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MULTIPLE SCLEROSIS: METHODS OF TREATMENT AND REHABILITATION

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Abstract

The specificity of multiple sclerosis (MS) is a young age patients with a variety of symptoms, the unpredictability of the disease. All these factors are the reason that the rehabilitation of patients with MS is one of the most difficult tasks of neurological rehabilitation. A wide range of symptoms in MS, the obvious way of complexity associated with his patient, and it is a disease with which we must contend daily. MS is a chronic disease of the CNS, diseases which frequency is 30–100 per 100 000 persons. However, knowledge about MS and its treatment may reduce symptoms intensity and improve the lot of their options. In recent years it is seen the increase in the number of scientific publications on effective rehabilitation of patients with MS. Rehabilitation in MS is symptomatic in nature and includes all motor dysfunction – of autonomic disorders to motor deficits. Well–conducted rehabilitation significantly reduces the effects of disease, thus increases the effects of pharmacotherapy. Regardless of the form of the disease, the result of PC is disability and reduced quality of life, making it difficult to self-service and independent functioning.

Doctor's detection of functional deficit targets and determining the therapeutic process, allows to reduce the intensity of symptoms of the disease. The work represents the chosen form of exercise methods of physiotherapy and some principles of rehabilitation strategies in the rehabilitation of patients with MS.

Key words: multiple sclerosis, treatment and rehabilitation.

Юрій Лисенко. Розсіяний склероз: методи лікування та реабілітації. Специфічність розсіяного склерозу – це молодий вік хворих, різноманітність симптомів, непередбачуваність перебігу хвороби. Усі ці фактори є причиною того, що реабілітація хворих на розсіяний склероз – одне з найскладніших завдань неврологічної реабілітації. Широкий спектр симптомів при розсіяному склерозі, імовірно, пов'язаний із його обтяжливістю для пацієнта, оскільки з цією хворобою потрібно змагатися щоденно. Розсіяний склероз – хронічне захворювання центральної нервової системи, частота якого складає 30–100 випадків на 100 тис. населення. Однак знання про розсіяний склероз, а також про його лікування може зменшувати інтенсивність симптомів і покращити багато параметрів якості життя людей. В останні роки простежуємо збільшення кількості наукових публікацій про ефективність реабілітації хворих на розсіяний склероз. Реабілітація при цьому захворюванні має симптоматичний характер і включає всі моторні дисфункції: від вегетативних до рухових порушень. Правильно проведена реабілітація значно зменшує наслідки хвороби, при цьому підвищує ефективність фармакотерапії. Незалежно від форми хвороби, наслідком розсіяного склерозу є інвалідність, а також зниження якості життя, що ускладнює самообслуговування й належне функціонування хворих.

Виявлення лікарем рівня функціонального дефіциту та визначення мети терапевтичного процесу, дає можливість зменшити інтенсивність симптомів при розвитку хвороби. У роботі здійснено огляд наукової літератури з питання основних форм фізичних вправ, методів фізикотерапії, а також деяких принципів реабілітаційної стратегії для хворих на розсіяний склероз.

Ключові слова*:* розсіяний склероз, лікування, реабілітація.

Юрий Лысенко. **Рассеянный склероз: методы лечения и реабилитации.** Специфичность рассеянного склероза – это молодой возраст больных, разнообразие симптомов, непредсказуемость течения болезни. Все эти факторы являются причиной того, что реабилитация больных рассеянным склерозом является одной из самых сложных задач неврологической реабилитации. Широкий спектр симптомов при рассеянном склерозе, вероятно, связан с его обременительностью для пациента, поскольку с этой болезнью необходимо бороться ежедневно. Рассеянный склероз является хроническим заболеванием центральной нервной системы, частота которого составляет 30–100 заболеваний на 100 тыс. населения. Однако знание о рассеянном склерозе, а также о его лечении может уменьшать интенсивность симптомов и улучшить многие параметры качества жизни людей. В последние годы прослеживается увеличение количества научных публикаций о эффективности реабилитации больных рассеянным склерозом. Реабилитация при этом заболевании имеет симптоматический характер и включает все моторные дисфункции: от вегетативных к двигательным нарушениям. Правильно проведенная реабилитация значительно уменьшает последствия болезни, при этом повышает эффективности фармакотерапии. Независимо от формы болезни, следствием рассеянного склероза является инвалидность, а также снижение качества жизни, что затрудняет самообслуживание и надлежащее функционирование больных.

Выявление врачом уровня функционального дефицита и определение цели терапевтического процесса позволяет уменьшить интенсивность симптомов при развитии болезни. В работе представлен обзор научной

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литературы по вопросу основных форм физических упражнений, методов физикотерапии, а также некоторых принципов реабилитационной стратегии для больных рассеянным склерозом.

Ключевые слова: рассеянный склероз, лечение, реабилитация.

Introduction. Multiple sclerosis (lat. Sclerosis multipex, SM), a chronic inflammatory, neurodegeneration disease of central nervous system where is the focal damage (demyelination) in many places and the collapse of myelin membranes of nerve tissue. This is the cause of abnormal transfer of impulses along nerve pathways in the brain and spinal brain [1; 2]. This disease usually has a multiphase flow with periods of exacerbation and remission [3]. Multiple sclerosis (MS) is one of the most common causes of disability of young people.It is generally more common for women than for men between 20 and 40 years old [1]. The incidence rate ranges from 30 to 100 per 100 thousand people [4].

Among many focal symptoms, it should be noted: symptoms of motility, sensitivity (paresthesia), cerebellum (imbalance), visual disorders, autonomic nervous system, pain syndromes and psychiatric dysfunction: violation of cognitive functions [2; 5]. Usually, at the beginning of illness the patient begins to experience a weakening of isolated muscle groups (especially in the upper limbs or themnot). Later, there is an increased muscle tone (spasticity), which makes it difficult to perform certain movements, and even makes them completely impossible [6; 7]. Quite often there are violations of the autonomic nervous system (dysfunction of the bladder, bowel dysfunction, dysphagia [7; 8]. Multiple sclerosis may take one of the following forms: relapsing-remitting; secondary progressive; primary progressive; progressive-relapsing [5; 9].

One of the most common ailments for which patients complain is sustained fatigue, exhaustion, which greatly reduces their quality of life. More than half (50–60 %) of patients describes the fatigue as the most irksome in their life, and also have occasion to disability and social exclusion.

The syndrome is characterized by uncontrolled depletion of apathy, rapid fatigue, lack of energy. To assess exhaustion syndrome, most commonly used scales fatigue (Fatigue Severity Scale, FSS), Scale and Impact fatigue (Fatigue Impact Scale, FIS) [10; 11].

In the past believed that physical activity is a factor which stimulates exhaustion (increases temperature, which causes a violation of neurotransmission). Most MS patient's exercises help to reduce the depletion syndrome, in some it does not change, but rarely diagnosed gain. Since in MS pathogenesis depletion has many causes, the result of the impact of physical activity on fatigue may depend on the mechanisms that cause the underlying disease.

Currently, there are many approaches to treatment and rehabilitation of patients with multiple sclerosis. However, to further improve effects of this pathology is a need of systematic analysis experience with various methods of treatment and rehabilitation.

The aim is to characterize the modern methods of treatment and rehabilitation of patients with multiple sclerosis.

Research Methods. The paper used data analysis literature.

Research Results. From over 40 years the value of rehabilitation of MS patients has increased significantly, and use of it in the combination with pharmacological treatment significantly improved treatment outcomes, as indicated by a survey of patients subjective and objective research data. Immunomodulation treatment smooths pathological symptoms, reduce the risk of exacerbations and slow the disease. Rehab makes it possible to improve the functional status of the patient, and most importantly, improve the quality of life. The rehabilitation program can not be the same for different groups of patients with MS, with a focus on clinical features and the degree of disease progression.

The quality of life of patients with MS in addition to pharmacological treatment affects complex rehabilitation at every stage of the disease, which must be constantly, not only in clinical settings [13; 14].

The specificity of MS (young patient age, diversity of symptoms, unpredictability of the disease) is the fact that the rehabilitation of patients with MS is one of the most difficult tasks of neurological rehabilitation [7]. In the rehabilitation of these patients are carried two therapeutic strategies: therapy, which is based on treating the symptoms (facilitation – impairment – based approach) as well as therapy, which is based on performance objectives (taskoriented – disability – focused approach [2; 7].

The principal element of the rehabilitation of patients with MS is an individual approach that depends on the stage of disease and patient empowerment [15]. In other words, it is a therapeutic process where the patient who is disabled or disability he faces, acquires and then sells knowledge, experience and skills needed for the most comfortable physical, mental and social functioning [15].

Patients suffering from MS demonstrate a wide range of symptoms, depending on the location of the disease in the CNS. Regardless, before you start treatment, should assess the functional status of the patient in performing the basic tasks of daily life (Activities of Daily Living) [16; 17].

Clinical Metric Study. Often there is a need to evaluate symptoms in a patient diagnosed with the help of scales. The most frequently used scales are Kurtske-EDSS (Expanded Disability Status Scale), the scale of Scripps (The Scripps Neurologic Rating Scale, SNRS), Barthel Index (BI), the index of serviceability AI (Ambulation Index) and measure functional independence (Functional Independence Measure, FIM) [9; 18; 19].

Kinesitherapy. There is no unified system of rehabilitation and kinesitherapy for patients with MS. It is believed that kineziterapiya should be comprehensive and multifaceted [20]. Movement disorders are the results of paresis, easing muscle strength, spastic phenomena omplitudy restriction of movement in the joints, ataxia, impaired balance and coordination and a sense of pain [21]. All this leads to social and psychological problems, manifested in low self-esteem, depression, phobias and cognitive disorders [22]. A permanent standby to full recovery of self-cares, frequent need for changes in the professional activity and the need for assistance leads to chronic emotional stress.

The goal of physical rehabilitation of patients with MS is to increase the muscle strength, improve the general physical condition, compensation for violations of coordination, maintaining optimal range of motion in joints, standardization of muscle tone, prevent muscle atrophy, fatigue resistance [23].

Physical rehabilitation should be carried out continuously. Keeping the patient's motor activity depends largely complete understanding of the model of therapy for this disease. Contraindications are excessive physical exhaustion, overwhelmed. Active exercise should be performed without complication or in isolated positions that avoid complication. Thus the patient can perform these exercises with many repetitions without bringing the body to a state of exhaustion.

Daily rehabilitation exercises should also include coordination in recognition of his own body position, proprioretseptsiz, because abuse muscular sense, often diagnosed with MS and creates difficulties at every stage of rehabilitation. It should be remembered daily breathing exercises, and patients with urinary disfunctions should also do exercises for the pelvic zone. During the exercises belong guard against overheating of the body. Fever can cause an increase in spasticity and fatigue strengthen. Dynamic exercises should be done in the change with breathing and relaxation exercises (in rhythm 10/15/15 minutes). The patient should perform exercises according to their own circadian biorhythms, recommended the same hours every day (during highest physical performance, never immediately after taking food, more hour or half before taking food. There should be no pain and exhausting of body. Not belonging follow the same apartment complex exercise program and change depending on the patient.

Exercise in the RS: stretching exercises that improve flexibility and range of movements in the joints and reduce the spastka; active dynamic exercises that increase muscle strength, muscle trophic through improved vascular function muscle–pump that improve endurance and physical layer; breathing exercises that improve respiratory function and oxygenation of muscle tissue; exercises to improve the static and dynamic balance.

Despite the lack of objective data on the topic of efficiency of rehabilitation treatment of patients with MS, there is a rule: do not treat the disease, but the patient. [24] There are no guidelines selection exercise without debate. Each patient must adjust itself loading, moving gradually from a minimum to a larger, bearing in mind that not allow to perform exercises «through the power», as opposed to the healthy individuals. Evaluation of physical deficits largely depends on the subjective feelings of the patient. For this planning of the rehabilitation should focus on issues of concern to the patient. It is appropriate to assess the functional deficits and target rehabilitation. The disease is improvident, but optimistic approach to therapy will help patients conquer difficulties in treatment [8]. Rehabilitation patients should be painless, consistent motor needs of the patient and based on natural movement patterns.

Author's Rehabilitation Techniques of Paresis and Paralysis in Patients with MS. Methodology of Karel and Berta Bobath is based on neurophysiological, hierarchical approach based on the stimulation of normal, proper movement and inhibition of pathological spastic movement patterns using detonization. The method aims to translational inhibition of pathological reactions and abnormal movement patterns. There are special provisions for changing the posture of the body that are opposite to those caused abnormal synergies. This approach is common in Europe [25].

Methods of Sahh and Shepherd. The approach is working on muscle strength antagonists. By increasing muscle strength is a struggle with spasticity. And also performed specific tasks that contribute to the inhibition of spasticity. This approach is common in the US and Canada [26].

Methods of Fetters. The cognitive approach, based on the explanation and report patient problems elasticity, the goal is to learn by using the brain to control spasticity, as much as possible.

Methods of PNF or method of proprioceptive facilitation of N. Kabat developed in the early 50's. Kabat – therapy – physiotherapy based on a selection of movements that strengthen impulses from proprioceptors and cause tonic reflexes. Using certain types of schemes and exercises close to natural movements that enhance signals from proprioceptors, which in turn improves the functional state of the motor centers [27].

Methods of Chedok – McMaster Stroke Assessment. Methodology of the survey, which provides a clear picture of the condition of patients with hemiparesis. The methodology is neurophysiological approach to Sihen Brunstrom. To determine the stage of recovery using progressive control stage recovery of upper limb, lower limb, foot, hand [28].

Methods of Ekzarta. This technique involves neuromuscular activation of sensorimotor training and co-activation of superficial and deep muscles. Selects the optimum load, a person learns to move right without pain. Suspension systems of Ekzarta help to determine which muscles are weak and broken, and gently tap them into operation.

Methods of physiotherapy of JI. Potekhin. Kinesitherapy can restore lost motor function and forms the daily routine of patient in which his physical activity will help to restore movement disorders. Physiotherapy includes exercises, massage, electrical stimulation, exercises in the water [29].

The *method* described by *Carrera Lorenzo.* The conventional method of specialists who successfully applied in many countries. Provides functional recovery stages verticalization, practice balance, walking, limb muscle strength increasing with special provisions, movement, exercise and other means of rehabilitation. [30]

The *method of forced training of paretic limb E.Taub (CI-therapy).* Concludes that the training of the paretic limb is carried out at the fixation of the healthy limb. A healthy arm is fixed using a special device to the body for 5–6 hours a day for two weeks. This forces patients to use the paretic limb, causing a condition in which the patient all the attention pays to the implementation of paretic limb movements [31].

Methods «neuromotor re-education» described by Robenesku N. Spifanov V. Based on modern methods of correction and dynamic proprioreceptive artificial movement correction.

Methods of recovery by Bubnovsky. To affect the body the Bubnovsky method uses specially designed complex of exercises on multi–gym of Bubnovsky with the functions of decompression and antigravity.

Methods of MGC by V. M. Motkov designed for patients with hemiparesis. Used in exacerbations (attacks) MS. Includes use of facilities, which use passive, active and passive, active exercises treatment provision. Active exercises in the affected limbs perform in the same plane and the same direction – to the study of quality movement in certain joints, and then – in different planes and directions [32].

Feldenkrais method or technique of physical training. Based on the meaningful impact on the brain stem, cerebellum and its connections. The technique is based on tracking the eyes on a bright object on a trajectory «maximum right – at the center – maximum left», «maximum up – in the center – maximum down», diagonally, learning proper mechanism for turning heads, tracking eyes on a bright object with a turn of the head and fixing at the point of maximum amplitude turns heads with fixing view on the center line of eyes tracking the position of maximum allotment of view and turning heads with bringing sight to the center line VPR tongue movements ABO – right – up – down, homo lateral rotation of the eyes, tongue, head for fixed gaze, directed oppositely turning heads, eyes and tongue, turning the shoulder girdle, chest, pelvis and legs bent.

In foreign literature [4; 5; 7; 9] there are described three main approaches in the rehabilitation of neurological patients used today. These are biomechanical, neurophysiological and cognitive approaches.

Biomechanical Carr and Shepherd. The underlying work on muscle strength antagonists by increasing muscle strength is a struggle with spasticity. The approach is common in the USA and Canada.

Neurophysiological Bobach, PNF. The underlying normal stimulation. proper motion suppressing abnormal movement patterns and stimulate the development of a proper movements. This approach is common in Europe.

Cognitive Fetters. The underlying explanation and informing the patient of his motor problems, including spasticity; the aim is to study the conscious control of movement.

All methods include working with relatives and instructions for the care of patients, active assistance and participation of relatives in rehabilitation is possible. However, a common feature of the technique is that they are designed to increase the independence and autonomy of the patient, reduce the appearance of disability and achieve full autonomy in active daily activities without assistance in the future.

The methodology is the use of medical provisions, various exercise movements and difficult coordinations of different assumptions close to the natural movements of achieving full independence in order to perform everyday functions of varying complexity.

Based on common features of methods, in search of increasing the efficiency of rehabilitation, given the known methods, tools, principles and features, our technique was perfected.

At this point need to be reminded the use of relaxation techniques (autohene training). At each stage of the disease need to find time for rest, relaxation and regeneration powers. Relaxation techniques are also a positive effect on the psychics of the patient, who can think about his illness with greater realism, assess its condition and leaks. Such a procedure appears, for example, in relaxation massage, performed three times a week for 45 minutes (promotes relaxation, reduces contracture and enhances blood circulation [33; 34].

Another form of rehabilitation is work therapy, which largely improves physical skills while fulfilling the tasks of daily life, which is an extension and complement to exercise physiotherapist. This gives the patient the awareness of its possibilities, thanks to the fact the patient recovers mental balance. Planning occupational therapy, the patient should be placed the task according to its capabilities [35].

MS patients are also recommended in studies of musical therapy. Properly chosen physical exercises performed in an appropriate rhythm is one of the important factors that facilitate the execution of complex movements. These exercises are also stimulating and calming simultaneously. Rhythm stimulate the patient to exercise and simultaneously divert his attention from the pain, encourage the implementation of relevant stride length, etc [36].

During the implementation of the rehabilitation program, the patient must learn to maintain balance in all major body position. You can use these devices as Balance Trainer. This device enables the patient acceptance of the passive vertical position (standing training), and perform various exercises (balance training).

Conclusions. Comprehensive and systematic rehabilitation positively affect the quality of life and prolong life and professional activity of the patient. In combination with pharmacological treatment, rehabilitation enables the creation of positive attitudes, strengthens the sense of cost and sociability.

Rehabilitation of patients with MS is a complex process and complexed. Thanks to medical advances, the use of new methods of rehabilitation, the life expectancy of patients with MS equal to the life expectancy majorities. It is essential understanding of the pathogenesis of the disease, which allows using treatment to increase the independence of the functioning of MS patients and improve their quality of life. A comprehensive approach, the use of different methods of kinesitherapy, including unconventional makes it possible to achieve a certain progress in the rehabilitation of patients with MS.

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