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МЕДИЧНІ НАУКИ ТА ГРОМАДСЬКЕ ЗДОРОВ'Я

PHYSICAL REHABILITATION OF PATIENTS WITH ARTERIAL HYPERTENSION USING NEURAC METHOD AND REDCORD SYSTEM

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Introduction. Arterial hypertension (AH) is one of the most important causes of cardiovascular disease. This is a major risk factor for coronary heart disease and cerebrovascular diseases and complications, with a cardiovascular mortality rate of 89% in adults and 74% in the working-age population. [1; 2]

Cardiac rehabilitation is increasingly recognized as an integral component of helping patients with cardiovascular disease. It is a Class 1 guideline in cardiac practice.

Neurac (neuromuscular activation) is the newest concept in the field of rehabilitation -medicine, which has become known for its significant benefits in the treatment of diseases and injuries associated with the bone system and disorders associated with the nervous system. At present, the Neurac method has not yet been used in the treatment of patients with cardiovascular diseases. But taking into account all the advantages and mechanisms of action of the Neurac method, it is possible to assume that it will be very effective for such patients [3].

The aim of the study Development of algorithm and provision of medical-biological and medical justification of the program of physical rehabilitation using different modes of muscle operation in patients with arterial hypertension according to the method of Neurac on the simulator Redcord. Studying the advantages of the Neurac method system on the Redcord simulator for the rehabilitation of patients with arterial hypertension. Objectives of the study: to study the impact of physical rehabilitation methods, namely the Neurac method on the Redcord simulator, which includes dynamic and statodynamic modes of muscle operation, on physical activity indicators in patients with hypertension of 1-2 stages of mild and moderate severity. To assess the impact of physical rehabilitation programs on the psychological status and nature of the quality of life of patients with arterial hypertension of 1-2 stages of mild to moderate severity. Analyze the efficacy of the different modes of exercise, according to the Neurac method for the treatment of hypertension 1-2 stages of mild to moderate severity. And also develop practical recommendations for the use of rehabilitation methods for such patients on the Redcord simulator.

Materials and methods. The study was conducted on the basis of Alef-clinics (Kharkiv, Ukraine). A treatment session took place on the Redcord simulator using the Neurac method. A special treatment algorithm was developed. The training involved three exercises of three rounds each. Rest between sets was 60 seconds, between exercises - 180 seconds, total treatment time - 1 hour. A group of fifteen patients was monitored. Patients complained of palpitations, recurrent headache, dizziness with increased blood pressure, shortness of breath while walking, generalized weakness, apathy, neck pain. The patients had no bleeding, no taste changes, and no surgery or blood transfusion. History: hypertension 1-2 stage 2 degree for 5-10 years. The control of patients' blood pressure was performed using a double combination of antihypertensive medications.

No changes in the skin and visible mucosa were detected during objective examination. In the lungs, respiration is vesicular. The heartbeat is muted. Heart rate - an average of 95-100 beats per minute. Blood pressure (BP) 150-160/100mm Hg Art. Respiratory rate 18/min. Before treatment on the Redcord simulator, patients were additionally examined: complete blood count, electrocardiogram (ECG), heart rate variability (HRV), Martin Kushelevsky test, ultrasound of the main neck arteries.

Results. Before treatment: complete blood count - unchanged, ECG - sinus rhythm, correct, left axis deviation. HRV - increased exposure to the sympathetic nervous system. Martin-Kushelevsky test - hypertensive reaction. Ultrasound of the main arteries of the neck - a decrease in blood flow in the vertebral artery. After treatment: complete blood count - no change, ECG sinus rhythm, correct, left axis deviation. HRV - enhanced influence of the parasympathetic nervous system. Martin-Kushelevsky test - hypertensive reaction. Ultrasound of the main arteries of the neck - an increase in blood flow in the vertebral artery.

With a variety of factors leading to an increase in blood pressure, we can talk about a single mechanism for its regulation with violations at different levels. BP is mainly determined by two parameters: cardiac output (CO) and systemic vascular resistance (SVR). The autonomic nervous system is essential in affecting the pumping function of the heart. The main trigger mechanism in the early stages of arterial hypertension is the sympathetic nervous system. Hypersympathicotonia reflects the inability of the circulatory system to adapt to increased loads. This initiates a whole cascade of regulatory disorders affecting blood pressure. The effect of treatment using the Neurac method is explained by the activation of the muscular system at the level of deep muscle groups, which are directly related to all systems of the body, and especially to the cardiovascular and nervous systems through visceral-motor and motor-visceral connections, first described in the works of M.R. Mogendovich [4].

The musculoskeletal system is an important marker of quality of life in the absence of additional injuries [5,6]. As a result of the use of physical rehabilitation, based on the Neurac technique using the Redcord simulator, there was a preservation and a slight increase in musculoskeletal mass, which was noted by patients, also objectively and subjectively, patients observed changes in muscle tone, neck pain completely stopped without any exacerbations. At the same time, most patients normalized BP and alleviated neurological symptoms (especially headache and apathy), which made it possible to reduce the dosage and switch to monotherapy of the used antihypertensive drugs during the treatment of hypertension.

The study also highlighted some aspects of the use of the technique in the treatment of patients suffering from hypertension. It is necessary to use physical activity of moderate intensity. Since the hypotensive effect of these activities manifests itself rather rapidly, and the work of force, on the contrary, raises the blood pressure in formation. In other words, a certain sequence must be performed strictly so as not to aggravate the patient's condition. For a more correct, safe effect, it is necessary to determine the individual values of the pulse. Heart intervals must be within moderate intensity heart rate and power endurance threshold values. This technique can considerably increase muscle force and strengthen them. For safety purposes, it is necessary to monitor blood pressure: before the session, after a moderate intensity of work, after strength work, after the final part of the session. Do not begin training if the patient's BP is greater than 160/100 mmHg.

Conclusion. Patients who were under treatment with a diagnosis of arterial hypertension of 1-2 stages of mild to moderate degree showed significant positive dynamics after treatment on the Redcord simulator using the Neurac method. The use of Neurac in general practice and physical rehabilitation helps to make up most of the non-drug treatment plan, providing rapid relief of patients' symptoms by a painless method and a non-invasive procedure. This tool continues to prove itself quite competent in the treatment of neurological and cardiovascular diseases.

References:

1. British Association for Cardiovascular Prevention and Rehabilitation. BACPR standards and core components for cardiovascular disease prevention and rehabilitation 2012. 2nd ed. UKBACPR, 2012. Retrieved from www.bacpr.com/resources/46C_BACPR_Standards_and_Core_Components_2012.pdf.
2. 2018 ESC/ESH Guidelines for the management of arterial hypertension The Task Force for the management of arterial hypertension of the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH).
3. Kim JH, Kim YE, Bae SH, et al.: The effect of the neurac sling exercise on postural balance adjustment and muscular response patterns in chronic low back pain patients. J Phys Ther Sci, 2013, 25: 1015–1019. doi: 10.1589/jpts.25.1015.
4. Могендович М. Р. Лекции по физиологии моторно-висцеральной регуляции [Текст] / М-во здравоохранения РСФСР. Перм. гос. мед. ин-т. Пермь: [б. и.], 1972.
5. Breno Q., Antônio H.Acute and Chronic Effects of Isometric Handgrip Exercise on Cardiovascular Variables in Hypertensive Patients: A Systematic Review. Sports 2017, 5, 55; doi:10.3390/sports5030055.
6. Inder, J.D.; Carlson, D.J.; Dieberg, G.; McFarlane, J.R.; Hess, N.C.; Smart, N.A. Isometric exercise training for blood pressure management: A systematic review and meta-analysis to optimize benefit. Hypertens. Res. Off. J. Jpn. Soc. Hypertens. 2015, 39, 88–94. [CrossRef] [PubMed].