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## Research Of Motor Function In Patients With Chronic Pain Syndrome At Radiculopathies Of Different Genesis

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### ABSTRACT

In patients with radiculopathies of various origins, along with chronic pain syndrome, various prolapse of the pyramidal sphere of the peripheral nervous system is observed [1]. In groups of patients with radiculopathies, the motor sphere was investigated using the described methods of studying the neurological status Skoromets A. A, which revealed a statistically significant limitation of the motor sphere [2]. The performed electroneuromyography confirmed the lesion in the motor fibers in patients with chronic pain syndrome with radiculopathies of various origins [4].

### KEYWORDS

Patients, radiculopathies, pyramidal sphere, radiculopathies, chronic pain syndrome, motor fibers

### INTRODUCTION

Thanks to such a universal human property as movement, an individual can interact with the environment. In response to various stimuli of the external environment, regardless of desire,

a person has reflex, that is, not voluntary movements. With the participation of the higher organs of the brain, with the accumulation of practical skills, voluntary

movements are formed on the basis of unconditioned reflexes [3].

In diseases of the peripheral nervous system, especially in radiculopathies of various origins, damage to the motor sphere is the main clinical symptom. For the study of the patient, the initial is to clarify the complaints, especially if this is a chronic pain syndrome [1]. The nature of the pain is found out: dull, sharp, stabbing, aching, throbbing, dagger, burning, etc.; localization and irradiation of pain, etc.

To identify the lesion of the motor sphere, it is necessary to pay attention to the volume, relief and correctness of muscle development. [1]. Explore the limited or full range of active and passive movements in the joints in degrees, the presence of contractures.

Muscle strength is rated on a 5 scale. The Rapid Diagnosis of Muscle Strength consists of several methods available:

- Handshake: the patient's muscle strength is assessed when two fingers of the researcher are squeezed;
- Deep squatting and lifting from this position determine the strength of the thigh muscles;
- Walking on toes and heels shows the strength of the muscles of the lower leg and foot;
- The ability to sit from a supine position with bent legs at the knee and hip joints reveals the strength of the abdominal muscles;
- Flexion of the patient forward from a standing position and extension back, shows the strength of the back muscles [4].

**The aim of the study was** to compare the nature of pain and the degree of damage to the motor sphere in patients with chronic pain

syndrome with radiculopathies of various origins.

## MATERIALS AND RESEARCH METHODS

We examined 560 patients, of whom 320 were selected with chronic pain syndrome (ChPS) with radiculopathies of various origins. To reveal the main stages of development and direction of ChPS in radiculopathies, the patients we selected were examined according to the following parameters: clinical characteristics of PNS lesions; electrophysiological characteristics of PNS lesions; chronic pain syndrome: its nature and stage of severity; the influence of ChPS on the development, nature and degree of affective disorders.

Distribution of patients into the following groups:

- 1) 1st group: chronic radiculopathy of compression-ischemic genesis (CIG) - 82 patients;
- 2) 2nd group - radiculopathy in chronic brucellosis (RChBr) - 84 patients;
- 3) 3rd group - radiculopathy of rheumatic genesis (RRG) - 76 patients
- 4) 4th group - radiculopathy with TORCH infection - 78 patients;
- 5) The control group consisted of 40 conditionally healthy people.

All patients with RChBr were in the age range from 16 to 75 years, where the largest number of patients was observed in the age groups of 30-39 years - 96 (30%), as well as 50-59 years - 67 (20.9%).

Among 320 patients, women prevailed - 205 (64.1%), men - 113 (35.4%). Among the diseases of the peripheral nervous system, which were accompanied by chronic pain syndrome, the greatest interest was aroused by diseases of the peripheral nervous system of infectious

origin: radiculopathy of compression-ischemic genesis, radiculopathy in chronic brucellosis, radiculopathy of rheumatic genesis, and radiculopathy in TORCH infection.

Neurological examination was carried out in a standard manner, with the isolation of certain syndromes, according to the standard algorithm for examining a neurological patient (Skoromets A.A., Skoromets A.P., Skoromets T.A.), emphasizing the study of the motor sphere.

A special neurological examination of the examination of the motor sphere consisted of:

- General examination with an assessment of the muscles of the limbs and trunk (detection of atrophies, hypo- or hypertrophies, pseudo hypertrophies, febrile and fascicular twitching), with localization and severity;
- Assessment of the patient's gait (identification of spastic-parietic, hemiparetic, steppage, atactic, etc.);
- Study of active movements in all joints;
- Study of passive movements;
- Determination of muscle strength (on a 5-point scale);
- Study of muscle tone.

## RESULTS AND DISCUSSION

Chronic pain can be felt by the patient as slow torture, making it difficult to go to work, exercise, shower and dress. When pain gets out of control, it binds the patient emotionally, undermining his self-esteem and changing the patient's outlook.

Sometimes pain develops into a poorly understood condition known as chronic pain syndrome. Unlike acute pain, this condition does not go away after the original injury or illness has been healed. It is characterized by pain that lasts more than six months and is

often accompanied by anger and depression, anxiety, loss of sex drive, and disability.

The main complaints of all patients were chronic pain in the cervical, thoracic or lumbar spine, in some cases radiating to the neck, head, arms and legs. Pain syndrome persisted every day and lasted more than 3 months. In the cervical and lumbar spine, the nature of the pain was dull and aching, aggravated by a prolonged stay in an uncomfortable position, as well as after a statistical load, in the group of CIG patients. When performing sharp movements, the pain became excruciating, burning in nature with "lumbago", like "electric shock," in the arm or leg. Patients complained of frequent awakenings and insomnia, followed by asthenia of the nervous system, since awkward movements during sleep caused pain and the search for a comfortable analgic posture. 43 (52.4%) patients complained of neuropathic pain, 23 (28%) had a burning pain with irradiation to any extremity.

Disorders from the motor sphere in patients of group 1 had the following characteristics: decreased muscle strength, flaccid paresis, decreased or loss of tendon reflexes. Muscle strength was reduced in 32 (39%) patients, and was assessed by paresis at 2-4 points (on a 6-point scale), which was 3.01 points. Changes in tendon reflexes were in the nature of a decrease in 32 (39%) patients and loss in 10 (12.2%) patients. Patients with lumbosacral radiculopathy radiating to the leg had a positive Lasegue symptom - 41 (50%), the angle of which was in the range of 30-65°, on average 47.4°.

Complaints of patients in the group with chronic brucellosis were reduced to pain that bothered daily, exhausting, aching, lasting more than 3 months. Pain in the lumbosacral region had its own characteristics: in addition to pain in the area of the exit of the spinal

roots, patients noted pain in the area of lumbosacral synarthrosis and the iliac crest. Patients especially complained of muscle pain in the lower leg - 21 (25%) and thigh - 23 (27.4%). 43 (52.4%) patients complained of neuropathic pain. About half of the patients 39 (46.4%) complained of profuse sweat, which created discomfort for the patient, and 37 (44%) patients were worried about insomnia, an increase in lymph nodes was detected in 54 (64.3%). the group of patients revealed sacroiliitis - 49 (58.3%) We used a number of diagnostic techniques. The most informative was Eriksen's symptom, in which the patient was placed on a flat hard surface on his back or on his side and pressure was applied to the crest of the superior iliac bone in the lateral position or squeezed with both hands the anterior superior crests of the iliac bones in the supine position. With unilateral sacroiliitis, pain occurred on the affected side, with bilateral sacral pain in the sacrum on both sides.

A large number of patients with radiculopathies of rheumatic genesis 64 (84.2%) complained of aching pain in the lumbar region. The patients were tired of volatility of pain in muscles and joints - 32 (42.1%), fibromyalgia - 48 (63.1%), as well as superficial sleep with frequent awakenings, which led to a feeling of weakness in the morning - 47 (61.8%) ... Most of the patients complained of frequent aching, prolonged pains in various parts of the body, which they described as: burning, pinching, debilitating and monotonous. The distinguishing factor of pain from patients in other groups was increased pain in cold and humid weather, during drafts and stress. It was noticed that in a warm room, especially in saunas, the pain decreased, but subsequently intensified again. The constant exhausting state of the patient

leads to frequent mood swings - 56 (73.7%). The neurological status in radiculopathies of RRG revealed signs characteristic of the underlying disease: limitation of limb movements - 43 (56.6%), decreased tendon reflexes - 37 (48, 7%). One of the significant symptoms were vegetative-vascular disorders in the form of hyperhidrosis, pallor and coldness of the fingers and toes.

Distinctive characteristics of complaints of patients with TORCH infections, namely herpes simplex, consisted of severe, unpleasant pains in the spine, often burning, or in the form of "electric shock". The pain radiated to the leg or arm. In 12 (15.4%) patients, pain was localized in the cervical spine and gave to the hands; the remaining 66 (84.6%) patients noted burning pain in the lumbar spine radiating to the legs. In the study of the motor sphere in patients of this group, the following were revealed: a slight decrease in muscle strength - 19 (24.4%), no significant changes were found on the part of active and passive movements. In 21 (26.9%) patients, brisk tendon reflexes were evoked.

During routine neurological examination of patients with RRG on an outpatient basis, motor disorders are not carefully examined.

Limitation of range of motion suggests damage to the spine or spinal root. It is necessary to distinguish the nature of the damage for the correct further tactics of the doctor. A distinctive feature is a decrease in pain sensitivity from the proximal to the distal, which was observed in all four study groups.

**Table 1. Differential diagnostic criteria in patients with chronic pain syndrome with radiculopathies of various origins**

Clinical manifestations	Radiculopathy			
	compression-ischemic genesis	with chronic brucellosis	rheumatic genesis	with TOP4 infection
Pain lasting more than 3 months	✓	✓	✓	✓
Burning pain in the affected area	✓ (after sudden movements)	-	-	✓
Tonic muscle tension in the affected area	✓	-	-	-
Severe restriction of movement	✓	✓	-	-
When the body bends, a sharp increase in pain	✓	✓	-	-
Volatility of pain in muscles and joints	-	-	✓	-
Increased pain with prolonged uncomfortable position	✓	-	-	-
Frequent awakenings and sleeplessness (awkward movements in time, causing pain and finding a comfortable antalgic position)	✓	-	✓	-
Burning pain with irradiation to the limb	✓	-	-	✓
Pain in the lumbosacral synarthrosis and iliac crest	-	✓	-	-
Muscle pain in the lower leg and thigh	-	✓	-	-
Aching pain in the affected area	✓	✓	✓	✓

<b>Increased pain in cold and wet weather, drafts and stress</b>	-	-	✓	-
<b>Pain in the spine of a burning character or in the form of "electric shock"</b>	✓	-	-	✓
<b>Decreased muscle strength in the affected area</b>	✓	-	✓	-
<b>Decreased muscle tone</b>	✓	-	-	✓

For a thorough history taking, listening to the patient's complaints and a complete examination of the motor sphere, the doctor needs 8-10 minutes. It will make possible to correctly diagnose for the choice of further treatment tactics.

Treatment involves this pathogenetic approach in each group of patients, aimed at relieving pain, eliminating vascular and dystrophic changes, improving trophic processes, and symptomatic regression.

We randomly selected 50% of patients from each group; the drug Mexidol (2-ethyl-6 methyl-3-hydroxypyridine succinate) was added to the main treatment. This drug is a powerful antioxidant, membrane protector and free radical inhibitor.

All patients were additionally used a course of Mexidol, 5 ml of 5% solution 2 times / day intramuscularly or intravenously for 20 days, then on an outpatient basis they continued taking the drug orally at 250 mg (2 tablets) 3 times / day for 2 months.

Mexidol restores the damaged structures and functions of neuronal membranes, ion channels, neurotransmitter conveyors, receptor complexes and optimizes synaptic transmission of the nervous system.

The main treatment used in all groups of patients slightly reduced pain, but the desired regression of pain was not observed. Pain perception was quantified using a visual analogue scale (VAS). In the first group, the pain syndrome was defined as moderate, that is, of average intensity - 30-59 mm according to VAS and amounted to 47 (57.3%), however, in 35 (42.7%) patients the pain syndrome was of high intensity - from 60 to 83 mm and a significant amount were neuropathic in nature.

When determining the level of pain by VAS (mm), in the second group of patients the indicator ranged from 32 to 85 mm, on average - 59.8. In a large number of patients, the pain syndrome was accepted as moderate - medium intensity: 32-59 mm according to VAS and amounted to 37 (44%), and also, in 47 (56%) patients the pain syndrome was of high intensity - from 60 to 85 mm. The neuropathic nature of pain was determined in 41 (48.8%) patients.

In the third group, pain syndrome according to the VAS scale during the day ranged from 34 to 65 and averaged 51.9. More severe pain disturbed the patients at night, where the VAS ranged from 45 to 85, on average 68.5.

The pain level in the fourth group according to the VAS was in the range of 40-88 mm. Thirteen

(16.7%) patients indicated the pain intensity as average, the other 65 (83.3%) noted pain as high intensity.

On day 20, all patients were re-determined the VAS parameters, which are presented in Table 2.

**Table 2. Differential diagnostic criteria in patients with chronic pain syndrome with radiculopathies of various origins**

Indicators BASH	Radiculopathy							
	compression-ischemic genesis		with chronic brucellosis		rheumatic genesis		with TOP4 infection	
treatment	Main treatment	+Mexidol	Main treatment	+Mexidol	Main treatment	+Mexidol	Main treatment	+Mexidol
Data obtained	30-59MM	25-40MM	32-85MM	26-64MM	34-65MM	28-55MM	40-88MM	25-45MM

The obtained indicators indicated regression of pain syndrome. In addition to the fact that the patients showed a significant reduction in pain, a decrease in inflammation and hypoxia in the root and nerve fibers, and a decrease in edema were noted. Particular attention was paid to the restoration of motor function: the range of motion increased, muscle tension decreased,

muscle strength increased, and muscle tone was restored.

### CONCLUSIONS

Analysis of clinical and diagnostic data showed that in patients with chronic pain syndrome with radiculopathies of various origins, with a thorough collection of anamnesis and complaints of the patient, as well as a complete

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study of the motor sphere and pain syndrome according to VASH, differentiation of the disease of the peripheral nervous system is possible. Mexidol, used as part of complex therapy, steadily relieves chronic pain syndrome, accelerates the regeneration of the function of nerve fibers, ultimately improving the patient's quality of life.

Thus, in modern conditions, both in inpatient and outpatient conditions, a neurologist has every opportunity for the correct diagnosis and treatment of radiculopathies of various origins.

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