

## ФІЗИЧНА ТЕРАПІЯ, ЕРГОТЕРАПІЯ

### HEALTH CARE TECHNOLOGIES IN CREATING OPTIMAL WORKING CONDITIONS IN HIGHER EDUCATION INSTITUTIONS

#### ЗДОРОВ'ЯЗБЕРЕЖУВАЛЬНІ ТЕХНОЛОГІЇ У СТВОРЕННІ ОПТИМАЛЬНИХ УМОВ ПРАЦІ У ЗАКЛАДАХ ВИЩОЇ ОСВІТИ

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#### Abstract

Neck-shoulder syndrome is a real problem in general clinical practice, manifested by pain, reflex myotonic symptoms in the cervical spine and upper limbs. The goal of our research was a comprehensive study of the clinical and instrumental aspects of the neck-shoulder syndrome for the development of a preventive program and rehabilitation tactics.

**Materials and methods.** We examined 103 people aged 18 to 50 years with clinical manifestations of reflex syndromes of cervical osteochondrosis in the form of cervicocranial pains, who underwent outpatient examination on the basis of National University «Yuri Kondratyuk Poltava Polytechnic» and the Skalyansky Clinic. Among them, 84 (78.64%) patients were women, 22 (21.36%) were men. The duration of having the neck-shoulder syndrome was from 1 to 10 years. The analysis of the obtained data revealed a mixed (musculovascular) mechanism of cervicocranial pain, which is a clinical manifestation of reflex syndromes of cervical osteochondrosis in young people. In this regard, it is advisable to include anti-inflammatory drugs (xefokam, denebol, olfen, nimesil, sigan, etc.), muscle relaxants (midokalm, sirdalud), vascular and venotonics (L-lysine escinat, troxevasin, actovegin) in the complex treatment of this category of patients, nicotinic acid preparations, etc.), vegetotropic drugs, as well as drugs that reduce irritative-paroxysmal phenomena and affect the pain syndrome (gabantine, lamotrine), antidepressants (amitriptyline, fluoxetine, etc.), physiotherapeutic methods and physical therapy.

**Conclusions.** Modern diagnostics and a rational approach to treatment will further lead to early rehabilitation of patients and increase the working capacity of young patients with cervicocranial pain on the background of osteochondrosis of the cervical spine.

**Key words:** neck-shoulder syndrome, osteochondrosis, degenerative-destructive disorders.

Шийно-плечовий синдром є реальною проблемою загальної клінічної практики, що проявляється болем, рефлекторними міотонічними симптомами в шийному відділі хребта та верхніх кінцівок. Метою нашого дослідження стало комплексне вивчення клініко-інструментальних аспектів шийно-плечового синдрому для розробки профілактичної програми та реабілітаційної тактики.

**Матеріали та методи.** Нами було обстежено 103 особи віком від 18 до 50 років з клінічними проявами рефлекторних синдромів шийного остеохондрозу у вигляді цервікокраніалгій, які проходили амбулаторне обстеження на базі Національного університету «Полтавська політехніка імені Юрія Кондратюка» та клініки Скалянського. Серед них 84 (78,64 %) пацієнтів – жінки, 22 (21,36 %) – чоловіки. Тривалість захворювання склала від 1 до 10 років. Аналіз отриманих даних виявив змішаний (м'язово-судинний) механізм виникнення цервікокраніалгій, що є клінічним проявом рефлекторних синдромів шийного остеохондрозу в осіб молодого віку. У зв'язку з цим до комплексного лікування даної категорії пацієнтів доцільно включати протизапальні препарати (ксефокам, денебол, олфен, німесил, сіган та ін.), міорелаксанти (мідокалм, сірдалуд), судинні та венотоніки (L-лізину есцинат, троксевазин, актовегін, препарати нікотинової кислоти та ін.), вегетотропні препарати, а також препарати, що зменшують іритативно-пароксизмальні явища та впливають на больовий синдром (габантин, ламотрин), антидепресанти (амітриптилін, флуоксетин та ін.), фізіотерапевтичні методи та лікувальну фізкультуру.

**Висновки.** Сучасна діагностика та раціональний підхід до лікування надалі призведе до ранньої реабілітації хворих та підвищенню працездатності хворих молодого віку із цервікокраніалгіями на тлі остеохондрозу шийного відділу хребта.

**Ключові слова:** шийно-плечовий синдром, остеохондроз, дегенеративно-деструктивні порушення.

The lifestyle of a modern person, including hypodynamia, the influence of exogenous and endogenous factors lead to changes in the bone-cartilage tissue of the joints and spinal discs, inevitably forming a degenerative-dystrophic symptom complex called osteochondrosis [1]. Anatomical and physiological features of the structure of the cervical spine (CSC) determine the polymorphism of the clinical manifestations of osteochondrosis of the spine. It is an indisputable fact that the maximum number of clinical manifestations of osteochondrosis does not occur at all in old age, but in the mature and working period of life [2,3]. In this regard, the question of studying the nature and mechanism of pain in the neck area, which is a clinical manifestation of vertebral pain syndrome, is relevant at the present time.

Neck-shoulder syndrome is a real problem in general clinical practice, manifested by pain, reflex myotonic symptoms in the cervical spine and upper limbs. Pathology is of great socio-economic importance. Since the disease is common in people who are forced to be in a non-physiological position professionally for a long time. Anatomical features of the cervical spine increase the mobility necessary to perform vital functions of the body, to hold the head and perform various movements. The small size of the cervical vertebrae, the need to hold and immobilize the head create prerequisites for the development of degenerative-dystrophic changes even in young people. In the cervical spine, nerve roots, blood vessels, and the spinal cord may be compressed. According to statistics, pronounced degenerative changes in the discs of the cervical spine are observed in 25% of patients under 40 years of age, 50% of patients over 40 years of age, and 75% of patients over 60 years of age. The C5-C6 discs are most often affected, and the C4-C5 and C6-C7 discs are less often affected.

Various clinical manifestations and syndromes arise as a result of compression of the roots of the cervical vertebrae by osteophytes or disc fragments. Clinical manifestations depend on the degree of root compression. Compression of the C3 root causes pain in the upper half of the neck. Root C4 – suprascapular, pain in the

collarbone area, atrophy of the trapezius, the longest muscle of the head and neck, pain in the heart. C5 root – pain in the neck, pain in the shoulder girdle, outer shoulder, weakness and atrophy of the deltoid muscle; root C6 - pain in the neck, pain in the scapular region, shoulder girdle, radiation of the thumb, weakness and atrophy of the biceps, decreased tendon reflexes from the biceps; root C7 – pain in the neck and scapula, spreading from the side of the forearm to the second and third fingers of the hand, with weakness of the triceps of the shoulder and weight loss, decreased reflexes from the triceps; root C8 – pain radiating from the neck along the inner edge of the forearm to the V finger of the hand, decreased cardiac radial reflex.

**The purpose of our research** was a comprehensive study of the clinical and instrumental aspects of the neck-shoulder syndrome for the development of a preventive program and rehabilitation tactics.

**Materials and methods.** We examined 103 people aged 18 to 50 years with clinical manifestations of reflex syndromes of cervical osteochondrosis in the form of cervicocranial pains, who underwent outpatient examination on the basis of Yuri Kondratyuk Poltava Polytechnic National University and the Skalyansky Clinic. Among them, 84 (78.64%) patients were women, 22 (21.36%) were men.

All patients underwent a study of clinical and anamnestic data, a study of the neurological status, and a computer tomography, X-ray spondylography of the SHV in two projections with functional loads. The obtained data were statistically processed. A control group was also studied, which included 30 practically healthy people.

**Research results.** All patients complained of a headache occurring in the neck and occipital region. In 86% of patients, this pain spread to the frontoparietal region. As a rule, the headache was of moderate intensity, more often dull, aching, had unilateral or bilateral localization just below the back of the head. Headaches often contributed to the early awakening of patients due to a prolonged uncomfortable position of the head. The increase in pain in 97% of patients was associated with sudden movements in

the cervical spine (turns, extension, bending, tilts, uncomfortable posture, long-term load on the cervical spine). Cervicocranial pain was accompanied by periodic dizziness (71.6%), fatigue or visual impairment (45.3%), unsteadiness when walking (28.3%), fainting (13.2%), noise or ringing in the ears (43.4%), numbness in the neck-occipital region (64.2%). In 3 of our patients, attacks of pain in the temple, neck, and face were observed, radiating deep into the eyeballs, hearing and vision were impaired. This symptom complex is known as Barré-Lieu syndrome, which occurs when the posterior cervical sympathetic node is damaged [4–7].

37 patients (35.92%) had a symptom complex in the form of headache, visual, auditory and vestibular disorders. It was part of the posterior cervical sympathetic syndrome, or cervical migraine syndrome [9]. It is known from literary sources that the posterior cervical sympathetic syndrome, or the vertebral artery syndrome, occurs when the plexus of the vertebral artery is irritated in people with degenerative-dystrophic changes in the spinal cord [8, 10].

The clinically dominant syndrome was a one-sided headache localized in the neck and back of the head. The pain was dull, burning, pricking, accompanied by dizziness, periodically intensified and had an attack-like character. 27 patients (26.21%) had small attacks occurring several times during the day. Patients held their heads with their hands, noted darkening of the eyes, ringing in the ears, and dizziness. The attack passed after a few minutes, but the feeling of stuffiness in the ears and the feeling of heaviness in the head persisted for some time.

Major attacks were observed in 14 people (13.59%) and occurred, as a rule, at night due to an uncomfortable position during sleep, sometimes due to prolonged immobility in the cervical region. Attack-like pains lasted several hours and were provoked by head movements, especially backwards. The pain was intense, accompanied by various vegetative symptoms (sweating, nausea, palpitations, hand tremors). Patients were afraid to move their head, there was constant dizziness, insecurity when walking. In 17.2% of cases, rapid and intense

head movements were accompanied by short-term unconsciousness. Over time, the headache became bilateral, oppressive, with a feeling of staleness, heaviness in the head. There was swelling of the face, especially in the morning, a feeling of pressure on the eyeballs, nausea, general weakness and increased fatigue.

Based on the data of the neurological status, it was noted the limitation and pain during movements in the thoracic spine, especially when turning to the side, pain during palpation of the spinous processes and paravertebral points (90.6 %), tension of the paravertebral muscles (88.7 %), flattening of the cervical lordosis, expansion of reflexogenic zones by functional type (54.7 %), mild asymmetry of tendon reflexes (60.4 %), slight tremor of the hands during emotional stress (absence of tremor at rest), decrease in visual acuity (26.4 %), radicular pain radiating to the arms and shoulders, radicular-type sensory disturbances in the hands (15%), paresthesias, insomnia (39.6%).

The most pronounced changes manifested clinically in the form of autonomic dystonia syndrome (94.3%) and were characterized by general weakness, hyperhidrosis, periodic attacks of palpitations, instability of blood pressure numbers, sleep disturbances, periodic nausea, and emotional lability.

According to the X-ray examination, 100% of patients showed signs of osteochondrosis of the cervical spine (decrease in the height of the intervertebral discs, osteophytes, degenerative changes of the intervertebral joints, etc.); in 23% of the patients, these manifestations were combined with instability in the C3-C4, C4-C5 segments. The spondylography data were correlated with the computer tomography data.

So, taking into account the obtained clinical and instrumental manifestations of cervicocranial pain, it is possible to trace the mechanism of their occurrence. At the initial stages, the genesis of the headache was dominated by the muscle component in the form of myofascial syndrome with tension headache. Reflex muscle-tonic manifestations manifested themselves as spasm of paravertebral and extravertebral muscles, thereby determining the clinical picture. Later,

during the irritant-compressive action, there was irritation of the sympathetic plexus around the spinal arteries, which in the clinical picture was manifested by periodic burning pains in the back of the head and on the back of the neck. The pain was provoked by an uncomfortable long-term position of the head or a sharp turn of it, and often led to vascular spasms. The involvement of the vascular component in the genesis of cervicocranial pain was transformed over time and acquired a venous component with the presence of a feeling of heaviness, staleness in the head (in the back of the head), and the headache acquired a pressing and distending character.

**Results and Discussion.** Based on the obtained data, we can assume a mixed musculoskeletal genesis of headache. Vascular disorders were manifested by regional cerebral angiodystonia syndrome. Venous insufficiency was observed, which was associated with the deterioration of venous outflow from the cranial cavity or insufficiency of venous blood circulation in the soft coverings of the head and neck.

With mild or moderate pain in the neck and upper limbs, preference is given to conservative treatment. The goal of treating such patients is to eliminate pain syndrome, muscle spasms, increase the range of motion, restore work capacity and simultaneously exclude social activity.

Prescribing complex preparations of B vitamins (Neurobion, Keltican-complex, Milgamma) also improves metabolic processes and relieves pain. Physiotherapy has a multifactorial therapeutic effect. Various combinations of DDT, amplipulsotherapy, novocaine electrophoresis, dimexide, magnetic and laser therapy were used. The effect on exo- and interoceptive tissues improves their nutrition. faster removal of pathological products from pathological foci, improvement of blood and lymph circulation; tissue connections in the affected organs are restored, which affects tissue reactivity and sensitization processes.

The choice of the optimal tactics of complex conservative treatment should be based on the understanding of the processes of development

of cervical-brachial syndrome, which can increase the effectiveness of treatment.

**Taping treatment.** Taping for headaches is a technique that has been actively used in world medical practice for several decades. Initially, kinesiology tapes were used in professional sports. Gradually, taping penetrated into various areas of medicine - neurology, speech therapy, traumatology, orthopedics, pediatrics and others. The essence of the method lies in the fact that during the application of an elastic patch (kinesiology tape) there is an impact on a certain area of the body. Focusing on the skin with a certain tension, tapes normalize muscle tone. There is a decrease in pressure on inflamed tissues and blood vessels. Tapes fix muscles, ligaments, joints, providing them with adequate support. The procedure is carried out according to indications, after consultation with a doctor. The course of procedures provides the following effects: normalization of blood circulation, stabilization of the lymph flow, the manifestation of pain syndrome is reduced, muscle tone is normalized.

The technique is effective and safe. Taping is especially effective for migraines. When undergoing a course of treatment, a high result is ensured. While wearing teips do not cause discomfort. This is explained by their elasticity, similar to human skin. Kinesio tapes are made of natural cotton or rayon, which allows the skin to "breathe". The presence of an adhesive acrylic layer guarantees reliable fixation. With the application, it is allowed to take a shower, visit the pool. The duration of wearing tapes can reach 5–7 days.

In the presence of headaches, the patient takes a sitting position, sticking patches is performed in the following sequence:

- the base of the tape is fixed to the lateral region of the spinous process of the third thoracic vertebra;
- the patient bends the neck forward, tilts and turns in the opposite direction;
- the lateral part of the Y-shaped patch is fixed to the mastoid process;
- the medial part of the tape is applied to the mastoid process located behind the lateral part.

Such an application, as it were, protects the muscle;

– to activate the adhesive layer, the tape is smoothed with the palms of the hands.

**Conclusions.** The analysis of the obtained data revealed a mixed (musculovascular) mechanism of the development of cervicocranialgia – a clinical manifestation of the reflex syndrome of cervical osteochondrosis in young people. In this regard, it is recommended to include anti-inflammatory drugs (xefokam, denebol, olfen, nimesil, etc.), muscle relaxants (midokalm), vascular and vein tonics (L-lysine escinate, troxevasin, actovedin). Complex treatment of patients in this category with vitamin preparations (nicotinic acid preparations, etc.), phytoncides, and drugs that relieve radiating attack-like pain and affect the pain syndrome (gabantine, lamotrine), antidepressants (amitriptyline, fluoxetine, etc.), physiotherapy and medical treatment is recommended. physical education A rational approach to modern diagnosis and treatment will further lead to early rehabilitation of patients and improve the working capacity of young patients. For prevention, it is advisable to use kinesio taping to improve the blood supply to the brain, lymph circulation, and relieve tension in the neck muscles.

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