**МЕДИЧНІ НАУКИ**

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# THE CHRONIC PAIN IN BACK AND NEW METHODS OF TREATMENT

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***Aim.*** *The study of the prevalence causes the formation of chronic vertebrogenic pain syndromes (CVPS), their clinical course, determining the optimal methods of treatment.*
***Methods.*** *The observation of the 31 patients with chronic vertebrogenic pain syndrome was led. It is identified neuroimaging changes and leading clinical and neurological syndromes. An objective assessment of the presence of pain confirmed using a visual analog scale and the test for the assessment of pain and functional economic status in chronic backpain. All patients were devided into 2 groups.*
***Results.*** *The duration of chronic vertebrogenic pain patients studied were: from 3 to 5 years in 11 (35 %), more than 10 years in 13 (42 %), more than 15 years – in 7 (23 %) patients. A significant duration of the pain syndrome was the reason for seeking care. Comparing the results of treatment in the two groups showed a significant benefit in the primary group, in which after 10 days the patients did not report pain and returned to work. In the control group revealed a statistically significant reduction of pain syndrome, the condition of patients required further rehabilitation.*
***Conclusions.*** *It is identified the best effect with the use of modern methods of treatment of reflex muscle-toxic with Xeomin in comparison with traditional methods*
***Keywords:*** *chronic pain in back, curation, Xeomin*

*Проведено наблюдение 31 больного с хроническим болевым синдромом. Пациенты I (основной) группы из 9 человек получали инъекции ботулотоксина типа А в грушевидную, прямые мышцы спины. Пациенты II (контрольной) группы из 22 человек получали стандартную терапию анальгетиками и миорелаксантами в сочетании с физиотерапевтическими процедурами.*
*Выявлен наилучший эффект при использования современных методов лечения рефлекторных мышечно-тонических синдромов с использованием ксеомина в сравнении с традиционными методами*
***Ключевые слова:*** *хроническая боль в спине, лечение, ксеомин*

## 1. Introduction

Chronic back pain is a common clinical manifestation of spinal pathology among people in different age groups. To eliminate chronic pain at the present stage of development of medicine use different medical and non-drug approaches. We offer one of the new methods for the relief of chronic pain and vertebral pain with botulinum toxin type A preparations

## 2. Aim

The study of the prevalence causes the formation of chronic vertebrogenic pain syndromes (CVPS), their clinical course, determining the optimal methods of treatment, retains its relevance, while remaining important social and economic problem that has defined the purpose of this study.

## 3. Literature review

Degenerative changes of the spine, causing chronic pain syndromes belong to one of the most common reasons for hospitalization in a neurological hospital and treatment for outpatient care. From 50 to 90 % of the population often experience pain in the back, with 25 % of the working population temporarily lose the ability to work in connection with this cause [1–4]. Chronic vertebrogenic pain alters not only the physical activity of the patient, but is accompanied by marked cognitive-motivational, psycho-emotional disorders, which further modifies labour and social activity. Reflex, muscle-tone and compression syndromes, when developing degenerative changes of the spine, leading to temporary or long-term disability and accompanied with large economic costs for examination, treatment and rehabilitation of patients [5–10].

## 4. Methods

A survey of 31 patients with HUBS on the basis of the neurological Department of the establishment of health care CCH SMP, Stavropol. One of them was 23 (74 %) women and 8 (26 %) men. The average age of the surveyed amounted 53,16±12,85 years. The patients

enrolled in the study revealed reflex muscular-tonic pain syndromes, compression syndromes. Duration HUBS ranged from 3 to 15 years or more.

All patients underwent a comprehensive clinical and instrumental and laboratory examination. The following methods were used: clinical-neurological, neuro-imaging, magnetic resonance imaging (MRI apparatus "Excelart Vantage"), computed tomography (CT apparatus "Hitachi Presto") of the cervical, lumbar spine. For the objective assessment of patients used the test evaluation of pain, functional and economic status in chronic back pain (R. G. Wotkinsccoавт., 1986) and the questionnaire visual analogue scale (VAS). Testing was performed before treatment and after treatment.

All patients were divided into 2 groups. Patients I (main) group of 9 people received injections of botulinum toxin type A in involved muscles pear-shaped, straight back muscles. Patients II (control) group of 22 people received standard therapy muscle relaxants, non-steroidal anti-inflammatory drugs, anticonvulsants, anesthetic in average dosage in combination with physiotherapy. The course of treatment was from 10 to 14 days. Statistical processing of results was performed using t-test, Student.

### 5. The results

According to the results of clinical and neurological examination of patients admitted to the neurology ward with chronic vertebral pain, revealed that reflex, muscular-tonic syndromes were observed in 19 (61 %) patients, and the compression syndromes in 12 (39 %) people. Degenerative changes of the spine, accompanied by chronic pain in the cervical level were observed in 7 (22 %) patients. When involvement of the cervical spine and the development of reflex syndrome the main complaints of the patients were local permanent expander or shooting pains, mostly in the morning or when making movements, limiting the mobility of the cervical spine. Among compression syndromes cervical injuries often suffered inter vertebral disc CV - CVI and marked compression of the spine C6, accompanied by weakness of the biceps muscle of the shoulder, pain and sensory disorders in the corresponding dermatome, combined with chronic cervical pain.

The majority of surveyed patients with CVPS were patients with localized pain at the lumbar level, 24 (78 %) of a person. The most common complaints with reflex syndrome this localization were unilateral pain, worse during standing, prolonged sitting. Patients often take a forced position, relieving the pain. When the reflex piriformis syndrome and compression of the sciatic nerve pain localized in the lower leg and the foot, there was a decrease in the Achilles reflex, sometimes with symptoms of intermittent claudication. Significantly more often among compression syndromes at the lumbar level were identified L5 root compression, with the defeat of intervertebral disc LIV-LV, when the pain radiate from the lower back to the buttock, on the outer edge of the thigh, superficial surface of the tibia to the first toe of the foot, accompanied by weakness of the extensor of the first toe. The cause of pain at the lumbar level from buttocks on outer rear edge of the thigh, the outer edge of the shank to the outer edge of the foot and fifth finger was the S1 root compression with the defeat of the intervertebral disk LV-SI.

In 6 (19 %) people with chronic vertebrogenic pain in the cervical and lumbar levels combined with lesions of the thoracic spine. With the defeat of this Department were detected reflex syndromes. The main complaint of the patients were stinging, deep, aching pain in the interscapular area, often at night, aggravated by the rotation of the torso, bending to the side.

The duration of chronic vertebrogenic pain patients studied were: from 3 to 5 years in 11 (35 %), more than 10 years in 13 (42 %), more than 15 years – in 7 (23 %) patients. A significant duration of the pain syndrome was the reason for seeking care.

The vertebral chronic pain was the cause of hospitalization 1 year in 5 person (16 %), 2 times a year – in 9 person (29 %), outpatient treatment from 1 to 3 times per year received 17 people (55 %).

Chronic vertebrogenic pain is one of the most frequent causes in a disability, including persons at a young age. According to our survey disability groups II and III had 12 (39 %) people.

According to the MRI revealed that the inter-vertebral discs of the cervical (CV-CVI) and lumbar (LIV-LV, LV-SI) of the spine was noted in 12 (39 %), and protrusion of the drive – in 19 (61 %) people. Spinal canal stenosis was diagnosed in 5 (16 %) people. In 6 (19 %) had a combination of herniation and protrusion of the intervertebral discs.

To assess perceptions of vertebrogenic pain patients was proposed the questionnaire, according to which before treatment, the intensity of pain in the study group was an 8,7±1,6 points, and in the control group, and 9,0±1,8 points. When using the test for evaluation of pain, functional and economic status in chronic back pain in the study group was of 8,9±1,08 points in the control of 9,1±1,6 points, which corresponded to a progressive worsening of the condition.

Patients of the main group with reflex muscular-tonic syndromes long back muscles and the piriformis muscle used injections of botulinum toxin type A (xeomin). Before the introduction of the drug previously performed CT study revealed hypertrophied muscle and measured the distance to it. Lying on the side of the patient was injected the needle into the right muscle, injected drug xeomin 100 units. When you scan CT scan was evaluated by diffusion of the drug in the muscle.

Patients in the control group was administered midokalm 1 ml intramuscularly, xefocam 16 mg per day, convallis 600 mg per day for 10 days. Besides used physiotherapy – magnetic therapy, phonophoresis, massage.

After treatment 10–14 days spent re-test in both groups. According to your in the main group was 1,5±1,6 points ($P<0,05$) in the control group to 6,0±1,8 points ($P>0,05$). Test evaluation of pain, functional and economic status in chronic back pain in the study group was 0,5±1,2 points ($P<0,05$) in the control of 5,5±1,2 points ($P>0,05$).

**6. Conclusions**

When the observation and examination of patients with CVPS the highest percentage consisted of patients with lumbar pain (78 %). More than half of the cases (61 %) in the presence of CVPS radiograph revealed the presence of protrusion of intervertebral discs, and to a lesser extent herniated discs (39 %). An additional factor contributing to chronic back pain was stenosis of the spinal canal. Detected x-ray data indicate that chronic vertebrogenic pain does not always contribute the most severe radiological changes of the spine, and there are additional factors influencing the formation of this syndrome, which once again confirms the need for research in this group of patients. Patients with degenerative-degenerative changes of the spine and the development of lasting CVPS have a high forecast prolongation of this syndrome in the future. Our study shows that there is a tendency of increasing the proportion of patients with this syndrome for longer suffering this pathology (42 %).

Evaluating the results of the treatment, it can be noted that the clinical effect in the main group of patients is based on the fact that the intramuscular injection of botulinum toxin type a causes relaxation intrafusal fibers of the muscle spindle and reduces the activity of the muscle stretch receptors and efferent activity of alpha - and gamma-motoneurons. This is evident in the pronounced relaxation of the injected muscles and significant reduction of pain in them. When the local introduction to therapeutic doses of botulinum toxin type A does not penetrate the blood-brain barrier and does not cause significant systemic effects. The presynaptic process of splitting the transport protein botulinum toxin is irreversible and takes approximately 30–60 minutes. Cellular effects are developing very rapidly and irreversibly, but the clinical effect of the drug is revealed in a few days. Eventually there is persistent chemodenervation injected muscles, impaired neuromuscular transmission caused by inhibition of the transport of acetylcholine to the presynaptic membrane, the development of paresis or paralysis of the muscles.

Comparing the results of treatment in the two groups showed a significant benefit in the primary group, which after 10 days; the patients did not report pain and returned to work. In the control group revealed a statistically significant reduction of pain syndrome, the condition of patients required further rehabilitation.

The study confirmed the high efficiency of modern methods of treatment of reflex muscular-tonic syndromes using xeomin in comparison with traditional methods. Early preventive measures with the use of modern methods of treatment should be recommended in patients with HVPS at the stage of reflex, muscular-tonic syndromes that will substantially prevent their suffering, will reduce the duration of treatment and the frequency of treatment for outpatient or inpatient care.

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# АНАЛИЗ ВЕДУЩИХ КОМПОНЕНТОВ ПРОИЗВОДСТВЕННОЙ СРЕДЫ ТРАНСПОРТНОЙ ОТРАСЛИ

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*Проанализировано ведущие компоненты производственной среды (техника безопасности, условия труда, организационно-управленческая) трудящихся транспортной отрасли на предприятиях разных форм собственности по результатам социологического опроса. Выявлена достоверная зависимость их распространенности от форм собственности предприятий, функционального назначения транспортных средств и региона пребывания*
***Ключевые слова:*** *условия труда; техника безопасности; трудящиеся; предприятия разных форм собственности*

*The reliability and efficacy of a man's working activity and his functional state much depend on structural features of the serviced equipment, technological processes and organization of production. From the advent of organizations of different types of ownership the issue of possible impact of this factor on the leading components of the manufacturing environment and the health of workers employed in this branch.*
***Aim****. To learn and analyze of the leading components of the transport branch production environment that influence on a workers' health.*
***Methods and materials****. According to the results of the public opinion poll the leading components of the production environment (safety engineering, working conditions and organizational) of workers of the transport branch at enterprises of different ownership forms have been analyzed. Sampled populations of the main and control groups were formed which analysis provided verification of the suggested hypotheses.*
***Results****. The analysis of the leading manufacturing environment components of the transport branch has revealed significant dependence of their levels on the type of ownership of the enterprises, functional purpose of vehicles and location.*
***Conclusions****. The comparative analysis was performed according to the criterion of the enterprise ownership form in two regions of the country. It has been established that worn-out and out-of-date equipment increases problems related to safety engineering manifold, makes working conditions worse increasing the risk of their influence on the health of people employed in the transport branch and the organization-management component considering bad managerial skills becomes an aggravating factor for the foregoing ones*
***Keywords:*** *working condition; safety engineering; workers; enterprises of different ownership forms*

## 1. Введение

Шестидесятая сессия Всемирной ассамблеи здравоохранения одобрила и утвердила Глобальный План Действий по здравоохранению трудящихся на 2008–2017 гг., в котором отмечено, что «….трудящиеся составляют половину населения мира и являются главным вкладчиком в экономическое и социальное развитие современного мирового сообщества. Их здоровье зависит от многих факторов производственной среды, социальных и поведенческих, а также от доступности медицинского обслуживания», и призвала державы мира разработать национальную политику и планы реализации ГПД на национальном уровне. Предложенный план действий касается всех аспектов здравоохранения трудящихся, включая первичную профилактику профессиональных вредностей, охрану и укрепление здоровья на рабочем месте, условия трудоустройства и более четкое реагирование систем здравоохранения на здоровье трудящихся [1].

## 2. Постановка проблемы

Надежность и эффективность трудовой деятельности человека, и его функциональное состояние во многом зависят от конструктивных особенностей