ETHIOPIAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 01, Jan-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

REHABILITATION OF STROKE PATIENTS

Axmadjon A.I.

Department of Neurology and Psychiatry

Ferhana medical institute of public health

Annotation: Cerebrovascular diseases, in particular stroke, occupy the first place among the causes of disability. Proper rehabilitation of patients after a stroke involves correction of motor and cognitive impairments, as well as social adaptation. The article discusses the basic principles of rehabilitation after stroke, the features of rehabilitation of patients with motor, speech, and cognitive impairments. The issues of using drugs that facilitate the rehabilitation process are discussed.

Keywords:Stroke, rehabilitation, cognitive impairment, motor disorders, speech function.

Cerebrovascular diseases occupy the first place among the causes of disability. Their share is constantly increasing, which is caused by a gradual increase in vascular diseases of the brain, an increase in the proportion of elderly people in the population structure. The desire to stop the growth of disability of the population arouses interest in rehabilitation.

Rehabilitation is a set of measures (medical, pedagogical, psychological, socio-legal and others) aimed at restoring functions disrupted as a result of illness and damage and social readaptation of the patient.

In patients with the consequences of stroke or other diseases and injuries, three main types of disorders can be distinguished:

-Damage, defect (impairment). Among the injuries that occur after a stroke, one can distinguish motor (paresis, ataxia), cognitive, speech, emotional-volitional, visual, sensitive, bulbar and pseudobulbar (dysphonia, dysphagia, dysarthria), pelvic, sexual and other disorders, as well as complications in the form of seizures, falls, thalamic pain, urinary tract infections, thromboembolic episodes, post-stroke arthropathies. The purpose of rehabilitation is the complete or partial restoration of impaired functions, prevention, treatment and minimization of complications.

-Disability. Impaired abilities are expressed in impaired walking, self-service, defined as activity in daily life or violation of more complex household skills. Self-care includes the ability to dress independently, eat, observe personal hygiene, use the bathroom and toilet, control sphincters, carry out independent movements (with support on a stick, without a stick, in a wheelchair) indoors and outdoors, sit down andget up in dependently. The ability to perform complex household skills may consist of assistance in cooking and cleaning the room, visiting shopping, working in a country house, driving a car, etc. The purpose of rehabilitation is to teach walking and self–service skills.

-Violation of social functioning (handicap). Violation of social functioning is expressed in the restriction of the exercise of that social role, which before the illness was the norm for the patient (in accordance with his age, gender, education, social status, profession, cultural level) and includes restriction of the social role in the family and society, restriction of social contacts, restriction or inability to work. The purpose of rehabilitation– restoration (full or partial) of a social role (which goes beyond medical rehabilitation itself) in the family and society, social contacts, the opportunity to attend concerts, theaters, exhibitions, various social and religious events, restoration of old and development of new hobbies (hobbies), restoration of working capacity.

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 01, Jan-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

There are 3 levels of recovery:

• True recovery is when impaired functions return to their original state. This is possible only when there is no complete death of nerve cells, and the pathological focus consists of from inactivated elements (due to edema, hypoxia, changes in the conduction of nerve impulses);

• compensation – functional restructuring, involvement of new structures in the functional system;

• readaptation – the use of various accessories in the form of canes, walkers, prostheses.

Rehabilitation is based on neuroplasticity – the property of the brain to change its functional and structural reorganization, the ability of its various structures to engage in different forms of activity. The reorganization is based on such factors as:

• the multifunctionality of the neuron and the neuronal pool;

• hierarchy of brain structures and sprouting (germination and further anastomosis of nerve fibers).

The concept of "ischemic penumbra" (penumbra), which has been developed over the past 25 years, is of great importance for understanding the possibility of restoring functions after a stroke. Ischemic penumbra is a boundary zone surrounding the lesion, in which neurons and other nerve elements are in a functionally inhibited, but anatomically preserved state, and which are a potential source of recovery impaired functions. The function of neurons in the ischemic penumbra zone can be restored by switching on collateral blood flow or by reperfusion.

The basic principles of rehabilitation are:

• Early start of rehabilitation activities. Early rehabilitation prevents the development

of complications of the acute period of stroke caused by hypokinesia and hypodynamia (thrombophlebitis of the lower extremities, congestive pneumonia, etc.), the development and progression of secondary pathological conditions (spastic contractures, pathological motor stereotypes), the development of social and mental maladaptation, astheno-depressive states.

• Consistency and duration, which is possible with a well-organized step-by-step construction of rehabilitation. The first stage of rehabilitation begins in the angioeducation department, where the patient is taken by ambulance. The second stage of rehabilitation is rehabilitation in a specialized rehabilitation hospital, where the patient is transferred after an acute period of stroke. The second stage may have different options depending on the severity of the patient and the existing neurological deficit.

The first option is that a patient with a good recovery of impaired functions is discharged for further treatment to a polyclinic at the place of residence or to a rehabilitation center. The second option is that a patient with a pronounced neurological deficit is transferred to the rehabilitation department of the same hospital where the patient was admitted. The third option is that a patient with moderate neurological deficit is transferred to a rehabilitation center. The third stage of rehabilitation is outpatient rehabilitation (either in the conditions of the rehabilitation department of the polyclinic, or in the conditions of rehabilitation at home – for severe, poorly moving patients).

Complexity and multidisciplinarity. Inclusion of specialists in the rehabilitation process various specialties (multidisciplinary team): neurologists, therapists (cardiologists), if necessary, urologists, kinesotherapy specialists (physical therapy), aphasiologists (speech therapists, physiologists or

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 01, Jan-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

neuropsychologists), massage therapists, physiotherapists, acupuncturists, occupational therapists, psychologists, social workers, biofeedback specialists, etc.

• Adequacy of rehabilitation measures –It involves the preparation of individual rehabilitation programs taking into account the severity of neurological deficit, the stage of rehabilitation, the state of the somatic sphere, the state of the emotional-volitional sphere and cognitive functions, the age of the patient.

• Active participation in the rehabilitation of the patient himself, his relatives and relatives. It is necessary that specialists in kinesotherapy, household rehabilitation, speech therapists, aphasiologists explain to caregivers. The goals and methods of the lesson were explained to sick relatives or nurses, the need for additional classes in the afternoon was explained. The role of the family in teaching self-service skills and creating conditions for various activities is also great.

The main neurological symptoms of stroke that require rehabilitation are:

• motor disorders and walking disorders;

• speech disorders;

• cognitive impairment.

Rehabilitation of patientswith motor disorders

According to the Registry of the Research Institute of Neurology of the Russian Academy of Medical Sciences, by the end of the acute period, hemiparesis is observed in 81.2% of patients (hemiplegia – in 11.2%, severe paresis – in 11.1%, mild paresis – in 58.9%) [5].

In the acute period of stroke, the main tasks of rehabilitation are:

• early activation of patients;

• prevention of the development of pathological conditions and complications associated with hypokinesia;

• restoration of active movements.

If the patient has no general contraindications to rehabilitation measures (coronary heart disease with frequent attacks of angina pectoris, high poorly corrected arterial hypertension, acute inflammatory diseases, psychoses and pronounced cognitive impairment), then from the first hours and days rehabilitation measures such as position treatment (antispasmodic laying of limbs), passive exercises and selective massage. A multicenter AVERT study using evidence-based medicine methods [10] showed that the use of very early rehabilitation (in the first 14 days after the stroke) reduces the level of disability, reduces mortality, reduces dependence on others, reduces the frequency and severity of complications and side effects, improves the quality of life of patients by the end of the first year after the stroke.

The indication for the activation of patients and their transfer to an upright position is the stabilization of hemodynamic parameters, for which it is desirable to use monitoring ECG and blood pressure. In case of medium and small heart attacks and small limited hematomas (without breakthrough blood into the ventricles) activation of patients can begin on the 5th day of the disease.

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 01, Jan-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

At the same time, verticizers are widely used, for example, an ERIGO type verticalizer (under the control of pulse and blood pressure).

In parallel with the activation of the patient and his transfer to an upright position, active therapeutic exercises are used to restore movements in paralyzed limbs, electrical stimulation of the neuromuscular apparatus. Along with the restoration of movements, the tasks of therapeutic gymnastics include training in walking and self-service elements. In recent years, computerized orthotic robots have appeared (LOCOMAT), which initially provide passive movements in the lower extremities, simulating a step. As movements recover, the proportion of active participation of the patient in locomotion increases.

At the end of the acute period of stroke (after 21 days) an early recovery period begins (the first 6 months after the stroke), the main The tasks of which are: further development of active movements, overcoming synkinesia, reducing spasticity, improving walking, training the stability of the vertical posture.

During this period, kinesotherapy continues to be used, aimed at activating movements in the paretic limbs.

The electromyogram biofeedback method is widely used. In addition to their conscious suppression, orthopedic surgery is widely used to suppress synkinesias. fixation and special anti -friendly passive and passive-active movements [2]. For to improve the walking function, the patient is taught to walk first along the Swedish wall, then with a four-legged support, an ordinary stick, then without support (if possible). To improve the stability of the vertical posture, various types of balance therapy are used.

The main means of combating spasticity is taking muscle relaxants. The most common are tizanidine, baclofen, tolperizone. Physiotherapy methods are also used (ozokerite and paraffin applications, cryotherapy, vortex baths for hands). By Botulinum toxin type A injections are used for pronounced local spasticity.

Self-care training runs in parallel, starting with the acute period of stroke, when active movements become possible. Learning begins with mastering self-getting out of bed, washing, eating, dressing, putting on shoes, using the toilet. Gradually, the scope of these actions expands: the patient learns to pack things, make the bed, use the refrigerator, elevator, get dressed and go outside, etc.

Rehabilitation is carried out against the background of adequate drug therapy, including:

1. Etiological therapy – antihypertensive, disaggregants / anticoagulants in order to prevent recurrent strokes.

2. Pathogenetic therapy, including metabolic and neuroprotective agents (cerebrolysin, nootropics, choline alfoscerate, actovegin, citicoline); antioxidants (mexidol, cytoflavin); vasoactive drugs (pentoxifylline, cavinton).

Rehabilitation of patients with speech disorders.

The main method of correcting speech disorders is classes on speech restoration, reading and writing, which are conducted by speech therapists-aphasiologists or neuropsychologists. Speech rehabilitation is longer and lasts up to 2-3 years. The methods of rehabilitation training depend on the stage of

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 01, Jan-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

rehabilitation. At an early stage, special "disinhibiting" and stimulating methods of restorative learning are used [7].

Restoration of speech comprehension is the understanding of individual words and the restoration of the ability to understand situational speech, at the next stage – the understanding of non-situational phrases. In parallel, the patient learns to understand written speech. Stimulation of speech comprehension occurs not only in the classroom, but also in ordinary everyday contact.

Restoration of one's own speech – learning to name individual objects and actions based on pictures, repeating individual sounds and words after a speech therapist, composing sentences and phrases.

The next stage of recovery is dialogue. At the final stage, monologue training (making up stories, retelling what you read).

In the acute stage of the disease, due to increased exhaustion, short classes (15-20 minutes each) are indicated. In the future, the duration of classes increases to 30-45 minutes.

Speech rehabilitation is performed against the background of drug therapy, which has an activating effect on the integrative functions of the brain. These include nootropics (piracetam), cerebrolysin, and gliatilin.

Rehabilitation of patients with dysarthria

In case of violation of articulation associated with dysarthria, a whole set of measures is carried out, including:

• gymnastics of the muscles of the throat and pharynx;

• gymnastics and massage of articulatory muscles;

• electrical stimulation of laryngeal and pharyngeal muscles (using VOCASTIM apparatus);

• exercises on pronouncing individual sounds, words, phrases, tongue twisters.

Rehabilitation of patients with cognitive impairment after stroke

Cognitive impairment often occurs after a stroke and is manifested by impaired memory, attention, gnosis, praxis, and decreased intelligence.

Little attention is paid to this aspect of cerebral circulatory disorders, despite the fact that cognitive impairments largely determine the outcome of rehabilitation measures and the quality of life of a patient after a stroke. Memory disorders developing after acute cerebral circulatory disorders, according to various authors, are observed in 23-70% of patients in the first 3 months after a stroke. To By the end of the first year, the number of patients with memory impairment decreases to 11-31%. The incidence of dementia in patients after stroke is 26%, and it tends to increase with age. In patients over 60 years of age, the risk of dementia in the first 3 months after a stroke is 9 times higher than in people without a stroke.

The frequency of non-demented cognitive impairment is even higher.

The cause of severe cognitive impairment and even dementia can be:

• massive hemorrhages and extensive heart attacks;

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 01, Jan-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

• multiple heart attacks;

• isolated, relatively small heart attacks, located in functionally significant areas: the anteromedial parts of the visual tubercle and areas close to it, the frontal lobes, the parietal-temporal-occipital regions of the brain, the mediobasal parts of the temporal lobe, pale globes. Cognitive impairment or dementia caused by heart attacks in functionally significant areas does not increase over time, but even decreases. So, according to N.N.Yakhno et al. [8] Improvement of cognitive functions is observed in 1/3 of patients by the end of the acute period of stroke. The degree of regression varies and depends on the location of the infarction, its location in the dominant or subdominant hemisphere, single or bilateral lesion, the presence of a previous brain lesion that was asymptomatic before the stroke.

Cognitive impairments that are detected in connection with a stroke can occur in different periods of time: immediately after a stroke (acute cognitive impairment) and in a more delayed period, caused, as a rule, by a parallel neurodegenerative (more often Alzheimer's) process activated in connection with increasing ischemia and hypoxia.

Post-stroke cognitive impairment worsens the prognosis, increases mortality and the risk of recurrent stroke by three times, as well as increases the severity of functional disorders after stroke, significantly complicates rehabilitation.

Metabolic and neuroprotective agents, drugs that affect neurotransmitter systems, correcting cognitive, emotional-volitional and other mental disorders are widely used to correct cognitive disorders after a stroke.

- Piracetam – improves metabolic processes in brain cells, it changes the rate of propagation of arousal, improves cognitive processes, especially memory and attention. It is used at the beginning of the course in the form of intramuscular injections (5.0 ml of a 20% solution for 20-30 days) or with severe cognitive impairment, intravenously up to 6 g for 2-4 weeks, and then orally 2.4–4.8 g / day for 3-4 months.

- Cerebrolysin has a polymodal effect on brain metabolism, stimulates the growth of various populations of neurons, increases the efficiency of associative processes in the brain, improves mental activity, memory, attention.

It is prescribed in the form of intravenous injections (5.0 i / m daily for 30 days) or intravenous drip infusions of 10-20-30 ml (depending on the severity of cognitive impairment) daily (for a course of 20-30 infusions).

- Choline alfoscerate is a centrally acting cholinomimetic, improves the transmission of nerve impulses in cholinergic neurons, has a positive effect on the plasticity of neuronal membranes, improves cerebral blood flow, activates reticular formation. It is prescribed intravenously at 4.0 for 2-3 weeks, then orally at 1.2 g / day for 3-4 months.

-Actovegin – has a positive effect on glucose transport and utilization, stimulates oxygen consumption. At the same time, actovegin does not increase the oxygen demand of cells, it itself contains oxygen molecules and acts as an oxygen donor. Numerous studies have shown that actovegin has antioxidant properties, as it reduces the formation of free radical oxygen fractions. Against the background of prescribing the drug, there is a significant improvement in memory, concentration, and thinking compared to the group a placebo. Clinical improvement of cognitive

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 01, Jan-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

functions was accompanied by normalization of the electroencephalogram and an increase in the amplitude of the induced cognitive potential P300. In case of damage to the hippocampus, actovegin stimulates the growth of hippocampal cells, improves the energy status of cells. The drug has an insulin-like effect, because it stimulates the transport of glucose into cells without affecting insulin receptors. The drug is especially indicated for patients with concomitant diabetes mellitus, metabolic syndrome, because it also has a pronounced depressing effect on the lipolytic effect due to stimulation of the adrenergic system. Actovegin is prescribed at 2000 mg IV for 10-14 days, then orally at 600-1200 mg / day for several months. The course of infusion therapy with actovegin leads to a more pronounced and rapid improvement in the condition of patients with cognitive impairment, therefore treatment should begin with parenteral administration of the drug.

-Acatinol-memantine is an antagonist of NMDA receptors, regulates ion transport – blocks calcium channels, normalizes the membrane potential of neurons, has a neuromodulating effect, stimulates the transmission of nerve impulses, improves cognitive processes, memory, learning ability, increases daily activity. They are applied according to the scheme: 5 mg – daily for the first week, 10 mg (in 2 doses) for the second week, then for 3-4 months – 15-20 mg each.

-Citicoline (ceraxone) is a mononucleotide containing ribose, cytosine, pyrophosphate and choline in its chemical structure. Injected into the body Citicoline serves as an exogenous source of choline for the synthesis of acetylcholine Citicoline has a positive effect on the repair of neuronal membranes, participates in the synthesis of phospholipid structures of cell membranes; reduces the accumulation of free fatty acids, stimulates the formation of acetylcholine and dopamine, enhances the activity of antioxidant systems. A meta-analysis of 10 studies involving 2,279 patients showed that in the acute period of stroke citicoline provides neuroprotection, strengthens in the subacute and recovery periods the processes of neuroplasticity and neuroregeneration. With the help of neuroimaging studies, it has been proved that when using citicoline in the acute period of ischemic stroke, there is a decrease in the volume of cerebral infarction. The use of citicoline helps to restore otor functions, walking and self-service functions. A number of placebo -controlled studies have shown the ability of citicoline to reduce the severity of post-stroke cognitive impairment and reduce spontaneity. In patients with post-stroke cognitive impairment, citicoline is prescribed for 1000-2000 mg / day intravenously drip for 10 days. Then they switch to oral administration of 200-300 mg (2-3 ml) 3 times a day for several weeks. Side effects are rare.

-Galantamine is a selective competitive and reversible inhibitor of acetylcholinesterase, enhances the effect of acetylcholine on n-cholinergic receptors. At the beginning, they take a dose of 8 mg / day (in two doses), the dose is increased gradually depending on the severity of cognitive impairment.

-Rivastigmine is a selective acetyl-I inhibitor butyrylcholinesterase of the brain slows down the destruction of acetylcholine, increasing its content in the cerebral cortex and hippocampus. The initial dose is 1.5 mg / day in two doses, the dose gradually increases to 12 mg / day (depending on the severity of cognitive impairment) for 4-6 months. Recently, the exelon patch (4.6 mg) has been widely used.

In addition to drug therapy, patients with cognitive impairments are given psychological correction classes.

eISSN: 2349-5715 pISSN: 2349-5707

Volume: 11, Issue 01, Jan-2024 SJIF 2019: 4.702 2020: 4.737 2021: 5.071 2022: 4.919 2023: 6.980

Literature:

1. Adrianov O.S. On the principles of the structural and functional organization of the brain. M.: JSC "Dentistry". 1999; 252.

2. Belova N.A. Neurorehabilitation: a guide for doctors. M.: Antidor. 2000; 568.

3. Damulin I.V. Post-stroke dementia. Some diagnostic and therapeutic aspects. Psychiatry and psychopharmacology. 2005; 7: 1.

4. Kadykov A.S. Rehabilitation after stroke. M.: Miklos. 2003; 176.

5. Ryabova V.S. Long-term consequences of cerebral stroke (based on the materials of the register). Journal of neuropathy. and psychiatrist. 1986; 4:532-536.

6. Stolyarova L.G., Tkacheva G.R. Rehabilitation of patients with post-stroke motor disorders. M.: Medicine. 1978;216.

7. Tsvetkova L.S. Aphasia and restorative learning. Moscow: MPSI; Voronezh: MODEK Publishing house. 2001; 256.

8. Yakhno N.N., Damulin I.V., Zakharov V.V. Memory impairment in neurological practice. Neurole. journal. 1997; 4: 4–9.

9. Bach-y-Rita P. Theoreticaland practical consideretions in the restoration of funvtion after stroke. Top Stroke Rehabil. 2001; 8: Suppl.3: 1–15.

10. Bernhardt J., Dewey H., Collier J.et al. A very early rehabilitation trial (AVERT). Int.J.of Stroke. 2006; 3: 160–171.