/13,6	10/50,0	49/26,3
d9108.3	15/31,3	8/34,8	8/22,9	5/31,3	9/20,5	8/40,0	53/28,5
d9108.4	12/25,0	2/8,7	13/37,1	1/6,3	15/34,1	1/5,0	44/23,7
p	0,01		0,002		0,001		

91.9% of all surveyed patients indicated negative changes in social life (all aspects of the social life of communities, for example, in the activities of charitable organizations, clubs or professional public organizations). Absolute violations in this indicator (d9108.4) were recorded in 23.7% (44 people) of patients with BNS of all groups, while 8.1% (15 people) of patients did not experience violations of their social life. Acute, subacute and chronic periods of pain syndrome forced patients to limit social activity due to increased pain during movements, emotional disturbances.

4. Conclusion

As a result of the study of the degree of violations of the structures of the lumbosacral region, a trend towards an increase in dystrophic disorders in this domain of the ICF by groups was revealed in connection with the chronicity of the pain syndrome. Severe and absolute disorders (large intervertebral hernia that displaces / compresses the spinal cord) were not detected. Thus, the analysis of the presented data showed the absence of a significant relationship between the degree of damage to the structures of the lumbosacral region and the severity of pain manifestations in the examined patients with LBP. The data obtained were taken into account when calculating the rehabilitation potential, establishing a rehabilitation prognosis and forming an individual program of medical rehabilitation.

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