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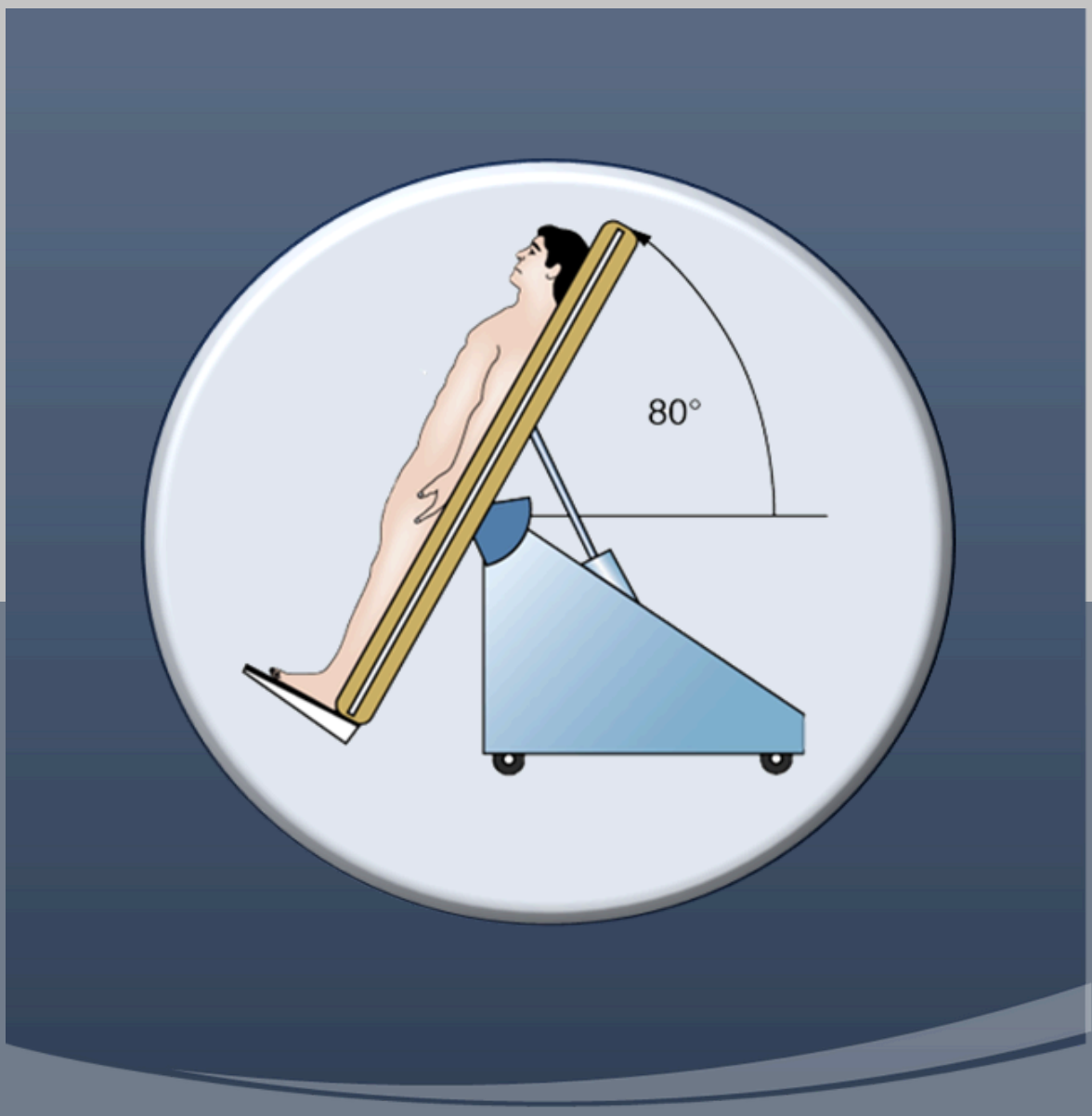
Verticalization in ischemic stroke due to diabetes mellitus



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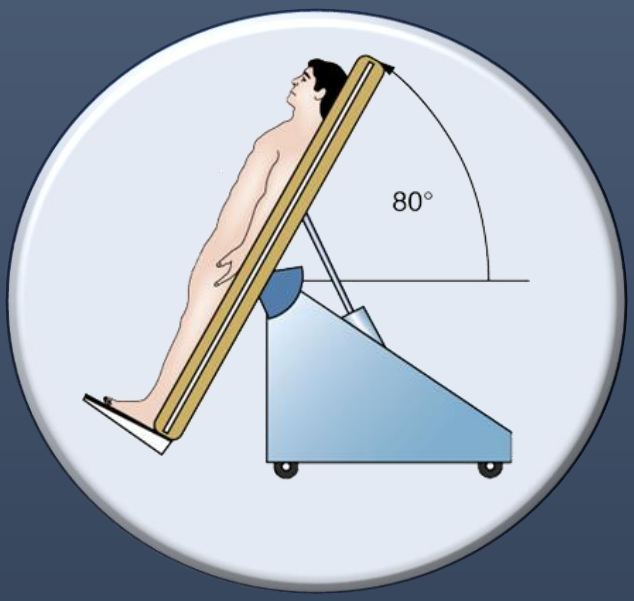
monograph



MONOGRAPH

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MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN

BUKHARA STATE MEDICAL INSTITUTE

R'oziev Feruz Ghiyosovich

VERTICALIZATION IN ISCHEMIC STROKE DUE TO DIABETES MELLITUS

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Roziev Feruz Giyosovich

Verticalization in ischemic stroke due to diabetes mellitus

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This monograph describes the scientific research carried out in the direction of evaluating the early rehabilitation measures, their procedure and effectiveness during the acute period of ischemic stroke on the background of diabetes. The information presented in the monograph meets the standards of treatment and rehabilitation, in which the methods of assessing the condition of stroke patients and performing the verticalization procedure are described in fluent language and many problems are emphasized. The manual can be used in practice as an important guide for medical institutions, clinical residents, masters, neurologists, rehabilitologists and neuroreanimatologists.

India-2024.

LIST OF ABBREVIATIONS

ABP	–	Arterial blood pressure
ACS	–	Acute coronary syndrome
AVBCB	–	Acute violation of blood circulation in the brain
IS	–	Ischemic stroke
HbA1c	–	Glycated hemoglobin
HD	–	Hypertension disease
LICA	–	Left internal carotid artery
LCCA	–	Left common carotid artery
LEC	–	Left external carotid artery
MG	–	Main group
MI	–	Myocardial infarction
MRI	–	Magnetic resonance imaging
NCD	–	Non-communicable diseases
RECA	–	Right external carotid artery
RCA	–	Right internal carotid artery
RICA	–	Right internal carotid artery
SFG	–	Speed of filtration of the granules
SFGR	–	Spellet filtration rate
USDS	–	Ultrasound dupsex scanning
WHO	–	World Health Organization

INTRODUCTION

According to the World Health Organization (WHO), stroke remains one of the main causes of death and disability among the population. Every year, 16 mln. population suffers from primary stroke and 5.7 mln. a person dies because of this. 31% of patients need constant care, 20% of patients cannot move independently and only 8% of patients can continue their previous activities. Currently, 3-4% of the world's population suffers from diabetes. Complications such as kidney failure, stroke, heart attack, and visual impairment are 25 times more common in patients with diabetes mellitus (DM), and they live an average of 15 years less than other layers of the population [1].

Diabetes mellitus is common in stroke patients worldwide, and this leads to poor outcomes of treatment and rehabilitation interventions. Clinical examination results of patients with ischemic stroke (II) against the background of diabetes deserve special attention. In such patients, pulmonary infectious complications are 1-3 times more frequent, cardiovascular complications are 4 times more frequent, and in-patient death is 5 times more frequent. The prevalence of diabetes in patients with acute stroke is 24-38%, and approximately 66% of patients with cerebrovascular disease have diabetes or impaired glucose metabolism. Mortality in the acute period of stroke is 34.6%, in the first year of life after the acute period is 13.4%, cases of severe disability requiring constant care are observed in 20% of patients, and 56% of stroke patients have limited work ability.

Jun Sung Moon (2021) studied the peculiarities of recovery of corticospinal tracts by diffusion-tensor tractography method in diabetic ischemic stroke. Kwolek (2021) studied the role of insulin therapy in rehabilitation after ischemic stroke in patients with diabetes , and the effectiveness and differences of long-term rehabilitation interventions. Wenjuan Zhao, Wei, Zhuang-Sheng (2022) investigated gender-related characteristics and levels of mobility limitation in adults in ischemic stroke with diabetes in long-term follow-up from the acute period.

[1]Goryun A.V., Stroke in the modern world: tendencies, problems, perspectives», posvyashchennaya vsemirnomu dnyu borby s strokem./ Moscow/ September 26, 2019 g.- C.`17

Monteiro K.B. (2021) studied the specific characteristics of the body's capabilities in the process of motor activity recovery after a stroke.

In our country, stroke is observed in 60,000 people every year, of which 42.4% are fatal, 41.9% are disabled, and 15.7% are complete with recovery. In Uzbekistan, diabetes occurs in 5.05% of the population of the Republic, and it is observed mainly in the age group of 20-79 years. In 70% of cases of strokes, carbohydrate metabolism disorders occur, and in 30% of cases, the amount of glucose in the blood is within the normal range.

To some extent, this study is based on PF-60 dated 28.01.2022 " On the new development strategy of Uzbekistan for 2022-2026 ", PF-5590 dated December 7, 2018 "On comprehensive measures to fundamentally improve the healthcare system of the Republic of Uzbekistan". PQ-102 dated January 26, 2022 " On measures to improve and expand the scope of endocrinology services" PQ-102 dated August 9, 2021 "On measures to further improve the quality of medical and social services provided to persons with disabilities" No. 5217, decisions No. PQ-3494 of January 25, 2018 "On measures to rapidly improve the emergency medical care system" and other regulatory legal documents related to this activity served to a certain extent for the implementation of tasks [2].

CHAPTER I. ETIOPATHOGENESIS, CLINICAL APPEARANCE, RISK FACTORS AND OPTIMAL METHODS OF EARLY REHABILITATION OF ISCHEMIC STROKE FORMED ON THE BACKGROUND OF DIABETES (literature review)

§1.1 Clinical description, epidemiology and etiopathogenetic classification of ischemic stroke formed on the background of diabetes

According to data, the rate of death from stroke in 2015 was 6.7 million. formed, it is estimated to reach 7.8 million in 2030 [2]. Primary disability is 3.2 per 10,000 population, and no more than 20 percent continue to work. Physical inactivity, which is the main cause of stroke, increases the death rate by 20-30%, while the

[2] Decision of the President of the Republic of Uzbekistan dated 26.01.2022 No. PQ-102.

increase in body mass index is also one of the main factors that cause blood circulation disorders and strokes. The regular increase of non-communicable diseases (NCDs) is causing serious losses in a number of countries with social, economic and medical complications. Blood circulation disorders and death due to diabetes are observed in more than 80 percent of cases [10; p. 18-19].

It is known that severe complications after stroke, movement and speech disorders, increase significant disability rates and worsen the quality of life. Based on the results of a study conducted in Europe, 600 cases of stroke are observed in every 100,000 population, causing disability in 360 (60%) cases. In addition, stroke requires special attention due to the high risk of recurrence, which increases by 10% in the first year and 5-8% annually in the following years. Only 10-12 percent of stroke survivors return to work, and 25-30 percent remain disabled for life. Brain damage is one of the main causes of temporary and permanent disability [6; pp. 6-8].

New main etiological factors of stroke development are diseases of the cardiovascular system (CVD) - heart rhythm disorders, ischemic heart disease and heart defects, atherosclerotic lesions of extracranial arteries. According to the results of the MRFIT study, the rate of death from ischemic stroke was found to be 3.8 times higher in patients with diabetes than in patients with normal carbohydrate metabolism [12; pp. 64-65].

Diabetes mellitus (DM) is a common chronic disease. The number of people with diabetes in the world has increased from 366 million people. The number of patients increases by 5-7 percent every year, and doubles every 10-12 years. If diabetes continues to increase in this way, according to predictions, by 2030 their number will reach 552 million. there is a possibility of organizing a person. The Central Asian region is no exception. Epidemiological studies show that about 5% of the adult population of Uzbekistan has diabetes. In 2011, the number of patients in the republic exceeded 122,460, of which 15.8 percent had type I diabetes and 84.2 percent had type II diabetes. About 16 percent of patients regularly take insulin, while

others follow a diet, exercise, and take blood sugar-lowering medications. Regardless of the treatment they receive, a patient with diabetes will need to monitor their blood sugar regularly. In order to achieve this, the patient must follow a diet, follow a healthy lifestyle, follow personal hygiene, be physically active, be able to choose the right profession for himself, and control his sugar level [97; pp. 21-23].

Diabetic patients are 25 times more likely to develop complications such as kidney failure, stroke, heart attack, and visual impairment, and they live an average of 15 years less than the rest of the population [98; 1-2 pp.].

The complications and risk factors of diabetes have been studied in a number of scientific studies. The ACCORD (Action to Control Cardiovascular Risk in Diabetes) study in 4,733 patients over 4.7 years of cardiovascular complications of diabetes; The UKPDS (UK Prospective Diabetes Study) study examined cerebro and cardiovascular complications associated with changes in blood lipid spectrum, unhealthy habits and glycated hemoglobin levels in 1148 diabetic patients. According to the MRFIT (Multiple Risk Factor Intervention Trial) study, 35 to 75 percent of patients with DM had cardiovascular and renal complications, and their dependence on arterial hypertension was studied. [103; pp. 72-74]. A large number of studies, such as ALADIN I, ALADIN II, ALADIN III, ORPIL, NATHAN, DECAN, SYDNEY, studied the etiopathogenic factors of peripheral diabetic neuropathies, course and directions of treatment [102; pp. 8-9].

Atherosclerotic damage of large and small cerebral arteries and microcirculation disorders are the basis of vascular pathology in DM II type. In patients with DM, on the basis of prolonged hyperglycemia, not only the risk of developing a stroke increases, but also the process of its recovery is complicated. Patients with DM have an increased risk of stroke due to the combination of hyperlipidemia and hypertension. A rapid increase in systolic arterial blood pressure (SBP) in patients with DM increases the risk of stroke by 2-3 times. In addition to atherosclerosis (AS) and hypertension (HD), the development of fibrinoid necrosis of the vascular wall causes microaneurysms and ruptures of the vascular wall [8; pp. 21-24].

Based on the results of today's extensive research (SHINE, 2021), it was studied that patients who developed ischemic stroke (II) against the background of DM type II have pathological changes of a systemic nature. Such patients develop micro- and macroangiopathies in venules, arterioles, heart capillaries, brain, kidney, upper and lower muscles, retina [12; pp. 63-66]. In patients with acute blood circulation in the brain against the background of diabetes mellitus, the development of a stroke takes an average of 6.9±5.2 years from the onset of the disease, and the neurological status is accompanied by focal changes in the dynamics. [47; pp. 1-6].

of acute cerebrovascular accident and diabetes are numerous and widespread, and have had a significant negative impact on the development of the state and society.

According to the statistics of the Ministry of Health of the Republic of Uzbekistan, death from stroke is 39% of vascular diseases and 23.4% of the total death rate. Every year, death from stroke in Uzbekistan is 374 cases per 100,000 population. According to research results, the mortality rate from cerebrovascular diseases is 10-35%, after heart and tumor diseases, which in turn is 11-12% in economically developed countries [72; p. 1-2].

Every year, 46,000 people in our republic need rehabilitation due to a stroke. A total of 700,000 people in Uzbekistan need rehabilitation [101; p. 1-2]. Based on the above data, no matter how widely studied cases of acute cerebrovascular accident and DM, stroke in the background of DM remains the leader in terms of high mortality rate, disease course, low effectiveness of treatment and rehabilitation measures, and high disability rate. This, in turn, shows that there is a high demand for increasing the level of health care as a result of the in-depth study of II cases that occurred against the background of DM, optimization of treatment and rehabilitation measures .

Often, acute hyperglycemia is manifested as a reflection of the stress reaction, active lipolysis occurs due to the release of cortisol and norepinephrine, as well as due to a relative intensive insulin deficiency. In any case, hyperglycemia in the acute period is a poor prognostic sign for the treatment and outcome of this disease.

Hyperglycemia has a number of negative effects in ischemic stroke, deepening ischemia of brain tissue, deterioration of mitochondria metabolism and, as a result, expansion of the ischemic penumbra zone, stimulation of anaerobic metabolism leads to the development of lactic acidosis; activation of free radicals, peroxide increases lipid oxidation of cell membranes and damage to intracellular organelles [12; pp. 76-78]. In addition, the adverse effects of hyperglycemia sometimes show hemorrhagic transformation of cerebral infarction after thrombolysis [11; 26-31 p]. In clinical observations, a number of features have been identified that aggravate the condition of diabetic stroke patients. Acute circulatory disorders in the brain often develop against the background of increased blood pressure, are often observed with impaired consciousness, are accompanied by obvious hyperglycemia, symptoms of pneumonia, and cerebrocardial syndrome. Many heart attacks are observed in this contingent of patients, the recovery process of brain functions is slow. One of the frequent complications in patients with diabetes is cognitive disorders of blood vessels, such patients have a more severe course of stroke, and polyorgan failure occurs due to systemic damage. Extensive information is presented in the literature about the problems that slow down the recovery process in stroke patients on the background of DM: sensory impairment, pain syndrome, trophic disorders in the limbs, joint dysfunction, pre-stroke movement disorders, balance disorders, cognitive dysfunction, exercise intolerance and others [70; pp. 83-86]. According to the results of a three-year investigation, it was found that the risk of death was 1.5 times higher in patients with high plasma glucose levels, but despite the large number of studies conducted in the direction of studying ischemic stroke observed on the background of diabetes, the problem of restoring the neurological deficits observed due to ischemic stroke in cases associated with hyperglycemia, treatment and shaping the coherence of early rehabilitation interventions remains a gap [157; pp. 126-131].

§ 1.2. Specificity of the main clinical and laboratory changes of ischemic stroke formed on the background of diabetes

A stroke is an acute disturbance of blood circulation in the brain (several minutes, rarely hours), focal neurological symptoms (movement, speech, sensation, balance, vision, etc.) and general brain symptoms (numbness, headache, vomiting, etc.). k) is a cerebrovascular disease characterized by sudden onset and persistence for more than 24 hours or death of the patient. Stroke is divided into two clinical-pathogenetic types: 1) ischemic stroke - characterized by the occurrence of a zone of ischemic necrosis as a result of acute ischemia occurring in a certain part of the brain; 2) hemorrhagic stroke (bleeding into the brain without injury) is characterized by conditionally blood leakage from intracerebral vessels or bleeding into the brain parenchyma or subarachnoid space as a result of rupture of arterial aneurysms [104; pp. 5-6].

Symptoms and stages of the clinical course of strokes [105; p. 17-18]:

1) 1–3 days — the acute period (treated in neuroresuscitation or intensive therapeutic units); 2) up to the 28th day — acute period (in departments specialized in the treatment of strokes or neurorehabilitation departments); 3) up to 6 months - early recovery period (ambulatory treatment, active rehabilitation and drug therapy); 4) Up to two years - late recovery period (ambulatory treatment, secondary prevention, recovery-oriented therapy); 5) After two years - the period of complications (ambulatory treatment, secondary prevention, drug treatment, prevention of the development of vascular dementia) [104; pp. 5-6].

International etiopathogenic classification of ischemic stroke TOAST and HP Adams et al. (1993): 1) atherothrombotic; 2) cardioembolic; 3) lacunar; 4) associated with other rare causes (vasculitis, hypercoagulation syndrome, coagulopathy , artery dissection, etc.); 5) the origin is uncertain.

Table 1.1.

Periods of strokes according to the clinical course

Time	Naming	Symptoms and nomenclature
0-3 hours 3-6 hours	Therapeutic window (1) Therapeutic window (2)	Neurological symptoms may not yet appear
up to 5 days	Acute period	Neurological symptoms are formed
up to 21 days	Acute period	Symptoms return or continue to develop
up to 6 months	Early recovery period	Various complications remain, which gradually recover
6-12 months	Late recovery period	Neurological functions continue to recover, but very slowly.
After 1 year	A time of trouble	Neurological functions are not restored or may be slightly restored.

Classification of pathogenetic types of ischemic stroke N.V. Ve re Shagin et al. (2000): 1) atherothrombotic (in 34 percent of cases) — arterio-arterial embolism (13 percent) cerebral vein thrombosis (21 percent); 2) cardioembolic (22 percent); 3) hemodynamic (15 percent); 4) lacunar (22 percent); 5) hemorheological stroke (7 percent) [104; 6-7 pp.].

Diabetic polyneuropathies - diabetes is one of the most common complications and is observed in almost half of the patients, which causes a delay in the adequate recovery and rehabilitation processes, as well as direct movement functions and balance disorders. Another complication of diabetes is autonomic-cardiac neuropathy, which leads to impairment of autonomic activity of various forms and levels, complicating the rehabilitation of various activities [70; pp. 85-87, 107; pp. 29-30]. Movement disorders are rarely observed. Polyneuropathies are common in the legs, and the distal part of the peripheral nerves is often affected.

Distal symmetric polyneuropathy is very characteristic of diabetes. In the distal part of the legs, dysesthesia, paresthesia and, in rare cases, pain appear. Movement disorders are manifested by distal muscle atrophy and hypotonia. Deep sensory disturbances and distal amyotrophies cause deformation of the foot joints, that is, diabetic arthropathies develop. These disorders cause "diabetic foot syndrome". [106; pp. 402-403].

The incidence and diagnostic criteria of diabetic polyneuropathy have been studied in various studies. According to the results of the study, DPN is observed in 90-100 percent of cases in the results of electroneuromyography. In up to 50 percent of patients, DPN can be asymptomatic (M. Davies), and in 10-20 percent of cases, it is accompanied by symptoms of the underlying disease. In patient complaints, pain is observed in 64 percent of patients, and "true" painful DPN is observed in only 19 percent of cases [109; pp. 97-98].

Based on clinical practices, the course of diabetic polyneuropathy can be divided into 3 main stages:

- Stage I symptomless (subclinical) polyneuropathy can be determined using a number of sensory and autonomic examinations or tests;

- II stage is manifested by signs of mild or clinically deepened polyneuropathy, manifested by characteristic subjective signs, reflexes and sensitivity reduction, etc. in the usual neurological examination;

- Stage III severe polyneuropathy, deep aggravating conditions are developed, in which complications such as sensory or sensorimotor deficits, autonomic disorders , severe pain syndrome and trophic ulcers, neuroarthropathy or diabetic heel are observed (limitation of functional capabilities and signs of disability) [110; pp. 54-61].

Diabetic polyneuropathy manifests itself in various clinical manifestations and remains one of the widespread medical-social and medical-economic problems of

neurology and endocrinology, causing loss of work capacity and shortening life expectancy [111; pp. 72-77].

Diabetic nephropathy (DN) is a kidney damage characteristic of DM, manifested in the form of nodular glomerulonephrosis as a result of metabolic and hemodynamic disorders, microcirculation disorders and under the influence of modulated genetic factors. Chronic kidney disease (CVD) is manifested by the occurrence of structural and functional changes in the healthy state of the kidneys for 3 months or more [108; pp. 78-79]. In the classic course of diabetic nephropathy, three stages are distinguished: stage of microalbuminuria (MAU); proteinuria stage (renal functions preserved) and chronic renal failure stage (SBE) [114. pp. 24-26]. Diabetic nephropathy is the leading cause of end-stage renal disease in developed countries. In diabetes mellitus, this pathological process in the kidneys develops in several stages, starting from diffuse changes to the development of nodular glomerulonephritis in 10-15 years. An early marker of DN is MAU. When DN is actively treated, remissions are observed in 40-50% of patients at the MAU stage for up to 2 years.

SFB - for determination, the amount of creatinine in the plasma is the measurement standard, and the assessment of clearance is carried out using a special formula CVD-EPI. Today, a number of calculators and formulas for calculating SFG have been developed, including the Cockroft-Gault formula. In the study, with the help of this formula, SFG is determined and the level of chronic kidney failure is evaluated. Physical activity at a light intensity, taking into account the activity of the cardiovascular system, the body's physical capabilities (age, risk of falls, decreased muscle size, anemia, peripheral and autonomic neuropathies), can be recommended for DM and SBK patients with a minimum duration of 30 minutes 5 times a week. It is necessary to take into account its nephrotoxic effect and elimination when prescribing drugs for arterial hypertension in patients with DM and SBK, and control of sodium and potassium levels is required [112; pp. 79-80].

Diabetic encephalopathies - MAT-related complications of DM have been widely studied in recent years. Although there is no generally accepted definition of diabetic encephalopathy (DE), dysfunction of MAT occurs in cases of strokes, brain tumors, ketoacidosis, and hypoglycemia. Cognitive impairment increases the risk of impaired hyperglycemia control, typical complications, development of disability, and risk to the patient's life. In elderly patients with DM type 2, marked cognitive impairment increases the mortality rate by 20% at 2 years [113; pp. 10-12]. In the NHANES III study, 3385 patients aged 30-59 years were assessed for cognitive impairment. In studies lasting 7 years, it was found that the combination of HD and DM increased the risk of developing dementia by 6 times. In a meta-analysis, 42 studies investigated the occurrence of depression in 21,351 patients with DM type I and DM type II. Accordingly, DM increased the risk of anxiety and depression by 40 percent [115; pp. 30-35].

In laboratory tests - according to the results of the Epic-Norfolk study, glycated hemoglobin (HbA1c), the average indicator of glycemia in the last 1-3 months, and its increase increases the risk of developing cardiovascular diseases and stroke sharply (≥ 7 percent). Violation of carbohydrate metabolism is observed in 70% of stroke patients, most of DM type II patients occur without an increase in glycemia, as evidenced by the HbA1c indicator, which is 30% of stroke patients . According to the results of the UKPDS study, the risk of developing a stroke is related to glycemia, reducing the amount of HbA1c by 1% reduces the risk of developing a stroke by 12%, microangiopathy by 35%, MI by 14%, and heart failure by 12%. A 1% increase in HbA1c increases the risk of developing MI by 10%, HbA1c increases the risk of 5.5% CHD and death from acute cerebrovascular accident [9; pp. 4-6].

In addition, the UKPDS (UK Prospective Diabetes Study) study confirmed the association of CVD with hyperglycemia. The relationship between the increase in HbA1c and the risk of developing KHD has been confirmed to be proportional. It has been proven that its 1% reduction reduces the risk of death by 21%, CI – by 14%,

microvascular complications – by 14%, and the risk of peripheral vascular damage – by 43% [117; pp. 954-955].

The incidence of CVD in patients with diabetes is 2-3 times higher in men and 3-5 times higher in women than in non-diabetics. It is known that in DM type II patients, CHD is 2-4 times more common, arterial hypertension is 3 times more common, and OMI is 4-7 times more common in patients without this disease. In 7-year clinical studies, the risk of developing MI was 3.5% in patients without a history of this disease, 20.2% of patients had no clinical manifestations of IUD, and 45% of cases had MI [117; pp. 954-955].

It is known that 50-70 percent of the patients with AG have carbohydrate metabolism disorders, obesity and lipid metabolism disorders. In the studies conducted by WHO (WHO Study of Vascular Disease in Diabetes) in diabetes, it was observed that the systolic blood pressure exceeding 160 mm.s.u. increases the mortality rate by 2-4 times. In the Whitehall study, systolic blood pressure was 152 mm s.u. and in cases above which the mortality rate has been found to increase dramatically. The UKPDS study provided decisive conclusions that there is a high correlation between the level of AP in DM type II blood glucose and macrovascular complications. The results of the analysis showed that AP control reduces the risk of developing strokes, microvascular complications and death. Every 10 mm.s.u. of average systolic AP. increased DM was observed to increase any complication by 12 percent, diabetes-related death by 15 percent, MI by 11 percent, and microvascular complications by 13 percent. The combined occurrence of DM and HD worsens the prognosis by aggravating both events: the risk of stroke is 4 times higher, the risk of developing a stroke is 2-3 times higher, the complete loss of vision is 10-20 times higher, SBE is 15-20 times higher [116; p. 112-113]. 40-50% of patients with DM older than 40 years have most cases of CVD. The course of UIC depends on the duration of DM, and the mortality rate of ACS was estimated to be 2-3 times higher.

Based on the results of the PROCAM study, an increase in the amount of fibrinogen in DM type II patients increases the risk of developing acute CVD by 1.6

times. (G. Assmann et al.). In the observations of Acang N, patients with complications of macroangiopathy have an average plasma fibrinogen level of 100 mg/dL (Kannel WB, Ganda O.). Kozek's research proves that there is a direct correlation between HbA1C and fibrinogen levels. Corrado and colleagues found a positive correlation between plasma fibrinogen levels and vascular intima in DM type II patients.

§ 1.3. Specificity of neuroimaging analysis of ischemic stroke formed on the background of diabetes

Today, DM requires special attention as it is considered equivalent to worsening the clinical course of type II cardiovascular diseases. In patients with DM, CVD is 2-5 times more common than in people without this pathology. Ischemic heart disease, myocardial infarction, arterial hypertension, acute blood circulation disorder in the brain are among them. Dyslipidemia is observed in 69 percent of patients with diabetes , arterial hypertension in 80 percent, diastolic dysfunction in 50-75 percent, and chronic heart failure in 12-22 percent. Complications related to arrhythmias in ECG examinations are particularly focused on: sinus tachycardia in DM II type 43.1% (without DM – 27.3%), paroxysmal atrial fibrillation increases the risk of death by 1.8–2 times, supraventricular extrasystole – 15.5% (9.1 percent). 74.2% of patients who developed ischemic stroke on the background of DM during ECG examination and 52.3% of patients without diabetes had HF, 29.6%/16.6% of previous myocardial infarction symptoms, 3.8%/1.7% of recurrent myocardial infarction and chronic heart Deficiency symptoms are detected in 28.2%/15.1% ratio. [23; pp. 60-65].

From neurovisual examinations, MSCT examinations first rule out signs of hemorrhage and provide information such as localization and density of the ischemic focus. Also, accurate information is obtained about the central structure of the brain, changes in the size of the cerebral ventricles, their width, compression, and the state of the skull. In the MSCT examination, the characteristic signs of dissociative encephalopathy are the diffuse damage of the white matter of the brain, the numerous

lacunar lesions (3-15 mm) located mainly in the periventricular area and the signs of secondary brain atrophy due to the damage of small arteries.

The advantage of MRI examination over CT examination is that it is possible to obtain complete information about the state of brain tissue. In the MRI examination, it is possible to determine from the first hours of the development of a cerebral infarction, and it also provides information about brain arteriovenous malformations. In the studies, the pathogenetic types of ischemic stroke in the MRT examination were atherothrombotic type 58.1%/48.1%, cardioembolic type 20.0%/20.1%, hemodynamic type 7.6%/13%, and lacunar stroke 14, when developing on the background of diabetes and without diabetes. 3 percent/18 percent were identified in different figures. In MSCT examinations, foci size is small in 35 %/50%, medium-sized foci in 44.8%/40.8%, and large-sized foci in 20%/9.2%, and it is determined that cerebral edema develops at high rates in ischemic strokes accompanied by diabetes. [49; pp. 36-38].

Duplex scanning of brachiocephalic arteries in patients with ischemic stroke caused by diabetes mellitus type II, when studying the KIM changes in brachiocephalic arteries in the common carotid artery, in more than half of the patients, an increase in the echogenicity of equivalent changes characteristic of atherosclerosis, a decrease in the level of differentiation of the layers of the vascular walls were studied. (Yuldasheva GB2021) . The development of macroangiopathies of type II diabetes mellitus lays the groundwork for the development of cerebrovascular diseases, depending on the duration of the disease, the degree of disturbance of carbohydrate metabolism, and the compensatory capabilities of the body. The degree of stenosis was observed at the initial diagnosis of the disease in a low level and was observed mainly unilaterally, but in patients with a history of 10-15 years, bilateral stenosis of the main arteries is observed with severe degrees and occlusions and is expressed with significant hemodynamic disturbances. [10; pp. 23-24].

§ 1.4. Modern methods of treatment and early rehabilitation of diabetic patients with ischemic stroke

Early Rehabilitation After Stroke: (a Narrative Review, Elisheva R. Coleman, Rohitha Moudgal, Kathryn Lang, Hyacinth I. Hyacinth, Oluwole O. Awosika, Brett M. Kissela, and Wuwei Feng), based on research evidence, early rehabilitation after stroke the time is still unknown. In the first 24 hours after the onset of a stroke, the use of intensive rehabilitation measures can seriously harm the patient's health, after 24 hours, careful rehabilitation measures have been determined to be effective and safe . In the early stages, regeneration is relatively effective in upper limbs [141; 63-65 p.].

B. Izzekii and his colleagues proved that 3 hours after the patients were transferred to the immobilization position, calcium excretion from the bones increases, which in turn causes changes in the bones. Nowadays, in the clinics of western countries, they are trying to transfer the patients to the vertical position, even if they are in a coma. [12; p. 64].

In the second half of the 20th century, a large number of research studies were conducted on the development of complications such as pneumonia, deep vein thrombosis, and pulmonary artery thrombosis, showing the harmful aspects of bed rest. Also, in the results of the research of Asberg KH, inadequate reactions to changes in body conditions were observed after several days of strict bed rest, especially in patients with cardiovascular diseases.

In recent years, even if no serious pathologies are observed when kept in bed mode, it has been observed that it causes a number of changes in the body. When healthy volunteers were on bed rest, a 40 percent decrease in muscle strength was observed in 28 days, especially in older adults, in the lower limbs. When kept in bed for 4-6 weeks, atrophy of muscles involved in maintaining vertical posture, disturbance of gravity regulation, and 6-40 percent decrease in bone mineral hardness were observed [132; pp. 29-30].

Complications caused by restriction of movement in strokes make up 62% of the total complications in the first week of the disease, 51% of deaths observed

within 30 days. In several scientific researches, prevention of these complications by means of early mobilization is envisaged. Phase II of the AVERT (A Very Early Rehabilitation Trial for Stroke) study will investigate the implementation of step-wise and safe early mobilization from 24 hours after the onset of the disease [132; pp. 29-30].

Various studies have shown that early rehabilitation plays an important role in the prevention of many organ system complications associated with inactivity, such as respiratory (pneumonia, atelectasis), circulatory disorders (deep vein thrombosis, pulmonary embolism), immunosuppression, bedsores, and muscle atrophy. there are different opinions. There are opinions about the activation of regeneration processes to reduce the risk of depression, prevent stroke-related complications [143; p. 2-3].

The rehabilitation process is one of the most urgent problems, and the sooner the rehabilitation process is started, the higher its effectiveness. 55-98% of patients with circulatory failure are kept in intensive care and intensive care units for more than 48 hours [66; p. 1-6].

Immobilization syndrome (IS) is the most problematic event in the rehabilitation process. 65-80 percent of patients with acute circulatory disorders in the brain need immobilization syndrome. This explains the relevance of the problem and shows the relevance of methodological support measures to combat it.

IS is a limitation of motor and cognitive activity of the patient as a result of complex polyorgan disorders and a set of non-physiological organic disorders. In this case, there is a violation of the above symptom complexes, in particular, heart failure, orthostatic failure (OSE) and gravity gradient (GG) [66; p. 1-6].

Orthostatic insufficiency (OSE) is a complex symptom complex of autonomic vascular insufficiency, characterized by a systolic blood pressure of 20 mm.s.u. decrease from and diastolic blood pressure by 10 mm.s.u. It is manifested by the following autonomic dysautonomia with a decrease from:

- Cerebral hypoperfusion: dizziness, visual impairment, cognitive impairment, memory impairment, inability to stand;
- Dyspnea;
- Tachycardia, >90 beats per minute;
- Increased sweating;
- Painful muscle spasms;
- Oliguria, decreased urination;

Gravitational gradient (GG) is the relationship of different states of the body in different gravity fields of the earth, the ability to maintain vital aspects, especially complex reflex seriotype.

The only way to overcome immobilization syndrome is to achieve verticalization of the patient while maintaining the gravity gradient. Verticalization is a treatment strategy for maintaining a normal position, the functioning of the body in a natural upright position, prevention and treatment of immobilization syndrome in patients in any case.

The goal of verticalization is to maintain or restore the maximum value of gravitation $(\geq 80)^{o}$, the mandatory conditions for the patient's work for any length of gravity are the implementation of the rehabilitation process.

The aim of this clinical study for professionals is to investigate, implement and evaluate the effectiveness of interventions to assist in the preparation and verticalization of patients at risk of developing immobilization syndrome in early activation after stroke [66; pp. 1-17].

Verticalization is a method of prevention and treatment of patients with immobilization syndrome. It is a method of restoring the maximum level of activity (gravity gradient) regardless of the patient's movement activity and spasms after keeping the patient in bed for 24 hours in acute brain blood circulation failure caused by various reasons [66; pp. 1-17].

Gravity or gradient i (GG) - maximum achieved without developing orthostatic deficit verticalization or angle.

PLR (passive leg raising) test is a test for assessing the volumic condition by passively raising the lower limbs: the legs are brought closer to the body at an angle of not less than 60 ° while the patient is lying with the spine horizontal. Hemodynamic indicators are returned (AD, pulse). The test is positive when the AD or pulse exceeds 10 percent. In this case, verticalization - volume failure may develop and lead to acute heart failure. After correction, hypovolemia test is repeated again. When a negative result is obtained, the patient can start verticalization.

BPS (Behavioral pain scale) - scale of behavior of pain - a scale for assessing the level of pain based on a number of patient-specific reactions. Before the verticalization procedure, the pain level is assessed on the basis of the Visual Analogue Scale (VASh), because the increase in the pain level in the patients can cause unconsciousness [66; pp. 1-17].

Verticalization technologies - active verticalization is carried out on a 3-section bed or rotary verticalization table with the help of assistants and specially trained specialists under the supervision of a reanimatologist. Active-inactive hardware verticalization consists of verticalizations performed by specially trained specialists under the supervision of assistants using a verticalizer. [66; p. 1-17]

During the acute period of ischemic strokes, changes in the mental state of patients and methods of psychotherapeutic rehabilitation - stroke has a negative psychosocial effect on the patient, causing a sharp change in lifestyle and environmental control. In 75-80% of cases, patients who survive a stroke lose their full working capacity, and only 13% of cases continue their previous work. Studies show that the mental state of post-stroke patients depends on the level of cognitive function impairment and the ability to recover impaired functions ; emotional and personal problems complicate the adaptation process. Targeted use of psychotherapeutic opportunities is effectively implemented with the formation of a psychological support program. [5. pp. 114-118].

According to the results of the research, the effect of the disease on the mental state of the patient is reflected in four forms: 1) related to sensitivity: pain in the

arms, legs, back and head (53 percent); 2) emotional - depressed mood (62 percent), fear (47 percent), worry about the future (89 percent), a feeling of regret for a sudden change in lifestyle (75 percent), a feeling of guilt in front of relatives (52 percent); 3) intellectual - lack of information about various levels of cognitive disorders, stroke and rehabilitation possibilities (79 percent), fears, thinking that the disease is "the last judgment" (69 percent); 4) motivational - disorders such as motivational disorder, anosognosia or hyponosognosia (47 percent), refusal to follow the doctor's recommendations, including refusal of rehabilitation measures (61 percent) are reflected in the psyche of patients, significantly complicating treatment and rehabilitation measures. [84; p. 3-4].

A.A. Shmonin says that carrying out the rehabilitation process together with psychological support reduces the level of anxiety and negative psychoemotional states. V.A. According to Kutashova and E.E. Minkov's research, various psychological characteristics can be observed in patients during the rehabilitation period: pessimism about their future, lack of self-confidence, inability to adequately assess their own capabilities, perception of their place in life as inactive, sadness at failure in the spotlight, feeling of guilt. increase etc. The main need to feel understanding, affection, kindness usually does not satisfy the patient, various actions take place in the psychotraumatic area. Various affective disorders reduce the quality of life of stroke patients, slow down the effect and effectiveness of medical treatments , and increase the risk of stroke recurrence . S.A. Mikhaevich, A.A. Skoromets showed a number of factors that slow down the recovery process in the acute and late period of stroke. Such factors include high levels of personality and situational anxiety, unresolved internal problems, lack of positive psychological background and family support [49; p. 1-4].

In psychological support, the social concept of "microsociety" was created, which is a socially oriented rehabilitation (relatives, medical staff and surrounding patients) and treatment environment (milieu therapy) with which the patient often interacts. Another important aspect of psychological measures is the establishment of psychological relationships in rehabilitation, optimal treatment of the patient

(confidence in the effectiveness of treatment results, cooperation with medical personnel, active participation in treatment measures and adherence to healthy lifestyle norms) and secondary prevention of stroke.

The conditions of the concept of psychological rehabilitation provide the basis for the creation of a permanent program of basic scientific and methodological psychological activities.

Principles of psychological rehabilitation:

1. The process of rehabilitation is to create psychological support programs and the individual is in the leading position: identifying personality problems and correcting them at each stage of rehabilitation.

2. Individuality - taking into account the patient's individual aspects (somatic, movement, cognitive, emotional, personality) when creating a personal psychological rehabilitation program.

3. Staged psychological rehabilitation. The stages of psychological rehabilitation reflect the dynamics of the patient's personality (to himself, to the illness and treatment, to micro and macro society) after the disease. Personal relationships at each stage: self-acceptance and self-help: formation of adherence to the treatment regimen and cooperation with medical personnel ; such as accepting a new social role and essence in life is evaluated.

4. Providing information (informing) - the patient fulfills the conditions of psychological rehabilitation, increasing the effectiveness of treatment: concern about the result of treatment; cooperation with medical personnel; activity in independent training; plays an important role in the formation and practice of healthy lifestyle skills.

5. Continuity. Continuation without interruptions at different stages of psychological care (acute inpatient, rehabilitation inpatient and outpatient rehabilitation) [5; pp. 114-118].

The method of positive psychotherapy is based on three principles, each of which corresponds to a certain methodological component:

1. The principle of hope corresponds to a positive approach to seeing human abilities and possibilities.

2. The principle of balance corresponds to a meaningful differential analysis of the psychodynamics of a person, the result of which is the harmonization of the primary and secondary real abilities of a person.

3. The principle of self-help is used first in the process of psychotherapy, and then as a strategy to harmonize, adapt and develop a person to himself and the environment: his partner, his family, his organization, team, etc. [118; pp. 16-19].

Providing psychological support to post-stroke patients is important in recovery of damaged functions, adaptation of patients to the environment and prevention of stroke recurrence. Establishing a psychotherapeutic direction, creating a positive treatment environment plays an important role in increasing the patient's personal responsibility for the patient's life prospects and treatment results [5. pp. 114-118].

Physiotherapy procedures in the early rehabilitation of ischemic strokes - the main task of physiotherapeutic procedures in the post-stroke period is to stimulate, preserve and improve brain compensatory mechanisms, improve blood and lymph flow in the brain, improve tissue nutrition and prevent secondary complications. Physiotherapy treatments are directed in two directions: pathogenetic, improving blood circulation in the brain and symptomatic, aimed at eliminating clinical symptoms .

Pathogenetic physiotherapy: Electrophoresis, magnetic fields

Symptomatic physiotherapy: Paraffin or ozokerite applications in the form of gloves and socks, permanent magnetic fields.

Pain reduction: Diadynamic or sinusoidal - modulated current, darsonval, ultraphonophoresis, electrostimulation.

Recovery of damaged functions usually begins on the first day after the onset of a cerebral stroke and can last from several months to several years. Early initiation of rehabilitation measures is considered to be most effective during the first 3 months after the onset of cerebral stroke. It should be noted that the medical procedures are

effective only in 80% of patients, spontaneous recovery is observed in 10% of patients, and in 10% of patients, all treatment measures are ineffective.

According to the Helsingborg Declaration adopted in 2006. (In 2015, systematic rehabilitation measures were completed) more than 70 percent of stroke patients have deficits of vital functions. According to the description of the World Health Organization, rehabilitation "must be goal-directed and time-limited", the attitude to the patient, initially the patient's personality, physical, mental and professional level readaptation should be provided [27; pp. 19-20]. There is information about the positive effect of electrosleep on the psychological and neurological status of patients who have had a cerebral stroke. We know that low frequencies (5-20 Hz) have an inhibitory effect on the brain, while high frequencies (40-100 Hz) have an excitatory effect. It is advisable to use pulses with a frequency of 10 Hz for the treatment of stroke and its complications. Impulse currents of this frequency have a sedative, hypotensive, hypolipidemic and antioxidant effect.

Among the modern methods of transcerebral physiotherapy, magnetotherapy is promising. Magnetic fields with different properties are used for therapeutic purposes - permanent magnetic field (DMM), pulsed magnetic field (IMM), low-frequency alternating magnetic field (OMF), pulsating magnetic field. The high efficiency of alternating and pulsed magnetic fields compared to constant ones is noted, which is due to their compatibility with rhythmic processes in the body and lack of adaptation to pulse effects [121; pp. 2-9].

Today, about 3,000 randomized clinical studies, including more than 300 meta-analyses, have been conducted on electrostimulation, magnetotherapy, exposure to ultraviolet rays, laser therapy, acupuncture, ultrasound, and physiotherapeutic procedures [121; pp. 2-9].

Magnetotherapy - as a result of the use of magnetic fields in the treatment, improvement of microcirculation, pain relief and sedative effect are observed, and it puts less stress on the central blood circulation and the heart compared to other physiotherapeutic procedures. For this reason, low-frequency magnetic fields are widely recommended for patients with many cardiovascular diseases. Despite the

fact that a large number of studies are conducted in the field of magnetotherapy, the level of evidence of the method is considered insufficient today.

As a result of the use of physiotherapeutic methods, it is possible to increase muscle tone and prevent the development of contractures, prevent the development of infections in the chest organs, recover several types of swallowing disorders, and reduce the length of hospitalization. Several methods of physiotherapy (NMES, FES, TES and TMS) have been proven highly effective in stroke [122; pp. 27-34].

In the early rehabilitation of ischemic strokes, therapeutic exercises are used - in the early rehabilitation process, therapeutic massage, passive exercises, relaxing active exercises, exercises on the formation of self-service are used. Exercises that require the application of strictly controlled dose of stress should not be allowed to cause the patient to become fatigued. The amplitude of movements is small at first, and then gradually increases. During the exercises, breathing should be smooth, breath holding and straining should be avoided.

Massage is recommended for 4-6 days after the acute state of the brain subsides, first for 5-7 minutes, then it can be extended to 10 minutes. The massage is carried out first by stroking, and then by light massaging. The hair part of the head and the collar zone, paretic limbs are massaged at a slow pace while the patient is sitting, the duration of the treatment is up to 15 minutes. Light stroking, crushing, and continuous vibration methods are mainly used. Massage of the collar zone is alternated with massage of the back, the course of treatment is 20 treatments. Contraindications: acute infectious and mental diseases, blood diseases in the acute period, malignant tumors, dysfunction of pelvic organs, depression [123; pp. 414-416]. Recommending physical activity respiratory gymnastics for 30-60 minutes of moderate intensity ≥ 5 days a week in patients with IUD and DM reduces the risk of developing cardiovascular complications. A combination of aerobic exercise and static loading helps to increase insulin activity, AP and control glycemia. Weight training helps maintain muscle strength and mass. Increasing the desired type of physical activity is considered beneficial for the body. Irregular leisure-time physical activity in patients with CVD reduces the risk of death compared to sedentary

individuals [108; pp. 91-92]. A blood glucose level >13 mmol/L is a temporary contraindication for physical activity. [130; 389-390-b].

55% of stroke patients can walk independently after one month, and after 2 months this figure reaches 79%. But after half a year, 53% of patients have persistent movement disorders.

In stroke patients with mild hemiparesis preserved due to a small lesion in the brain, physical therapy can be started on the 2nd day in emergency neurology departments. Targeted complex passive, active-passive and active physical exercises are recommended to restore the damaged movement activity. Physical exercise rehabilitation in case of severe hemiplegia and a large lesion in the brain is carried out in the form of passive and antispastic exercises according to the patient's condition. Differentiated physical exercises are determined according to the degree of damage and localization of the focus, and play an important role in the recovery of movement, normalization of muscle tone, and formation of the patient's self-service ability.

8-12 procedures are performed in therapeutic exercises used in cases of hemiparesis in the acute period of stroke [124; pp. 248-249]. In the acute period of stroke, the patient's position and passive movements can be recommended from the first day. In the course of treatment, the position of the patient is important, the muscles prone to spastic contracture should be stretched as much as possible and the points of attachment of their antagonists should be in a close position. Discomfort, pain and other complaints are transferred to another position. During the treatment, it is prescribed to change the patient's position every 1.5-2 hours. Therapeutic exercises Passive therapeutic exercises on the paralyzed side, especially with the help of an instructor, will relieve the condition. Activities such as active exercises, relaxation exercises, breathing exercises, and changing the body position in bed mode are also performed with separate parts of the healthy and affected arms and legs .

Ischemic stroke is a disease that poses a serious threat to human health, and in most cases it causes disability due to a number of restrictions on movement.

Neurological deficits caused by a stroke: movement, sensation, speech, swallowing, cognitive and psychoemotional disturbances, resulting in changes in a person's lifestyle, work activity and social relations.

Diabetes mellitus is a disease that is widespread today and has a negative impact on human health, life and work, with complications such as diabetic retinopathy, diabetic nephropathy, and diabetic polyneuropathy, which occur as a result of hyperglycemia. Also, diabetic macroangiopic complications cause changes in the blood vessels of the brain, heart, kidneys and limbs.

When ischemic stroke is accompanied by diabetes, stroke is complicated by diabetes and its complications. Changes in the cardiovascular system, central and peripheral neuropathies caused by diabetes complicate the diagnosis, treatment and rehabilitation process of the disease from the first hours after a stroke is observed, and cause a significant decrease in recovery indicators.

Based on the information presented above, early initiation of rehabilitation measures, conducting them in a comprehensive manner and continuing step by step are the main principles of early rehabilitation. Ischemic stroke patients need immobilization syndrome, and limiting any physical and mental loads in the first hours of the onset of the disease improves the prognosis of the disease, while in the early stages of treatment, moving the patient's body to a vertical position after 24-48 hours is important in improving the prognosis of the disease.

From the first days of a stroke, the patient's lack of confidence in recovery, many thoughts such as anxiety and despair about the future, depression of the patient's mood and lack of confidence in recovery reduce the effectiveness of treatment. Psychological rehabilitation of stroke patients increases their confidence in recovery and provides upliftment of mood. Because as our great ancestor Abu Ali ibn Sina said, "You cannot heal the body without healing the soul."

Physiotherapy and therapeutic exercises play an important role in the recovery of damaged functions, movement recovery, normalization of muscle tone, reduction of secondary complications, formation of patient self-service and work ability. When an ischemic stroke occurs against the background of diabetes mellitus, there

are no contraindications in both pathologies, and the selection of individual appropriate rehabilitation measures, their use as early as possible, and their implementation in a complex manner play an important role in the recovery of patients. Diabetes and its complications are one of the main factors that cause delay in the initiation of rehabilitation activities and reduce their effectiveness.

CHAPTER II . CLINICAL DESCRIPTION AND RESEARCH METHODS OF PATIENTS WITH ISCHEMIC STROKE FORMED ON THE BACKGROUND OF DIABETES

§2.1. Clinical description of examined patients

In 2020-2021, the results of examination and analysis of 190 patients who were admitted and treated with the diagnosis of acute cerebral blood circulation disorder, ischemic type in the Bukhara branch of the Republican Emergency Medical Research Center, emergency neurology departments, in order to solve the scientific goals and tasks provided for in the research work, were presented. .

Table 2.1.

Distribution of patients depending on age and gender and anthropometric parameters

Indicator	Main group (n=80)		Control group (n=70)		Comparison guru hi (n=40)	
	n	M±m	n	M±m	n	M±m
Treatment days		7.4 ±0.28		7.3 ±0.29		8.1 ±0.26
Age		62.3±0.7		61, 2 ±0.83		65, 1 ±1.3
Women	38	47.5±5.58	20	28.6±7.14	15	28.6±7.65
Men	42	52.5 ±5.58	50	71.4±7.14	25	71.4±7.65
Height		170, 2 ±0.64		169.9±0.63		169.9±0.97
Weight		84.7±1.23		83.04±1.06		83.04±1.72
Weight index		29.3±0.51		28.8±0.38		28.8±0.66

Patients with ischemic stroke on the background of diabetes, group I (main) consisted of 80 patients, the ratio of women to men was 1:1.1, and the average age was 62.3±6.2, and group II (control) had diabetes in the anamnesis and examinations. 70 unspecified patients with a gender ratio of 1:2.5 with a predominance of men and an average age of 61.2±6.9 years, early rehabilitation measures were carried out in this group of patients. Group III (comparison group) consisted of 40 patients with a gender ratio of 1:1.7, male predominance, average age 65.1±10.3, ischemic stroke

against the background of diabetes, but early rehabilitation measures were not carried out.

The study was conducted in the subacute and acute period of ischemic stroke. Consciousness is at the level of unconsciousness and coma, body temperature is higher than 37.2 °C, systolic blood pressure is higher than 160 mm/Hg, diastolic blood pressure is higher than 100 mm/Hg, severe heart failure, pulmonary artery thromboembolism, myocardial infarction. patients in the acute period, severe heart rhythm disorders, 4-5 stages of diabetic nephropathy were not included in the study.

Also, patients with brain injuries, epilepsy, infectious, demyelinating, chronic degenerative, hereditary degenerative diseases and somatic pathology of the central nervous system were not included in the study.

Examination methods included clinical and neurological tests: neurostatus, NIHSS scale, Barthel scale, Rivermead mobility index, Taylor scale and MRS scale. Practice verticalization PLR and BPS based on the results of the tests. Among the laboratory methods: general analysis of blood and urine, coagulogram, glycated hemoglobin test, blood glucose, urea and creatinine levels were checked.

Instrumental research includes methods such as electrocardiography (ECG), ultrasound dopplerography of brachiocephalic vessels of the brain (BCV UTDG), angiography examination of cerebral blood vessels (CBV), magnetic resonance imaging (MRT), multispiral computer tomography (MSKT).

§2.2. Methods of scientific research

2.2.1. Description of clinical, instrumental-neurovisualization methods

During the study, neurological scales were used to assess the clinical and neurological condition of patients, study the effectiveness of treatment and early rehabilitation measures. With the help of these scales, the clinical neurological condition of the patients was determined on the 1-2 days of the study, and the dynamic changes were studied and analyzed on the 7-10 days, 21-24 days and 57-60 days.

NIHSS scale - The NIHSS (National Institute of Health Stroke Scale) scale is widely used to objectively assess the level of clinical symptoms in cerebral strokes. With the help of this scale, the state of consciousness, vision, motor and sensory system, coordination disorders, gnosis and speech functions of the stroke patient is evaluated. This scale is widely and effectively used due to its convenience in assessing neurological deficits after stroke and their dynamic changes during treatment. The rating is from 0 to 4 points, and the increase in the sum of points determines the severity of clinical symptoms. The lower the sum of points, the better the patient's condition, the higher the score, the worse.

Scoring:

0- satisfactory condition;

3-8 - mild neurological disorders;

9-12 - moderate neurological disorders;

13-15 - severe neurological disorders;

16-34 - severe neurological disorder or coma.

Depending on the sum of points, the prognosis of the disease can also be estimated. If the sum of points is less than 10, the prognosis is good, if it is more than 20, the prognosis is considered bad [105; 174-175-b]. Using the NIHSS scale, the status of patients in the main group, n=70 in the control group, and n=40 in the comparison group was assessed before and after early rehabilitation.

Barthel Scale - Activities of Daily Living Index (BI) Barthel Scale is used to assess the level of performance of essential vital functions in daily life. The scale has been used since it was proposed by Dorothea Barthel in 1955 . The high reliability of the test (test-retest, inter-rating), as well as its sensitivity, have been studied and proven: score dynamics. A score of 4 or more (with a maximum score of 20 points) can be considered significant, while a change of less than 4 points is due to measurement error. The Barthel Index includes 10 items related to self-care and mobility. Assessment of the level of daily activity is carried out with the sum of the points determined by the patient for each section of the test. The scale reflects

the actual condition of the patient 24-48 hours ago. Early use of the scale is convenient both for determining baseline patient activity and for use and monitoring to determine effectiveness of care.

Evaluation criteria:

0-45 points indicate severe disability, severe limitation of activities or their complete impairment;

50-70 points - moderate level of disability, indicating moderate limitation of activity;

75-100 points - indicates that activity is mildly limited or preserved. [125; pp. 176-178].

In the study, the Barthel scale was used extensively to assess changes in activities of daily living in all patients in the main and control groups before and after the study.

Rivermead Mobility Index - on the (Rivermead mobility index) scale, depending on the patient's response, each section is evaluated with one point: 0 points - the patient cannot independently perform any purposeful movement, 15 points - the patient can perform any movement (FMCollen et al., 1991; D. Wade , 1992).

The main group of patients with ischemic stroke on the background of diabetes and ischemic stroke were observed using the Rivermid mobility index, and the indicators related to motor activity were evaluated at the beginning of the study and after the study in all patients of the control group without diabetes.

The Taylor scale is a scale for assessing anxiety, and the scale consists of 50 statements. Each question must be answered with "Yes" or "No". The statements are based on the Minnesota Multidimensional Questionnaire (MMPI).

Survey results: 1 point is awarded:

- If the answer is "Yes": 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 , 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50
- If the answer is "No": 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

Analysis of results:

40 to 50 points — Very high level of anxiety.

25 to 40 points — High level of anxiety.

15 to 25 points — Moderately high anxiety.

5 to 15 points — Moderately low anxiety.

0 to 5 points — Low anxiety.

Using the Taylor scale, the condition of patients in the main group (n=80) and control groups (n=70) was assessed before and after psychological rehabilitation, and in the comparison group (n=40). Depending on the age, gender, education and mental state of the patients, psychological rehabilitation activities were carried out in the methods of rational psychotherapy, emotional psychotherapy and psychological conversation.

PLR (passive leg raising) test is a test to assess the volumic condition by passively raising the lower limbs: in this, the legs are brought closer to the body at an angle of not less than 60^{o} with the patient lying with the spine horizontal. Hemodynamic indicators are returned (AP, pulse, central venous pressure-when there is a venous catheter). Test AP or when the pulse exceeds 10 percent or the central venous pressure is 2 mm Hg. is considered positive when it exceeds In this case, orthostatic and volemic failure may develop in verticalization and lead to acute heart failure. After correction, hypovolemia test is repeated again. When a negative result is obtained, the patient can start verticalization. PLR test was performed before the verticilization procedure in both groups of patients, and in cases where a negative result was observed, the procedure was continued; and when a positive result was observed, the patient continued the treatment for 24 hours, and the PLR test was performed again.

BPS (Behavioral pain scale) – pain level assessment scale – pain level assessment scale was conducted on the basis of several patient-specific reactions. Before the verticalization procedure, the pain level of the patients is assessed on the basis of the Visual-Analog Scale (VASh), in some patients, the increase in the pain level can cause unconsciousness. Rating 0 points no pain at all, 10 points unbearable pain.

Using the BPS scale, the patient's condition was evaluated before starting verticalization practice and therapeutic exercises, and early rehabilitation measures were continued only in case of a negative result.

Medical Research Committee Scale (MRS).

MRS is a rehabilitation scale that is useful for assessing the level of muscle strength and motor function recovery regularly during rehabilitation activities. In each joint, muscle strength is assessed separately in the proximal and distal parts.

Guidelines for assessment

Ball muscle strength

0 No movement

1 Palpation has muscle contractions, no movement is visible

2 There is some weak movement

3 The power is noticeable in motion

4 There is strength of movement, weakness is felt in relation to the opposite side

5 Normal muscle strength.

MRS - rehabilitation scale was used to evaluate the changes in the condition of patients before the daily passive healing exercises were performed, the results of the MRS scale for 1-2 days, 7-10 days, 21-24 days and 57-60 days were presented in the research results.

Magnetic resonance imaging of the brain examination - Magnetic field induction was 1.5 Tesla - magnetic induction magnitude of 0.5 T by Siemens Magnetom Avanto 1.5T MRT apparatus in a standard way (T1 and T2 order, sagittal, axial and frontal section density, section thickness 1-10 mm) was carried out for the

purpose of visual assessment of the state of the brain substance. Brain MRI was performed in 7 patients in the main group and 8 in the control group with ischemic stroke, and it was performed when there was suspicion of an acunar stroke or a brainstem stroke.

Multispiral computed tomography of the brain - Patients underwent MSCT at admission and again at 5-8 days of treatment. MSCT examination was carried out in the reception diagnostic department of Bukhara branch using MSKT GE – REVLUTION EVO (64 sections) General Electric (GE Healthcare) in the USA, developed in 2019. The diagnosis of hemorrhagic stroke was ruled out in the MSCT examination, and information was obtained about the localization and density of the ischemic focus. MSCT was performed in 73 patients in the main group and 62 in the control group and 40 in the comparison group. In the main group, where ischemic stroke was detected in the MSCT examination, n=43 lesion size was 2.76±0.22 cm^2, n=32 density was 20.0±3.82 ED, in the control group the size of the lesion was 2.98±2.59 cm^2, density was 20 is 19±3.77 ED.

Ultrasound brachiocephalic arteries duplex scanning and angiography - Brachiocephalic arteries UTDS and angiography examination methods brain extracranial and intracranial brain and neck vessels duplex scan (DS) simultaneously Sono Scape, SSI 5000, dachchik L-741, 5.5-10 mHz, dachchik, noubekc 3.5 mHz, sector phased sensor 2P1, 4-2 mHz Made in China, 2019, passed through hardware. The study was conducted in the reception diagnostic department of the Bukhara branch of Republican scientific center of emergency medical care. This is a non-invasive examination method, which was used to study the condition of the carotid artery and brachiocephalic trunk, to obtain information about their structure, and to assess the blood flow in the patients being examined in the comparison group. With the help of UTDS, it was possible to diagnose the speed of blood flow in the central large blood vessels of the brain, blood vessel diameter, CIM, degree of stenosis process, vessel twists, and detectable angiospasms. Decreased permeability of brachiocephalic arteries, incidence associated with diabetes, effect on effectiveness of treatment and early rehabilitation measures and correlation were studied.

Cerebral blood vessel angiography examination was carried out using EOP-Brivo "S" shaped arc OES-785 (China), manufactured in 2019. In the main group (n=23), it was 28.75±9.44 percent, and in the control group (n=12), it was 17.1±10.88 percent.

Table 2.2.

Degrees of stenosis of arteries supplying blood to the brain

Degrees of stenosis	Percent
Light	0-29
Medium level	30-50
Heavy	50-69
Critical	70-99
Occlusion	100

Degrees of stenosis of large arteries supplying blood to the brain (according to NASET and ECST classification, 1991) [105; p. 159-160]. Brachiocephalic arteries were examined by duplex scanning in the main group (n=49), 61.25±6.96 percent, and in the control group (n=57), 81.4±5.15 patients.

When the degree of brachiocephalic artery stenosis was examined by ultrasound duplex scanning and angiography methods, stenosis of the common carotid artery was observed in the main group in 51.2% of patients on the right side, on average 19.8±2.6%, on the left side in 47.5% of cases, 13.7±2, It was 0 percent, and in the control group, it was observed in 87.1 percent of cases, the right side was observed in 17.15 ± 2.6 percent on average, and left side was observed in 74.3 percent, and it was 11.19 ± 2.4 percent on average. In both groups, it can be observed that the stenosis is mainly located in the common carotid arteries.

Stenosis of the major arteries supplying blood to the brain was observed in 59.7% mild, 29.2% moderate, and 11.1% severe cases in the main group, and 56.5% mild, 26.1% moderate, and 15.9% severe in the control group. and 1.4 percent had cases of critical stenosis.

Electrocardiography

The ECG examination was performed primarily for the immediate detection of myocardial infarction and arrhythmias, and it is important to perform an ECG examination before all urgent therapeutic procedures. Therefore, 100% of all patients had an ECG examination. According to the obtained results, the number of heartbeats in the main group was 82.4 ±2.3, minimum 45, maximum 140 beats per minute and in the control group 81.9±1.87, minimum 55, maximum 137 . Cardiac dystrophy on ECG is 100 percent, CG 92.9 ±3.19 percent in patients, left ventricular hypertrophy MG 95±2.5 percent, CG 78.6±5.53 percent, sinus tachycardia MG 20±10.0 percent, CG 15.7±10.9 percent, sinus bradycardia MG 2.5± 11.0 percent, CG 1.4±11.9 percent, ischemic heart disease BG 1.25±11.1 percent, not detected in CG, post-infarction cardiosclerosis PIKS MG 13.7±10.4 percent, CG 7.1 ±11.5 percent, heart rhythm disorder MG 5±10.9 percent, CG 8.6±11.4 percent and chronic heart failure MG 1.25±11.1 percent and not detected in the control group.

§2.2.2 . Description of laboratory test methods

General blood analysis - was analyzed at the beginning of the study, that is, when the patient was admitted and when the patient was discharged from the ward. In the general blood analysis, the number of erythrocytes, leukocytes and platelets, hemoglobin content in erythrocytes was determined. Evaluation of these indicators is important to determine the possible causes of vascular insufficiency. A decrease in the number of erythrocytes and the amount of hemoglobin (anemia) can be caused by cerebral ischemia as a complication of acute bleeding. Changes in the amount of leukocytes in acute inflammatory diseases in the body, in most cases, leukocytosis is an indicator of competing diseases and indicates the need for additional examinations and treatment measures, as well as concomitant diseases complicate the treatment and rehabilitation process. An increase in the erythrocyte sedimentation rate (EChT) can indicate inflammatory processes in the body, including inflammatory changes in the walls of blood vessels (arteritis), which can play an important role in the development of acute circulatory failure. In the study,

the appratat Mini Screen P, blood-forming elements PrimioStar, ZEIZZ microscope for hemoglobin testing were examined in all patients within the first 3 hours after admission and 5-10 days of treatment.

General urinalysis - the study of various properties of urine (color, density, protein content, bilirubin, glucose) allows to determine the symptoms of inflammation in the organs of the urinary system. Glucose and ketone bodies can appear in the urine in diabetes, and the level of protein in the urine can increase due to arterial hypertension. These diseases are important risk factors for stroke. Also, proteinuria is an important indicator in diagnosing and determining the level of diabetic nephropathy [126; pp. 77-78]. At the beginning and at the end of the study, the results of a general urinalysis were given in all groups of patients, this analysis was performed several times in the dynamics of patients who were treated in the neuroresuscitation department and pathological changes in urine were observed.

Blood biochemical analysis - Blood glucose is the main factor in the diagnosis of diabetes. Dynamic determination of blood glucose is important in the treatment and early rehabilitation of patients with a history of diabetes. During the study, the blood sugar level in the main group and comparison group patients was analyzed daily and intermittently, and in the control group for 1-24 hours on the day of the patient's admission and dynamics. Determination of blood urea and creatinine is important in the assessment of kidney function, especially blood creatinine According to the Cockroft-Gault formula, SFG-balls are important in determining the filtration rate and diagnosing chronic renal failure as a complication of diabetic nephropathy.

$$SFG(ml\backslash min) = \frac{[140 - old(year)] * body\ weight\ (kg)}{Creatinine\ in\ plasma\ (\mu.mol\backslash l)} * 1{,}23(M)\ or\ 1{,}05(W)$$

In the research groups, the SFG was determined using the above formula and the levels of chronic kidney failure were assessed based on the indicators presented in Table 3 [112; p. 77-78] .

Table 4.

Chronic kidney disease stage and SFG levels

SFG (ml/min/1.73 m2)	Indicator	Stage
≥ 90 and above	Optimal	S1 1
60-89	An imperceptible decrease	S2 1
45-59	Partial reduction	S3a
30-44	A clear decrease	S3b
15-29	A sharp decline	S4
< 15	Terminal kidney disease	S5

Also, blood biochemistry analysis Mindray BA-88A China, 2017 semi-automatic analyzer, Miniscreen P, Italy, 2007, Tsentrafuga TDZ4-WS, China, 2007, bilirubin level, ALT, AST enzymes were studied.

In the results of the analysis, patients with the period of exacerbation or decompensation of somatic diseases were not included in the study [126; pp. 77-78].

Coagulogram

Coagulogram - the blood coagulation system HumaClot Duo Plus was studied in 2019 using a coagulograph made in Germany. Consideration of the coagulogram is important for the prevention of stroke and the assessment of the effectiveness of taking anticoagulants. Based on the analysis of the blood coagulation system, it is possible to diagnose or rule out several manifestations of hemorheological stroke. During the study, blood clotting time and fibrinogen, prothrombin time, prothrombin index, MNO, AVTT indicators were determined and analyzed dynamically. [125; pp. 63-64]. The dynamics of all group patients was analyzed several times, the results of the use of anticoagulants and antiaggregants were evaluated, and the necessary doses were controlled.

§ 2.2.3 . Statistical processing of research results

In order to facilitate the implementation of the research, a special research card and a special rehabilitation card were drawn up, approved by the Scientific Council of the Bukhara State Medical Institute and registered at the Ministry of Health Secretariat. Research and rehabilitation cards were completed for each patient. Statistical processing of research results was carried out on a personal computer using a database created on the basis of Microsoft Excel 2019 (Microsoft, SShA) software, which included the results of clinical, laboratory, instrumental and neurovisual methods of examination.

Data base processing was added to the statistical analysis by calculating such statistical characteristics as M- average of the variation series, ð - standard square deviation, m- average standard error, min- minimum indicator, max - maximum indicator, correlation coefficient.

When the results are shown as average indicators and expressed as percentages, the t-accuracy index was found using different methods, and the reliability criterion was evaluated using the Student's table in both cases.

In the study, the changes in the initial and subsequent patients' condition were evaluated using scales, and the t-accuracy index was found using the "difference method" and the r-reliability limit was evaluated using the Student's table. Differences were considered significant if the r value obtained for a given criterion (test) was below the level of critical significance ($r<0.05$).

We used non-parametric statistical methods because the studied sample did not meet the norms of normal distribution. In order to determine the flexibility of character changes, the r - Spearman correlation criterion was used [127; pp. 129-221].

CHAPTER III. CLINICAL-NEUROLOGICAL, LABORATORY-INSTRUMENTAL EXAMINATION RESULTS (obtained personal results analysis)

Diagnosing ischemic stroke and its occurrence with diabetes requires a series of subjective, objective, neurological, laboratory and instrumental examinations. Based on the above examinations: the main group is patients who have been diagnosed with ischemic stroke and diabetes and underwent early rehabilitation; control group - patients who underwent early rehabilitation with a confirmed diagnosis of ischemic stroke, but denied a diagnosis of diabetes; the comparison group consisted of patients with a confirmed diagnosis of ischemic stroke and diabetes and early rehabilitation measures were not carried out. During the diagnostic process, the clinical picture of the diseases was compared, and patients close to each other in terms of clinical measurements were united in groups, diabetes and its complications were diagnosed in the patients of the main group and the comparison groups, and their treatment and impact on the early rehabilitation process were compared dynamically using neurological scales.

§3.1. Research results of clinical neurological examination in patients

In subjective examinations, patients' complaints and anamnesis data were studied and compared. The table below shows the prevalence of common brain symptoms in patients studied in the study with the onset of stroke in the study groups. In groups suspected of ischemic stroke on the basis of diabetes, the onset of the disease with complaints such as loss of appetite, numbness, inability to express complaints, nausea was manifested in higher rates than in the control group.

3.1 .

Expression of common brain symptoms in study groups (n=190)

Symptom	The main group (n=80)		Control group (n=70)		Comparison group (n=40)	
	n	M(%) ± m	n	M(%) ± m	n	M(%) ± m
H work loss	2	2.5 ±1.7	0	0.00	2	5±3.4*
Carthiness	15	18.7 ±4.4	11	15.7 ±4.3 **	5	12.5±5.2 *
Ca n't tell	21	26, 3±4.9	8	11.4 ±3.8	8	20±6.3
Headache	72	90 ±3.4	61	87.1 ±4.0 **	35	87.5±6.32 **
Dizziness	70	87.5 ±3.7	63	90.0 ±3.6 ***	34	85±5.65 ***
Heart nausea	19	23.7 ±4.7	16	22.8 ±5.0 **	12	30±7.3 **
Vomiting	9	11.2 ±3.5	5	7.14 ±3.1	7	17.5±6.0 **
H weakness	71	88.7 ±3.5	62	88.5 ±3.8 ***	34	85±5.6 ***

Note: p < 0.05*, p < 0.01**, p < 0.001***. Reliability scores between group 1 and group 2, group 1 and group 3.

It can be observed that the general cerebral symptoms were expressed more deeply in the main group and the diabetes control group compared to the control group.

3.2 - table.

Anamnesis data in study groups (n=190).

Indicator	Main group (n = 80)		Control group (n=70)		Comparison group (n=40)	
	n	M(%) ± m	N	M(%) ± m	n	M(%) ± m
Start a stroke han time (hours)	80	17.1 ± 2.3	70	14.4 ±2.1***	40	18.4 ±1.83***
Hypertension (year)	80	10.5 ± 0.3	80	8.93 ±0.33	40	10.3±0.43
Antihypertensive irregular	21	26.3 ± 4.9	43	61.4 ±5.82**	8	20±6.32**
Antihypertensive regular	59	73.8 ± 4.9	27	38.6 ±2.82*	32	80±6.32*
Antiaggregant ir-regular	17	21.3 ± 4.6	38	54.3 ±5.95	6	15±5.65
Antiaggregant regular	63	78.8 ± 4.6	32	45.7 ±5.95	34	85±5.65

Note: $p < 0.05$*, $p < 0.01$**, $p < 0.001$***. Reliability scores between group 1 and group 2, group 1 and group 3.

These complaints are based on the presence of early and late complications of diabetes due to the hemodynamic and hemorheological changes caused by diabetes, which are observed at relatively high rates in patients with ischemic stroke developed on the background of diabetes.

There is no significant difference between the study groups between the time elapsed from the onset of the disease to the hospitalization of the patients. Patients in all groups of the study were accompanied by hypertension, and it was determined from the anamnesis that the onset of this disease was an average of 10 years. Compared to the control group, it is observed that patients with DM take more antihypertensive and antiaggregant drugs, and even in such cases, the higher duration of stroke compared to the control group can be explained by hypercoagulation developed against the background of DM.

Table 3.3.

Time of onset of diabetes and types of hypoglycemic drugs taken before stroke.

History of diabetes	AG (n= 80)	CoG (n= 40)
Type 2 diabetes	100 % z	100%
DM from 10 years back	38 %	37.5 %
DM 5-10 years	45 %	42.5 %
DM 1-5 years	1 7%	17.5 %
DM is primary identified	4 %	2.5 %
Metformin is acceptable	53 %	62.5 %
Sulfon and urea preparation are accepted	15 %	15 %
DPP ing ibitor q abul does	9 %	5 %
Accepts insulin	24 %	17.5 %

In the above table 3.3, all patients of MG and TG suffered from DM type II, the time of the onset of DM was 4 percent of MG and 2.5 percent of CoG patients, diabetes mellitus was detected, 1-5 years after the detection of DM, MG 17 percent,

CoG 17.5 percent , 5 -10 years MG 45%, CoG 42.5% and patients with more than 10 years MG 38%, CoG 37.5%. Before the stroke was observed, the means taken for hypoglycemic purposes are listed in the above table. Insulin was used in 24% of MG patients and 17.5% of CoG patients, and oral hypoglycemic agents in 76% of MG and 82.5% of CoG patients. After a stroke, all patients continued treatment with insulin based on the recommendation of an endocrinologist.

Clinical description of objective examinations

All patients in the study groups underwent a thorough objective examination, and somatic parameters were recorded during the study. Patients with acute organ failure were not included in the study. During the study, when there were sharp changes in the measurements of hemodynamic and other somatic indicators, the patient was put to rest, the vital signs were normalized, and the study was continued after 24 hours.

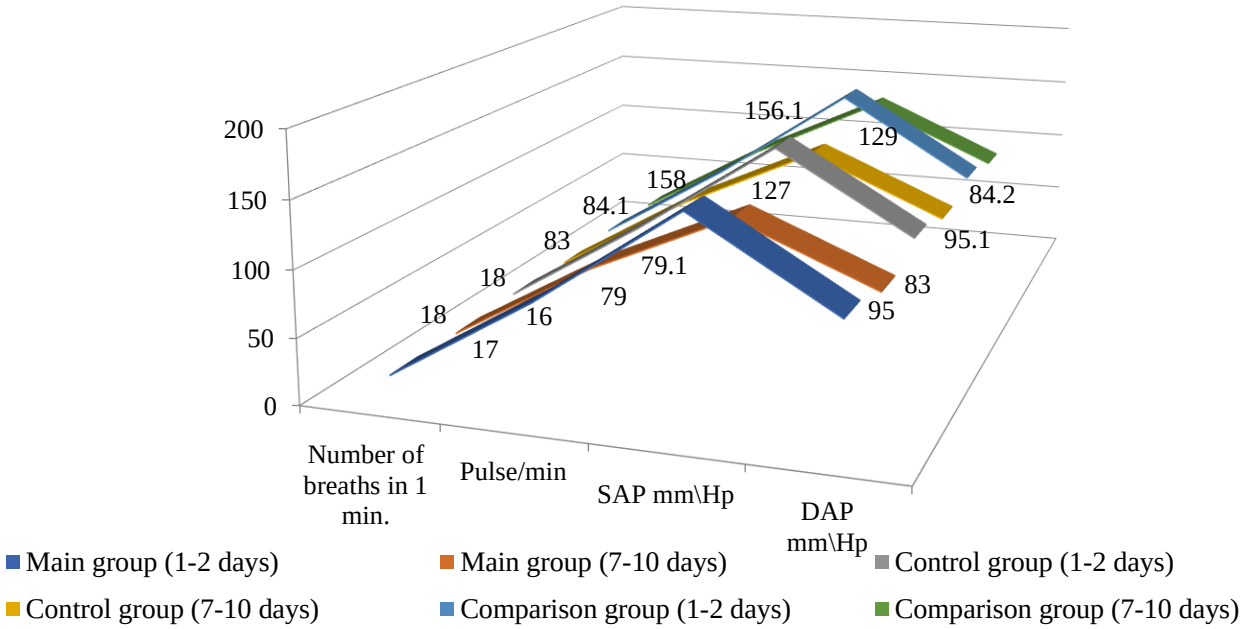


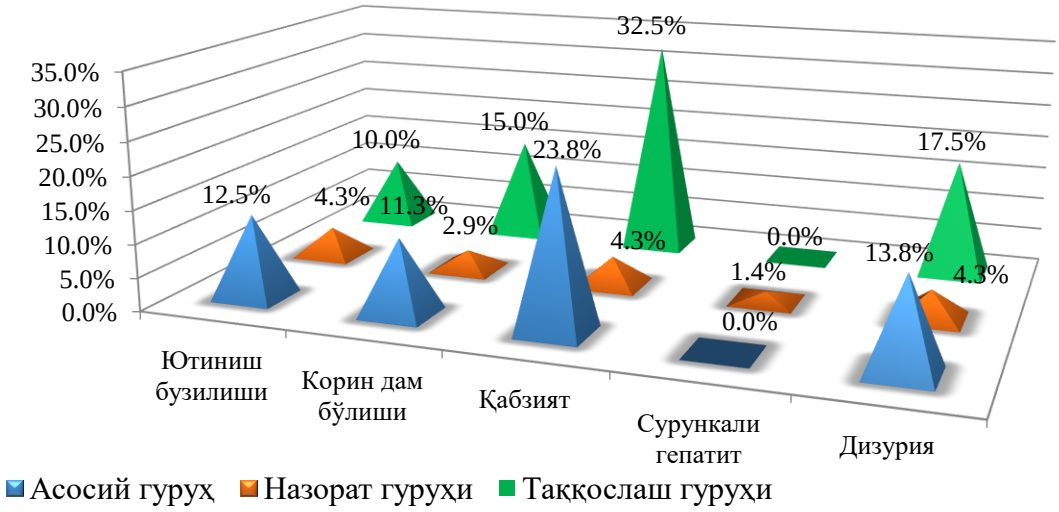
Figure 3.1. Hemodynamic parameters in the examined patients

All three groups, all patients had ischemic stroke against the background of hypertension, and no cases of symptomatic arterial hypertension were detected.

Vital signs respiratory rate was 18 breaths per minute on days 1-2 and 18 on days 7-10 of treatment, and no significant differences were observed between study

groups. The number of heartbeats per minute during the objective examinations of the activity of the cardiovascular system was 78-85 beats per minute on the basis of average indicators during the 1-2 days and 7-10 days of treatment. Arterial blood pressure in all groups of patients participating in the study was measured and recorded every 4 hours upon admission and in dynamics against the background of antihypertensive therapy. Arterial hypertension was determined as one of the important criteria for starting and continuing the practice of verticalization, and during the practice of verticalization, arterial blood pressure was checked every 5 minutes. . Compared to days 1-2, SBP decreased by 30 mm h.s.u., and SAP decreased by 10 mm h.s.u. on days 7-10 against the background of antihypertensive therapy. It was also found that in the group of patients with advanced ischemic stroke against the background of DM, the symptoms typical of CVD diseases are expressed in relatively high indicators of NG.

Figure 3.2. Diagram of pathological changes in digestive and urinary systems in patients



From pathological changes in the activity of the digestive system, it was observed that swallowing disorders are of the central dysphagia type. A 2.9 times higher incidence of dysphagia in patients with DM compared to the control group can be explained by diabetic neuropathies occurring against the background of diabetic angiopathies.

As can be seen from the diagram above, abdominal rest was observed to be 3 times more common in the DM group, and constipation was 5.5-7.75 times more common. In the main group, the high level of these symptoms is explained by a complication of diabetes mellitus, due to autonomic polyneuropathy, intestinal dysfunction. Also, in the control group, n=1, 1.4±1.4% of chronic hepatitis was diagnosed, taking into account that the liver function is in the period of compensation, liver enzymes are normal, and the disease is in the remission period, the patients were included in the study.

Symptoms of dysuria in the activity of the urinary system were observed in AG and TG at 3-4 times higher rates than in NG.

Table 3.4.

Complications of diabetes in primary and diabetic control group patients

Complication	Main group (n=80)		Comparison gr (n=40)	
	n	(%) ± m	n	(%) ± m
Diabetic angiopathy	80	100 ±0	40	100 ± 0
Diabetic retinopathy	32	40 ± 5.5 **	17	42.5 ± 7.8 **
Diabetic nephropathy	36	45 ± 5.6 **	19	47.5 ± 7.9 **
Diabetic polyneuropathy 2	68	85 ± 4.0 ***	35	87.5 ± 5.5 ***
Diabetic polyneuropathy 3	12	15 ± 4.0 **	5	12.5 ± 5.2 *
Autonomous polyneuropathy	19	23.7 ± 4.8 *	11	27.5 ± 7.1 **

Note: $p < 0.05$*, $p < 0.01$**, $p < 0.001$***. Reliability scores between group 1 and group 2, group 1 and group 3.

Dysuria symptoms are higher in groups accompanied by DM, polyuria and hyperglycemia, facilitating the increase of secondary retrograde infections in the urinary tract due to glucosuria, genitourinary neuropathies due to autonomic polyneuropathy.

All patients of the main group accompanied by diabetes (n=80) were complicated by diabetic angiopathy to varying degrees. Diabetic microangiopathies, diabetic retinopathy 40-42%, diabetic nephropathy 45-47%, diabetic

polyneuropathy 2nd degree 85-87% and diabetic polyneuropathy 3rd degree 13-15% of cases were observed, and there were no significant differences between AG and CoG.

During the study, the filtration rate of SFG-balls was determined using the Cockroft-Gault formula, and the level of diabetic nephropathy was determined. In the practical recommendations as a result of the research, in order to focus the attention of neurologists and neuroreanimatologists on diabetic nephropathy, it was recommended to delay verticalization and continue medical procedures in cases where the blood creatinine level is higher than 130-150 μ.mmol/l .

Manifestation of clinical signs in neurological status

Assessment of neurostatus is the most important clinical factor in the diagnosis of acute cerebrovascular disorders. Acute deficits in neurostatus in patients were studied as a complication of diabetes mellitus, an existing pathology in the nervous system, and the effect of this complication on the implementation of early rehabilitation measures in the acute period of ischemic stroke was studied.

When examining the neurological status of the patients at the initial examination, in all three groups, there were no defects in the functioning of the optic nerve: amorrosis or hemianopsia. Pupils were D=S in all groups of patients, and 1.25±1.24 percent of mydriasis was detected in the main group (n=1). Paresis of oculomotor nerves was observed in 1.25±1.24 percent of cases, and this condition was not observed in CG and CoG. Diplopia was observed at 6-8% higher rates in MG and CoG, while eyeball movement cooperation did not show significant changes in all groups. Dysphagia was observed in both groups, and it was determined that it was 2.9 times more common in patients with DM than in the control group. It was also studied that dysarthria, aphasia, and symptoms of damage to the central facial nerve developed 2-3 times more frequently in patients with ischemic stroke caused by DM, and symptoms of damage were expressed at deeper levels.

Table 3.5.

Comparison of pathological changes in the neurological status of patients in research groups

Indicator	Main group (n=80)		Control group (n=70)		Comparison group (n=70)	
	n	%± m	n	%± m	n	%± m
Diplopia	6	7.5±2.94	1	1.4±1.4*	4	10±4.74*
apple of the eye	9	98.8 ±1.24	0	100±0	0	100±0
Goriz ontal nist a g m	4	17.5±4.25	6	22 , 9±5.02 *	9	22.5±6.6**
III pair of nerves pa-resis	1	1.25 ±1.24	0	0 ±0	0	0 ±0
The face asymmetric	8	22.5 ±4.7	9	12.9 ±4 **	1	27.5±7.06*
Dysarthria	9	61.2 ±5.4	0	57.1 ±5.9 ***	9	47.5±7.9***
Aphasia	3	3.7 ±2.12	1	1.4 ±1.42 * *	3	3.75±2.12*
Dysphagia	0	12.5 ±3.7	3	4.3 ±2.42 *	4	10±4.74*
Anisoreflexia	7	96.3 ±2.12	5	92.9 ±3.08 * *	6	90±4.74**
Monoparesis	3	3.8 ±2.12	5	7.1 ±3.08 *	2	5±3.45
Hemiparesis	3	91.3 ±3.16	2	88.6 ±3.8 ***	5	87.5±5.23***
Hemilegia	4	5 ±2.44	3	4.3 ±2.4**	3	7.5±4.16*
Paraesthesia	9	86, 3±3.9	0	0 ±0	3	82.5±6.01

Note: $p < 0.05$*, $p < 0.01$**, $p < 0.001$***. Reliability scores between group 1 and group 2, group 1 and group 3.

In the study groups, according to the neurological examination, mild movement disorders in the form of monoparesis were observed in 7.1% of CG patients, and 92.9% of moderate and severe movement disorders were observed in the form of hemiparesis and hemiplegia. cases were observed. The observation of moderate and severe movement disorders in MG and CoG patients can be justified by micro- and macroangiopathic complications of DM. Sensory disorders are observed in the peripheral part of all muscles, accompanied by paresthesias in most cases, and are based on the connection with diabetic polyneuropathy from the anamnesis. Sensory disturbances in the form of hemihyperesthesia were also

observed among patients of all groups of the study, and no significant differences were observed in the frequency of occurrence. It can be observed that movement and sensory activity disorders are expressed more deeply in the main group against the background of diabetes than in the control group.

Patients in Romberg's condition when the coordinator tests are checked at the initial examination MG (n=78), 97.5±1.75 percent, CG (n=66), 94.3±2.77 percent, and CoG (n=38), 95±3.45 percent, ($p<0$,01) was observed to be bed rest or restlessness. From pathological reflexes, Babinski pathological reflex MG (n=61), 76.25±4.76 percent, CG (n=53), 75.7±5.13 percent and CoG (n=26), 65±7.54 percent unilateral, MG n=14, 17.5±4.2 percent, CG n=8, 11.4±3.8 percent, and CoG n=10.2±6.8 percent were found to be bilaterally positive. Marinesko Rodovich pathological reflex MG (n=67), 83.7±4.1 percent, CG (n=43), 61.4±5.8 percent and CoG (n=21), 52.5±7.9 percent, unilateral, MG (n=13), 16.2±4.1 percent, CG (n=17), 24.3±5.1 percent, and CoG (n=15), 37.5±7, Double positivity was observed in 6% of cases. It can be observed that the occurrence and ratio of pathological reflexes are more pronounced in the main and control groups of diabetes. In all three groups, no meningeal signs were detected in neurological examinations, and clinical signs of hemorrhagic stroke and other pathologies causing meningeal signs were not observed in other instrumental examinations.

3.2. Analysis of laboratory-diagnostic indicators

During the conducted research, it was studied that the initiation of a number of early rehabilitation measures directly depends on the laboratory parameters. In all three research groups, general blood analysis, blood coagulation indicators, general urinalysis and blood biochemical analysis were studied at the time of admission and dynamics of patients, and early rehabilitation measures were carried out, assessing the level of influence of pathological processes and the internal capabilities of the body. Early rehabilitation measures were started on the basis of laboratory parameters and dynamic analysis was carried out.

Table 3.6.

Comparative indicators of general blood analysis in patients among the examined groups

Indicator	Main group (n=80)	Control group (n=70)	Comparison group (n=40)
	M±m	M±m	M±m
Hemoglobin 1-2 days	116.2±1.4	120.3±1.76 ***	115.8 ±2.46***
Hemoglobin 7-10 days	118.25 ± 1.38	122.1 ± 1.49***	116.6±2.54***
Erythrocyte 1-2 days	3, 79 ±0.0 5	3.9±0.05	3.9 ±0.08
Erythrocyte 7-10 days	3 , 84 ± 0.05	3.9 ± 0.04	3.86 ±0.07
Leukocyte 1-2 days	6, 7 8±0.2 4	6, 4 ±0.2 1	7.2 ±0.45
Leukocyte 7-10 days	6.48 ± 0.15	6.1 ± 0.16	6.8 ±0.42
EC 1-2 days	13.8±0.65	12.9± 0.68	14.1 ±1.28
EC 7-10 days	10.49 ± 0.44	10.94 ± 0.39	11.2 ±0.92

Note: $p < 0.05$*, $p < 0.01$**, $p < 0.001$***. Reliability scores between group 1 and group 2, group 1 and group 3.

Especially based on blood glucose control and blood creatinine levels Using the Cockroft-Golt formula, the filtration rate of SFG-balls was determined, and the level of chronic kidney failure as a complication of diabetic nephropathy was evaluated, and it served as one of the basic indicators for starting the practice of verticalization.

Hemoglobin content in the blood can be observed in the main group, on the background of DM, the average values of erythrocytes and hemoglobin content in the blood are lower than in the control group. The observation of anemia symptoms in AG was based on Bright's anemia developed on the basis of SBE caused by diabetic nephropathy, and it was observed that this affects the effectiveness of treatment and early rehabilitation measures. The number of leukocytes in the main group and the comparison group showed a higher level of leukocytes and SPE

compared to the control group, and MG hyperglycemia is explained by the high tendency to various secondary infection foci and chronic inflammatory processes.

When coagulation time and related factors were examined, coagulation time CG in the initial examinations started at 03:28±00:05, ended at 03:58±00:05, CG started at 03:27±00:05, ended at 03:54±00: 05, CoG start 03:21±00:07, end 03:50±00:07 va after treatment against the background of antiaggregant and anticoagulant therapies, MG start 03:49±00:04, end 04:27±00:04, CG start 04:04±00:04 end 04:37±00:04, CoG start 03:26±00:04, end 03:54±00:05. The difference between the groups is based on the fact that the blood clotting time is relatively longer in CG, which leads to hyperglycemia and, as a result, an increase in the hematocrit index.

The amount of glycated hemoglobin was determined in the patients of the study group, and the indicator NbA1≥7 mmol/l was determined in 56% of MG patients, 59% of CoG patients, and 100% of cases of NbA1≤ 77mmol/l in CG patients.

Fig-3.7 .

indicators of coagulogram analysis in patients examined in the study

Indicators	**Main group**	**Control group**	**Comparison group**
	(n=80)	**(n=70)**	**(n=40)**
Prothrombin time	12.9±0.31	14.1±0.1	12.7±0.4
PTI	125.2±2.9	102.2±0.6**	127.9±4.5*
MNO	0.83±0.02	0.98±0.01	0.82±0.3
APTT	25.1±0.5	30.1±0.1*	25.7±0.39
Fibrinogen	4.4±0.1	3.2±0.1*	4.7±0.14

Note: $p < 0.05$*, $p < 0.01$**, $p < 0.001$***. Reliability scores between group 1 and group 2, group 1 and group 3.

If we pay attention to the results of the laboratory examination of the blood coagulation system, it was found that in the study groups consisting of ischemic strokes developed against the background of DM, including prothrombin time in the

ratio of 1.1, PTI, MNO and APTT indicators, 18-22% hypercoagulation indicators were high. It was also observed that the amount of fibrinogen increased by 10-18 percent.

The dynamics of blood biochemical analysis results are presented in Table 3.8, and no significant difference was found between total bilirubin, ALT and AST indicators.

Table 8.

Results of dynamic comparison of blood biochemical analyzes in the main and control groups

Indicator	MG (n=80)	CG (n=70)	CoG (n=40)
	M±m	M±m	M±m
Bilirubin (general)	17.36±0.34	17.49±0.61	16.6 ±0.51***
Biliruby (related)	4.06±0.22	4.15±0.43	4.3 ±0.39
ALT	31.8±2.14	30.3±4.9***	27.3 ±2.7***
AST	27.6±1.4	26.5±3.2***	26.7 ±2.23***
Urea 1-2 days	8.56±0.45	7.04±0.32	9.3 ±0.8
Urea 7-10 days	6.89±0.29	6.18±0.27	7.5 ±0.47
Creatinine 1-2 days	117.1±4.15	97.66±3.65***	132 ±8.02***
Creatinine 7-10 days	101.01±2.87	89.79±2.99***	97.5 ±4.38***
Glucose 1-2 days	10.23±0.39	6.23±0.27	10.4 ±0.55
Glucose 3-4 days	8.95±0.32	5.12±0.08	8.7 ±0.31
Glucose 5-6 days	8.4±0.29	4.76±0.07	8.6 ±0.36
Glucose 7-8 days	7.36±0.19	5.21 ±0.08***	7.4 ±0.26

Note: $p < 0.05$*, $p < 0.01$**, $p < 0.001$***. Reliability scores between group 1 and group 2, group 1 and group 3.

A significant increase in the amount of urea and creatinine in the blood by 18-26 percent is based on the complication of diabetic nephropathy in DM, and the amount of creatinine in the blood serves as one of the criteria for starting

verticalization. Indicators of changes in the dynamics of blood glucose, urea and creatinine levels were studied, and in case of deviations of these indicators from the standard criteria, additional procedures were carried out based on the recommendations of the endocrinologist and nephrologist, and when the indicators were normalized, early rehabilitation measures were continued for the patients.

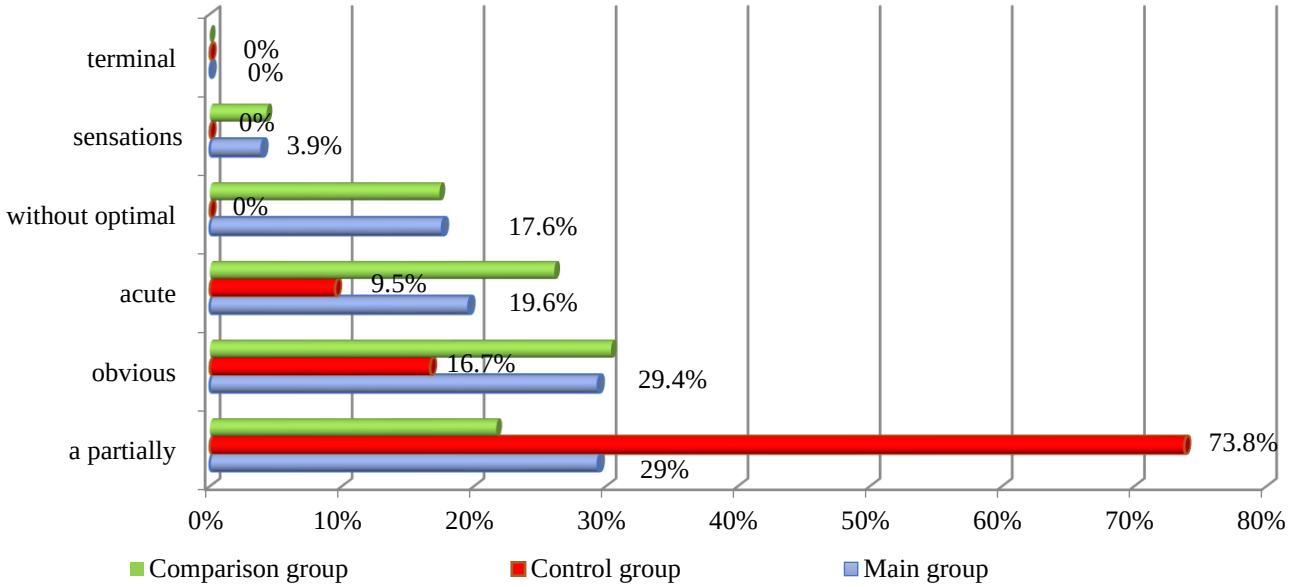
Significantly higher levels of blood urea and creatinine in MG indicate the occurrence of HKD as a result of diabetic nephropathy and serve as the main diagnostic criteria for determining this indicator.

Based on the amount of creatinine in the blood The filtration rate of SFG-balls was studied using the Cockroft-Gault formula, and the HKD level was determined accordingly. **Optimum impairment** of chronic renal failure in MG patients (n=15), 29.4 ± 3.04 percent, CG (n=31), 73.8 ± 1.4 percent and CoG **(** n=5), 21.7 ± 8.6 percent **(** p<0.01); insignificant decrease MG **(** n=15), 29.4 ± 3.04 percent, CG(n=7), 16.7 ± 5.3 percent and CoG(n=7), 30.4 ± 9.6 percent **(**p<0.05); partial decrease MG **(** n=10), 19.6 ± 3.97 percent, CG (n=3), 9.5 ± 7.3 percent and CoG (n=6), 26.1 ± 9.16 percent (p<0.01); obvious decrease state MG (n=9), 17.6 ± 4.24 percent, CoG (n=4), 17.4 ± 7.9 percent; a sharp decrease was observed in cases of MG (n=2), 3.9 ± 9.7 percent, CoG (n=1), 4.3 ± 4.25 percent, obvious and sharp changes in SBE were not detected in CG (p< 0.01) . Cases of decrease in kidney

function at the terminal level were not detected in all three groups (patients with severe kidney function disorders were not included in the study).

Figure 3.3. Representation of levels of chronic renal failure

In the patients of the main and diabetic control groups, it can be observed that there is a significant increase in kidney function disorders caused by diabetic nephropathy compared to the control group, and these kidney function disorders cause a number of complications in the acute period of treatment and early rehabilitation of ischemic stroke, causing a decrease in the effectiveness of



treatment. Blood glucose levels in patients were monitored dynamically. On the 1st-2nd days of the study , the amount of glucose in the blood was found to be 35-40% higher in AG and TG patients . It can be observed that the majority of patients with DM in the anamnesis were accompanied by hyperglycemia at the time of acute circulatory disorders in the brain . After the onset of the disease, all patients were transferred to insulin therapy, and the blood sugar level decreased dynamically, and verticalization practice and other stages of early rehabilitation were carried out in turn.

The following changes in dynamics were observed in the general urine analysis: specific gravity on days 1-2 MG-1016.8±0.63, CG-1013.69±0.53 and CoG-1016.9±0.66 on days 7-10 MG-1013 ,90±0.37, CG- 1013.16±0.49 and CoG 1014±0.53; protein content on days 1-2 MG 0.18±0.03, CG 0.04±0.004 and CoG

0.19±0.04 on days 7-10 AG 0.15±0.03, CG 0.02±0.004 and CoG 0.16±0.04; amount of erythrocytes in urine on days 1-2 CoG 1.28±0.40, CG 0.40±0.08 and CoG 1.29±0.53 (p<0.01) , on days 7-10, MG 2.28 ±0.49, CG 1.11±0.17, CoG 2.22±0.66; leukocytes on days 1-2 MG 3.75±0.56, CG 2.19±0.28, CoG 3.96±0.66, on days 7-10 MG 5.54±0.74, CG 3, 24±0.33, CoG was 6.14±0.95 (p<0.001) . Average indicator in patients with glucosuria 46.3±5.6, in patients with CoG 45±5.5 (p<0.001), in indicators of ketonuria MG 12.5±3.7, CoG 17.5±4.3 (p<0.001) These symptoms were not observed in the urine analysis of patients of the control group. It can be seen that the pathological changes in MG patients were reliably different compared to the control group.

3.3. Results of instrumental-neurovisualization examination in ischemic stroke formed on the background of diabetes

Instrumental examination methods are considered to be quick and important methods for diagnosis and type of disease from the onset of stroke. The ischemic or hemorrhagic type of acute blood circulation disorder in the brain was differentially diagnosed with the help of MSCT or MRI examination, and the condition and pathologies of the CNS system were determined with the help of ECG examination. Patients with acute heart failure were not included in the study. Brachiocephalic artery patency was determined by UTDS or angiography techniques and compared in study groups.

The analysis of ECG changes in all patients observed II showed that changes in cardiac activity during the first examination, dystrophic changes in the myocardium, with signs such as a decrease in the voltage of the QRS complex, a shortening or disappearance of the QT interval, flattening of the T wave, were present in all patients (n=80) (100 percentage), CG (n= 65) (92.9±3.08 percent) and CoG (n= 37) (92.5± 4.16 percent) observed in patients . Left ventricular hypertrophy R wave amplitude V5-V6 > 26 mm, aVL more than 11 mm , S+R tooth amplitude V1(2) aVL 35 mm , S V3 + R aVL 28 mm in men, based on 20 mm in women MG 95±2.44 percent of patients (76/80), CG 78.6±4.9 percent (55/70) and CoG 87.5 ±5.23 percent (35/40) it was found that it developed in cases. In MG and

TG, due to DM and diabetic micro and angiopathies, it can be observed that myocardial dystrophy was more frequent compared to the control group and left ventricular hypertrophy was also significantly more frequent.

Table 3.9.

Comparison of ECG findings in patients.

Indicator	Main group (n=80)	Control group (n=70)	Comparison group (n=40)
	M±m	M±m	M±m
Myocardial dystrophy	100±0.0	92.86±3.07***	92.5± 4.16***
ChQ hypertrophy	95±2.43	78.57±4.9***	87.5 ±5.23***
Tachycardia with S inus	20±4.47	15.7 ±4.34**	22.5±6.6**
Bradycardia with S inus	2.5±1.74	1.43±1.4*	0
UIK angina pectoris	1.25±1.24	0	0
IKKS (PIKS)	13.75±3.85	7.14±3.08*	10 , 0±4.74*
Extrasystole	5±2.43	8.57 ±3.34**	0
SUE (XSN)	1.25±1.24	0	2.5 ± 2.47 *

Note: $p < 0.05$*, $p < 0.01$**, $p < 0.001$***. Reliability scores between group 1 and group 2, group 1 and group 3.

In all three groups, sinus node was the rhythm leader, heart rate was 82.4±2.3 beats per minute, CG was 81.9±1.87 beats per minute, and CoG was 81.4±1.93 beats per minute. Sinus tachycardia with RR interval shortening and HPN increase MG 20±4.47% (16\80), CG 15.7±4.75% (11\70) and CoG 22.5±6.6% (9\40) consisted of the development of cases , in less cases bradycardia was detected in MG 2 , 5±1.75 percent (2/80), CG 1.4±1.42 percent (1\70) and was not detected in CoG, and on the contrary, cases of sinus tachycardia were more observed in the main group. As can be seen in Table 3.9 above, in the ECG examination, cardiosclerosis after myocardial infarction in patients with YuIK, IKKS (PIKS) was 1.5-2 times higher, in the groups with ischemic stroke against the background of DM, pathologies in heart activity were detected. times more views.

Ultrasound brachiocephalic artery duplex scanning (UTDS) examination method . UTDS examination of brachiocephalic arteries was performed in MG (n=49), 61.25±6.96 percent, CG (n=57), 81.4±5.15, and CoG (n=32), 80 ±7.07 percent patients . Brachiocephalic arteries using the UTDS method were studied and compared the existing obstacles in the cerebral blood flow, the changes in the blood flow rate due to them and the resulting clinical symptoms. Table 3.10 shows that UUA on the right and left side is observed at 18-20% higher rates in D MG and CoG patients (p<0.001), KIM MG and CoG increased by 10-12% (p<0.001) Vmax was 10-15 percent faster in MG and CoG patients than in CG patients studied based on indicators.

It can be observed that the main part of stenoses corresponds to UUA, D is narrowed by 1.2 times compared to CG in MG, Kim is thickened and the degree of stenoses increases and V max accelerates. It was also observed that external, internal carotid and vertebral arteries D, V max showed a high degree of stenosis and a significant increase in blood flow rate in MG.

3.Table 10 .

Indicators of extracranial brachiocephalic arteries determined by the UTDS method (n=190)

Indicator	Main group	Control group	Comparison group
	M±m	M±m	M±m
UUA young D	4, 1 ±0.2	4.9±0.1 3 *	4.2 ± 0.19 **
KIM max	1.25 ± 0.05	1.15±0.04	1, 3 ±0.05
V max	102.9±5.4	92.3±3.4 ***	10 1,9 ± 5 , 47***
He is UA left D	4.1± 0.19	4.8 ±0.1 *	4.4 ± 0.17 *
KIM max	1.2±0.05	1.07±0.03	1.2±0.0 4
V max	96, 9 ±5.1	84.7±3.4 ***	9 0.6 ± 4.45 ***
TAA young D	3.5 ± 0.15	3.8± 0.09	3.7 ± 0.13
TAA left D	3.5± 0.16	3.8± 0.07	3.7 ± 0.14

Inner house q u art ung D	3.6± 0.16	4.17±0.1 ***	3.9 ± 0.16
Inner house q u art left D	3.9±0.1	3.9±0.1	3.9 ± 1 , 13
He is A D	2.8 ± 0.06	3.02± 0.07	2.9 ± 0.07
V max	38.8±1.4	36.6± 0.87**	38.8±1.4 **
He left A left D	2.7± 0.06	2.9 4 ± 0.07	2.8 ± 0.07
V max	41.8±1.0	34.7±0.9 *	3 9 , 3 ±1, 31**

Note: D- diameter, KIM - in common carotid arteries and V max results. p <0.05*, p <0.01**, p <0.001***. Reliability scores between group 1 and group 2, group 1 and group 3.

When the degree of brachiocephalic artery stenosis was checked by ultrasound duplex scanning, stenosis of the common carotid artery in the main group was observed in 41.7 percent (72\30) 7±3.1 percent of patients and left in 33.3 percent (24\72) 11.6± observed in 2.7 cases, right-sided 39.1% in the control group, (27\69)

14.43±2.4%, left-sided 24.6% (17\69) and right-sided 68.8% in the comparison group, (22\32) is observed in 35.7±3.37 percent, left-sided in 56.3 percent (18\32) cases, and the average is 23.9±2.37 percent.

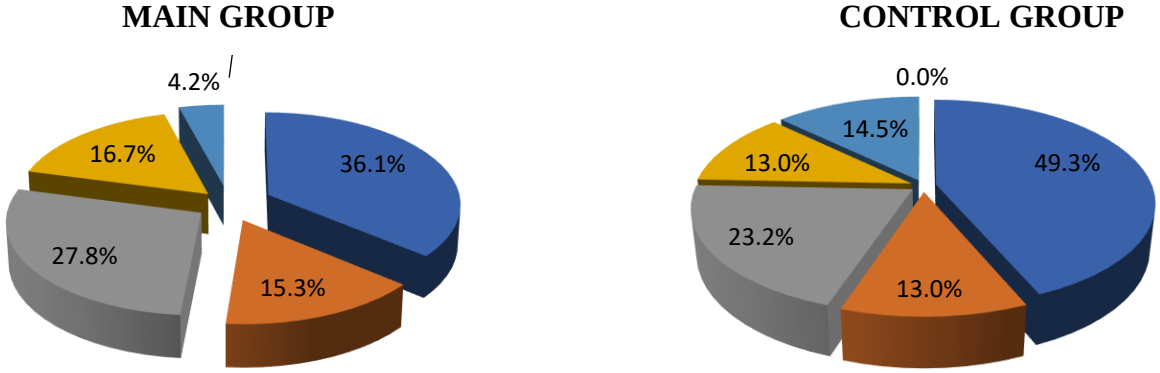


Figure 3.4. Levels of stenosis detected in branches of brachiocephalic arteries in UTDS examination.

In all three groups, it can be observed that the stenosis is mainly located in the common carotid arteries. Also, cases of stenosis were observed in the external and internal carotid artery and the spinal artery, as shown in Figure 3.4.

Figure 3.4 presents the results of NASET and ECST classification of stenosis levels detected in all extracranial branches of brachiocephalic arteries in UTDS and

angiography examinations , in which cases without stenosis are MG 36.1 ±9.42 percent, CG-49.3 ±8.57 percent, and CoG 22 .5 ±3.98 percent, mild MG-15.3 ±10.85 percent, CG-13.0 ±11.23 percent and CoG-25 ±4.42 percent, moderate stenosis MG-27.8 ±10 ,2 percent , CG-23.2 ±10.55 percent and CoG - 32.5 ±5.75 percent , severe stenosis MG-16.7 ±10.76 percent, CG -13.0 ±11.23 percent and CoG-15.0 ±2.65 percent critical stenoses were observed in MG-4.2 ±11.54 percent, CG-1.4 ±11.95 percent and CoG-5 ±0.88 percent ($p<0.01$) , no occlusion cases were detected in all groups of patients.

MRI examination was performed in 7 patients in the main group and 8 in the control group, MSCT examination in 73 patients in the main group and 62 patients in the control group and 40 patients in the comparison group.

In the main group, where ischemic stroke was detected in the MSCT examination, n=43 lesion size was 2.76±0.22 cm², n=32 density was 20.0±3.82 ED, in the control group the size of the lesion was 2.98±2.59 cm², density was 20 ,19±3.77 ED and in the comparison group n=40, the foci size is 2.86±2.15 cm², density is 18.33±1.36 ED.

Table 3.11.

Indicators determined by MRI and MSCT examinations in patients.

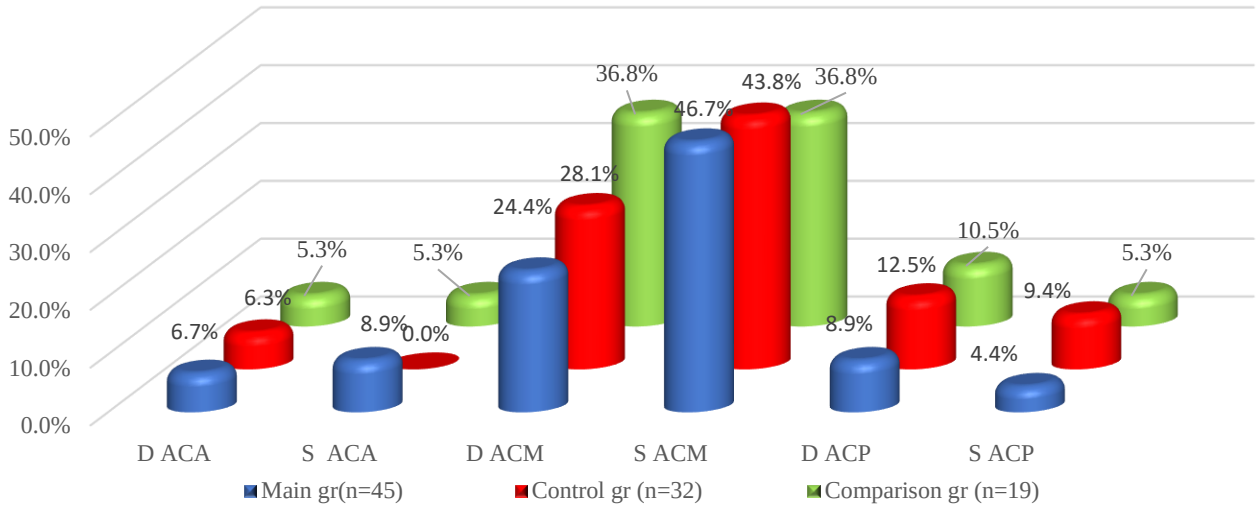
Indicator	Main group (n=80)		Control group (n=70)		Comparison group (n=40)	
	n	M±m	n	M±m	n	M±m
MSKT	3	91.25 per-cent	2	88.60 percent	0	100 percent
MRT	7	8.75 per-cent	8	11.40 percent	0	0
Subatrophy	8	72.5±4.9	1	58.6±5.9 ***	0	7 5 ± 6 , 85**
Atrophy	2	15±3.9	8	11.4±3.8 8	2	1 5 ± 3 , 45**

Stroke and encephalopathy	6	95±2.4	3	90±3.8 ***	5	87.5 ± 5 , 23***
It 's a stroke	5	56.25±5.5	2	45.7±5.9***	9	47.5 ± 7.9 ***

Note: p < 0.05*, p < 0.01**, p < 0.001***. Reliability scores between group 1 and group 2, group 1 and group 3.

Brain subatrophy was found to be 14-18% higher in MG and CoG patients compared to NG (p<0.001), brain atrophy was 5-7% higher, and vascular encephalopathy was observed in 25-32% higher rates. (p<0.001) it was observed that the formed ischemia center was detected, and the diagnosis of ischemic stroke was made on the first day.

In the rest of the patients, although the clinical diagnosis was made, the MSCT examination was repeated in the following days due to the fact that penumbra formation lasts 8-48 hours. Also, when studying the correlation between the size of the ischemic heart and the amount of sugar in the blood, it was found that there is a weak positive correlation of r=0.027±0.15.



3.5 . The location of the stroke center in the projection of blood circulation basins in the brain in MRI and MSCT examinations.

If we pay attention to the diagram above, in all three groups, the stroke center was mainly left midbrain MG 46.7±7.44 percent, CG 43.8±5.93 percent and CoG

36.8±11.1 percent (p<0.001) and right it can be observed that MG 24.4±6.41, CG 28.1±5.37 percent and CoG 36.8±11.07 percent (p<0.001) are located in the basin of middle cerebral arteries. Also, in the basin of the right frontal cerebral artery, MG - 6.7±3.7 percent, CG- 6.3±4.28 percent and CoG- 5.3±5.1 (p<0.01), in the basin of the left frontal cerebral artery MG-8.9±4.24 percent, CoG- 5.3±5.1 and CG is not detectable (p<0.001), in the basin of the right spinal artery MG-8.9±2.24 percent, CG-4.4 ±3.07 percent and CoG 10.7±7.04 (p<0.05), in the basin of the left spinal artery MG 4.4±3.07 percent, CG 9.38±5.15 percent and CoG 5, In 3±5.15 percent (p<0.05) cases, it was found that the ischemic center was located. Indicators were shown in relation to patients with an ischemic focus MG (45\80) and CG (32\70) and CoG (19\40). Subarthropathy, atrophy and vascular encephalopathy found in MRI and MSCT examination were more common in the main group, which was directly explained as a complication of the adjacent disease DM. It can be observed that the localization of the ischemic focus is mainly in the basins of the middle and anterior cerebral arteries in AG and TG, and in the basins of the middle and posterior arteries of the NG.

3.4. Analysis of treatment differentiated by disease etiology in patients with ischemic stroke

In case of acute circulatory disorders in the brain, starting treatment from the first hours has a significant impact on the outcome of the disease. Many developed and developing countries have their own standards of treatment. DM is also treated according to its own standards, as well as in the case of an accompanying ischemic stroke, the symptoms of both diseases are treated together. After the development of II, it is replaced by insulin injection, regardless of the type of hypoglycemic agent.

Based on the standards of treatment: antitumor, correcting cardiovascular system activity, antioxidant, antihypertensive, antiaggregant, angiocoagulant, nootropic and neuroprotective agents were used in all patients. Analgesic, sedation, and antibacterial therapy were administered to patients in need. In contrast to CG, in MG and CoG accompanied by DM, most patients were seen by an endocrinologist and sodium bicarbonate was used to correct acid-base balance and ketoacidosis. In

order to normalize blood sugar levels, insulin therapy was started for all patients, and blood glucose levels were controlled. Also, in the case of severe diabetic polyneuropathy and obvious disturbing clinical signs, 600 mg of thioctic acid products in the form of injection once a day were used.

Summary. Complaints, history data, objective examinations, neurological status, dynamics of laboratory and instrumental examination results of patients in the main and diabetic control group and non-diabetic control group with ischemic stroke and diabetes were compared, the physical condition of the patient's body, existing adjacent pathologies and compensatory possibilities were studied. Patients' complaints reflect symptoms related to stroke disorder, DM and its complications. From the anamnesis data, it was found that the majority of MG patients have had DM for years and have been treated. Also, significant information about recent cases and other concomitant diseases was obtained from the stroke conducted in the anamnesis data. In the objective examinations, it was found that there are a number of pathological changes in the heart, kidneys, retina and other internal organs, which affect the prognosis of the disease, with complications of the organs and systems of organs and systems of the CG and CoG. In the neurological status, focal signs were found to be more numerous and denser in MG. Diabetic polyneuropathies, diabetic autonomic polyneuropathies, and diabetic encephalopathies deepen neurological symptoms and complicate the clinical picture. In the laboratory analysis, the etiopathogenesis of hemorheological buzilization was observed, acute blood circulation disorders and acute inflammatory symptoms were denied. The analyzes revealed signs of DM-related hyperglycemia and its complications, including increased blood urea and creatinine and increased CFT. Compared to CG, it was observed that the relative size of the ischemia center in MRT or MSCT examinations, narrowing of brachiocephalic artery diameter in USDG or angiography examinations, and a significant increase in maximum flow velocity were observed in instrumental examinations. In the case of acute cerebrovascular accident accompanied by diabetes mellitus, it is recommended to start insulin therapy in order to control the blood sugar level during the treatment process,

procedures aimed at eliminating acid-base balance and diabetic ketoacidosis, and thioctic acid products when the symptoms of diabetic polyneuropathy are disturbing. When symptoms of diabetic retinopathy were observed, treatment was carried out based on the advice of an ophthalmologist and when symptoms of diabetic nephropathy were observed, based on the advice of a nephrologist.

CHAPTER IV. DYNAMIC ANALYSIS OF THE RESULTS OF EARLY REHABILITATION

§ 4.1. Description of recommended verticalization practice in patients

In the absence of verticalization practices and impossible cases, early rehabilitation measures were applied from the first hours of stroke, including patient activation and early verticalization in the main and control group patients. Patients of the comparison group were treated on the basis of standard procedures, and the degree of neurological deficit was assessed using neurovisual scales at 1-2 days, 7-10 days, 21-24 days and 57-60 days, as in all groups.

Early passive verticalization is performed when there is no possibility of independent transition to the upright position, and due to the severity of the general condition, a stepwise verticalization procedure was performed using a verticalizer table 24 hours after the onset of the disease.

Early rehabilitation process is one of the most urgent problems, and the sooner the rehabilitation process is started, the higher its effectiveness. 55-95 percent of patients with acute cerebrovascular accident are kept in intensive care and intensive care units for more than 48 hours. In the acute period of strokes, not only focal neurological deficits, but also autonomic nervous system injuries, including the development of orthostatic hypotension, significantly complicate the implementation of rehabilitation measures.

After hospitalization in the departments of neuroresuscitation and emergency neurology, after 24-48 hours of treatment in bed mode, the results of clinical, laboratory and instrumental analysis of patients were studied and verticalization was performed in the absence of contraindications.

Before the verticalization procedure, the patient's vegetative state and absence of pain limitations were evaluated using the PLR (passive leg raising) test and the BPS (Behavioral pain scale) test. In the process of verticalization blood pressure, heart rate, respiratory rate and SPO2 indicators were monitored.

According to the results of the somatic condition, PLR and BPS tests, the patients were carried out on a functional bed in passive, active passive manual and active verticalization methods. Determination and implementation of preparation for verticalization began from the first day of the onset of the disease. 0-15° when PLR and BPS test results are positive in 1-48 hours from the onset of the disease; when the results are negative, the head or upper part of the body was kept at an angle of 15-30° for a long time. After 2 days at the onset of the disease, in patients with negative PLR and BPS tests, the body position was gradually adjusted to an angle of 30°-45°-60°-75°-90°. Breathing rate, pulse, arterial blood pressure and SPO_2 were kept under control for 15 minutes when the body position was raised by 15°. In cases where the change of clinical indicators was not higher than 20%, the practice was continued for 15 minutes and the body position was returned to the previous position, after the patient was kept in a quiet position for 2 hours, the patient was verticalized by another 15° in addition to the previous position. In cases where the change in clinical indicators was greater than 20%, the patient was quickly returned to the previous position and vital signs were normalized, and verticalization was resumed after 24 hours.

The PLR test results can be seen from Table 4.1 that in the main group compared to the study group, the PLR test was positive in a large number of patients in the first days, and in the next 3-5 days, it was maintained at high values compared to the control group.

4.1 .

Passive lower limb flexion (PLR) test results

PLR test	Main group (n)	Main Group (%)	control group(n)	Control group (%)
Completely negative	22	27.5 ± 2.03	44	62.9 ± 1.1
1-2 days are positive	21	26.3 ± 2.10	7	10.0 ± 4.29
3-4 days are positive	31	38.8 ± 1.57	16	22.9 ± 2.62
5-7 days are positive	6	7.5 ± 4.39	3	4.3 ± 6.75
Total	n - 80		n- 70	

In patients of the main group, passive verticalization test (PLR test) on the first day was positive in 72.5% of cases and 37.1% in the control group, and 7.5% in the main group on the 5-7th day of the disease in cooperation with specific treatment procedures and early rehabilitation measures. , 12.8±0.2 and 4.3 percent in the control group, up to 27.6±0.4 (x^2=0.001-0.1%). (p≤0.001) was observed to decrease and this showed that diabetic ischemic stroke patients had instability in orthostasis compared to the control group.

Table 4.2.

Pain expression test (BPS test) results

BSP test	Main group (n)	Main group (%)	Control group (n)	Control group (%)
T is dead negative	41	51.3 ± 1.2	55	78.6 ± 0.7
1-2 days are positive	2 6	3 2 , 5 ± 1.8	11	15.7 ± 3.3
3-4 days are positive	10	12.5 ± 3.3	3	4.3 ± 6.8
5-7 days are positive	3	3 , 8±6.3	1	1.4 ± 11.9
Total	n - 80		n - 70	

According to the results of our research, the intensity of pain in patients with ischemic stroke on the background of diabetes VPS test was 32.5±1.8 % on the first day and 15.7±3.3 % in the control group. main group 12.5± 3.3 percent, and in the control group 4.3±6.8 percent, (x^2=0.001-0.1%), (r>0.001) positive results in patients. Cases with pain intensity higher than 1-2 points according to the VPS test caused a delay in the practice of verticalization.

According to the results of the PLR test in the first days of hospitalization, most of the main group of patients had obvious signs of orthostatic insufficiency and the pain index of the BPS test was relatively strong. On the 5-7th day of treatment, PLR and BPS negative test results were considered an indication for verticalization in most patients. It can be observed that the results of the tests in the main group show a negative result slowly compared to the control group, and this, in turn, causes the verticalization process to be delayed by 3-4 days.

Table 4.3.

Results of verticalization in 1-2 days of the study

Verticalization 1-2 days	Main group (n)	Main group (%)	Control group (n)	Control group (%)
15-30°	78	97.5 ± 0.2	43	61.4 ± 1.12
30-45°	1	1.25 ± 11.1	19	27.1 ± 2.34
45-60°	1	1.25 ± 11.1	8	11.4 ± 3.98
75-90°	0	0	0	0
Total	n- 80		n- 70	

As can be seen from Table 4.3 above, verticalization on the 1-2 days of the examination was 15-30° in the main group, 97.5 ±0.2 percent of 78 patients, 61.4 ±1.12 percent in the control group , 30-45° and 45 Verticalization at an angle of -60° was performed in 1 patient (1.25%). It was possible to conduct control group 30-45° in 19 patients (27.1%) and 45-60° in 8 (11.4%) patients. In both groups, no patient had an angle of 60-90° (x^2=0.001-0.1%). (r < 0.001), verticalization failed. In the first days of the onset of the disease, patients were immobilized, kept in bed at an angle of 15-30° in order to prevent the development of otrostatic insufficiency

and complications of the disease. 15-30° was performed on the head and upper body from the first hours with the patient lying on the bed before transferring to the verticalizer.

Table 4.4.

Results of verticalization in 3-4 days of research

Verticalization 3-4 days	Main group (n)	Main group (%)	Control group (n)	Control group (%)
15-30°	18	22.5 ± 2.32	14	20 ± 2.86
30-45°	12	15.0 ± 2.98	7	10 ± 4.29
45-60°	18	22.5 ± 2.32	10	14.3 ± 3.50
60-75°	5	6.3 ± 4.84	9	12.9 ± 3.72
75-90°	27	33.8 ± 1.75	30	42.9 ± 1.65
	80	100	70	100

Based on the data of table 4.4 above, on the 3-4 days of the study, verticalization was performed in MG 15-30°, (n=18) (22.5 percent) patients, 30-45° (n=12) and 45-60 verticalization at an angle of ° (n=18) (22.5 percent) was performed in patients.

Table 4.5.

Results of verticalization in 5-7 days of the study

Verticalization 5-7 days	Main group (n)	Main Group (%)	control group(n)	Control group (%)
15-30°	4	5.0 ± 5.45	2	2.9 ± 8.33
30-45°	3	3.8 ± 6.33	1	1.4 ± 11.87
45-60°	9	11.3 ± 3.51	5	7.1 ± 5.15
60-75°	12	15.0 ± 2.98	4	5.7 ± 5.58
75-90°	52	65.0 ± 0.92	58	82.9 ± 0.65
Total	n- 80		n- 70	

control group hi patients, verticalization on 3-4 days was at 15-30° (n=14) (20 percent), 30-45°, (n=7) (10 percent) and 45-60° (n=10) (14.3 percent) it was possible

to pass in the patient at an angle of 75-90° MG (n=27), 33.8 percent, CG (n=30), 42.9 percent (x^2=0.001-0.1%), (p >0.01) verticalization was performed in patients.

65.0±0.92 % of patients in the main group and 82.9 ±0.65 % of the control group (r >0.001) who achieved 75-90° verticalization orthostasis in the 5-7 days of the study .

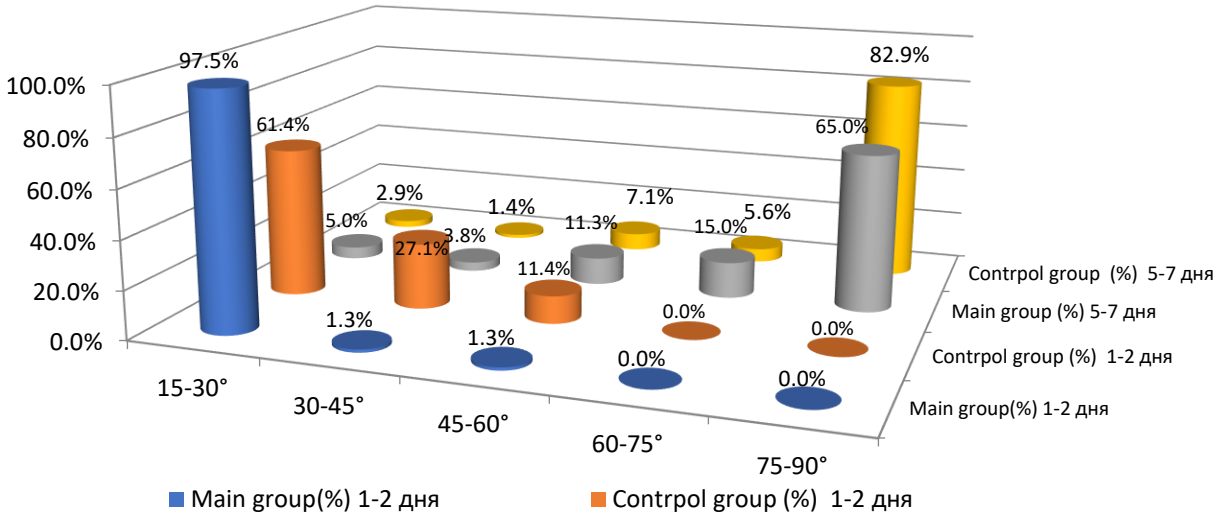


Figure 4.1. Dynamics of verticalization indicators on 1-2 days and 5-7 days of hospitalization in research groups.

As a result, in the process of passive verticalization In 1-2 days, passive verticalization measures in patients with ischemic stroke on the background of diabetes were 97.5 ± 0.2 , 61.4 ± 1.12 percent in the control group (r<0.001), and the 5-th of the study In 7 days, the patients who were brought to a vertical position of 90° were 65.0±0.92% of the main group and 82.9 ±0.65% of the control group (p<0.001).

Ischemic stroke in the background of diabetes mellitus, the process of verticalization is slow and lasts relatively long. It caused a delay of verticalization processes by 3-4 days in transient ischemic strokes against the background of diabetes. Also, it was found that there is a weak negative correlation of r=-0.15±0.43 between the days of maximum verticalization and the amount of sugar in the blood of patients.

§ 4.2 The principle of organization of complex early rehabilitation measures of ischemic stroke formed on the background of diabetes

During early rehabilitation measures in the acute period of ischemic stroke, rehabilitation measures were selected that do not have a drastic effect on the hemodynamic parameters of patients, that do not cause heavy physical or mental stress to patients during the treatment, and whose effectiveness has been proven in scientific research in the decade after their effectiveness. Also, in the selection of rehabilitation methods, diabetes and its complications are not contraindications. Based on the principles of rehabilitation, taking into account the requirement to start it early, in most cases, early rehabilitation measures were started 24-48 hours after hospitalization. A system of psychological rehabilitation, physiotherapeutic procedures and therapeutic exercises was used based on the principle of complexity. The principle of step-by-step implementation of rehabilitation measures was recommended to carry out treatment and rehabilitation measures in planned departments after the patient has completed the treatment measures in the acute period of the disease.

4.2.1-Results of psychological rehabilitation

Both groups of patients were evaluated for anxiety and agitation according to the Taylor scale, after first aid and standard medical procedures were started, with adequate mood and hemodynamic parameters. Depending on the age, gender, education and mental state of the patients, psychological rehabilitation activities were carried out in the methods of rational psychotherapy, emotional psychotherapy and psychological conversation. In patients aged 40-65, men and patients with higher education used the rational psychotherapy method, and in women of this age, the emotional psychotherapy method was used. 65-70-year-old patients were provided psychological support regardless of gender and education . Based on the pathologies of the patients' somatic state, delays in the initiation of psychological rehabilitation and changes in the mental state before and after the start of rehabilitation measures were evaluated, the changes in the background of DM and the differences with the control group.

Table 4.6 presents the different durations of initiation of psychological rehabilitation studied in research groups prior to initiation.

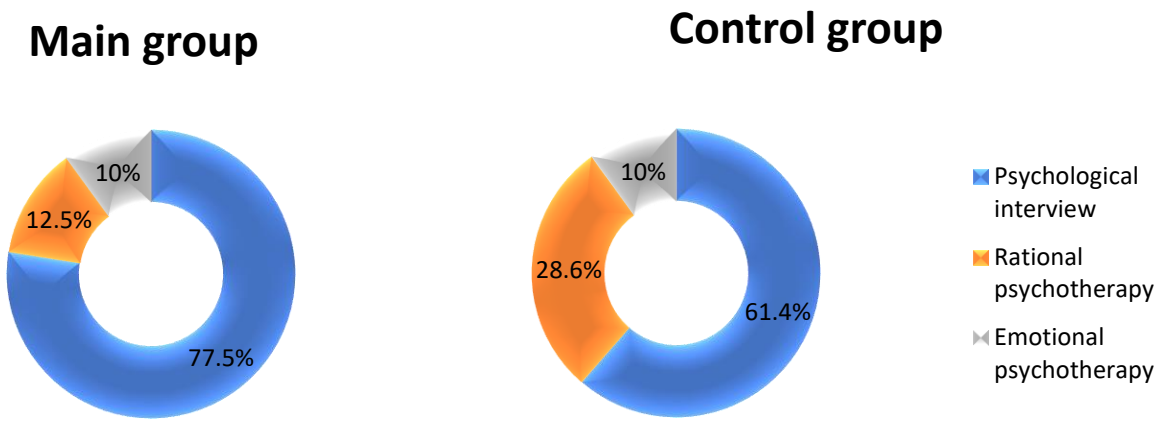
Table 4.6.

Periods of initiation of psychological rehabilitation in the main and control groups

Indicator	MG (n=80)		CG (n=70)	
	(n=80)	(percent)	(n=70)	(percent)
1-2 days	52	65.0 ± 5.3	49	70 ± 5.5
From 3 - 4 days	20	25 ± 4.8	18	26 ± 5.2
From 5 - 6 days	8	10.0 ± 3.4	3	4 ± 2.4

In the research groups, the initiation of psychological rehabilitation measures was 1-2 days MG (n=52), 65.0±5.3 percent, CG (n=49), 70±5.5 percent. 1-3 days delay MG (n=20), 25±4.8 percent, CG (n=18), 26±5.2 percent, (4-5) days delay MG (n=8), 10.0 ±3.4%, CG (n=3), 4±2.4%, (r<0.001). As can be seen from the above results, significant delays were observed in AG patients compared to NG.

Figure 4.2. Indicators of the use of psychological rehabilitation methods conducted in research groups.



Psychological rehabilitation was carried out in the following group of patients based on rational psychotherapy, emotional psychotherapy and psychological conversation methods, according to the patients. Most of the patients in both groups underwent psychological rehabilitation measures by the method of psychological interview. Due to the relatively large number of symptoms of MG discirculatory and

diabetic encephalopathy, and the high level of anxiety of patients, the method of psychological interview was widely used.

In the main group, psychological conversation method (n=62), 77.5±4.6 percent, in the control group (n=43), 61.4±5.45 percent, rational psychotherapy MG (n=10), 12.5±1 ,46 percent, CG (n=20), 28.6±3.45 percent, and emotional psychotherapy style MG (n=8), 10±1.19 percent, (n=7), 10.0±1.36 percentage ($r<0.001$) was used in cases.

Level of anxiety Low level of anxiety according to Taylor scale before psychological rehabilitation MG(n=1), 1.3±1.2 percent, CG (n=3), 4.3±2.4 percent, CoG (n=1), 2.5±2.5 percent, 7-10 days MG (n=3), 3.8±2.1 percent, CG (n=6), 8.6±3.3 percent, CoG (n=2), 5.0±3.4. Medium-low level of anxiety at initial examination MG (n=16), 20.0±4.5, CG (n=20), 28.6±5.4 percent, CoG (n=7), 17.5±6,0 percent at follow-up MG (n=28), 35.0±5.3 percent, CG (n=46), 65.7±5.7 percent, CoG (n=14), 10.0±4.7 percentage. Moderately high level of anxiety before MG (n=53), 66.3±5.3 percent, CoG (n=45), 56.3±5.5, CG (n=24), 60.0±7.7 percent and on days 7-10 MG (n= 39), 55.7±5.9 percent, CG (n=17), 24.3±5.1 percent, CoG (n=20), 50.0±7 .9 percent. High level of anxiety initially MG (n=7), 8.8±3.2 percent, 7-10 days (n=5), 6.3±2.7 percent, CG before (n=8), 11.4±3.8 percent, 7-10 days (n=1), 1.4±1.4 percent, CoG 1-2 days (n=7), 17.5±6.0 percent, 7-10 days very high level of anxiety was detected in MG at initial examination (n=3), 3.8±2.1 percent, TG (n=1), 2.5±2.5 percent, not detected after psychological rehabilitation, very high level of anxiety in CG was determined in the initial and follow-up examinations.

Table 4.7.

K indicator	MG 1-2 days	MG	CG	CG	CoG 1-2 days	CoG

		7-10 days	1-2 days	7-10 days		7-10 days
Low level	1.3±1.2	3.8±2.1	4.3±2.4	8.6±3.3	2.5±2.5	5.0±3.4
Medium low d r.	20.0±4.5	35.0±5.3	28.6±5.4	65.7±5.7	17.5±6.0	10.0±4.7
Middle upper d r.	66.3±5.3	56.3±5.5	55.7±5.9	24.3±5.1	60.0±7.7	50.0±7.9
Upper d r.	8.8±3.2	6.3±2.7	11.4±3.8	1.4±1.4	17.5±6.0	35.0±7.5
Very high d r.	3.8±2.1	0	0	0	2.5±2.5	0

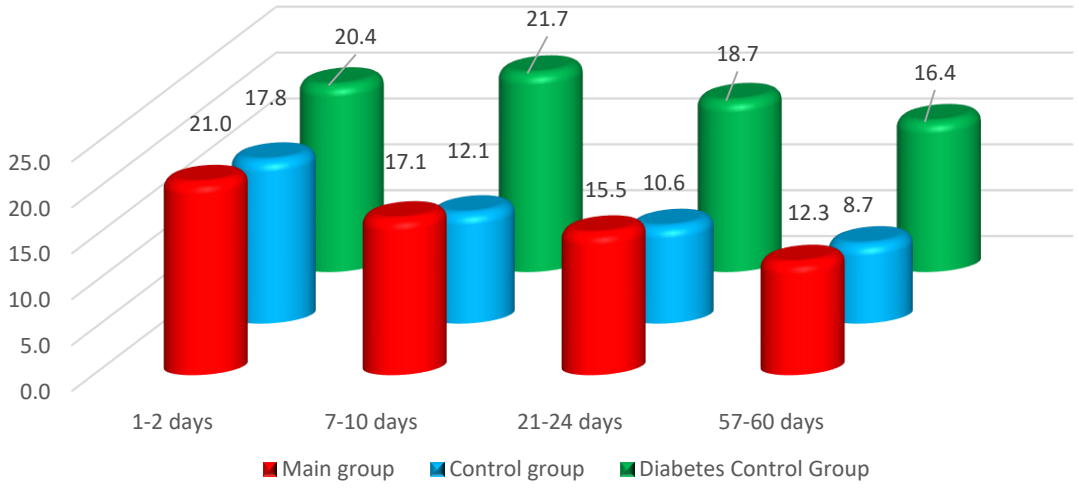
Dynamic measures of anxiety level in study groups according to the Taylor scale

In the data presented in Table 4.7, it can be observed that AG and TG patients have very high, high and medium high levels of anxiety compared to NG.

Figure 4.3. Indicators of psychological rehabilitation dynamics.

On the basis of psychological rehabilitation measures, the number of patients with low and medium-low level of anxiety decreased in the main and control groups. When looking at the final results, it can be observed that the level of anxiety in MG and CoG patients was less decreased compared to CG.

From the diagram above, in MG (n=80) patients, the average index in 1-2 days before psychological rehabilitation is 21.0±0.86, and the average index in 7-10 days after rehabilitation is 17.05±0.63, 21-24 days is 15.5±0, 12.3±0.48 (r<0.001) on days 65 and 57-60, CG (n=70) before psychological rehabilitation averaged 17.84±0.86



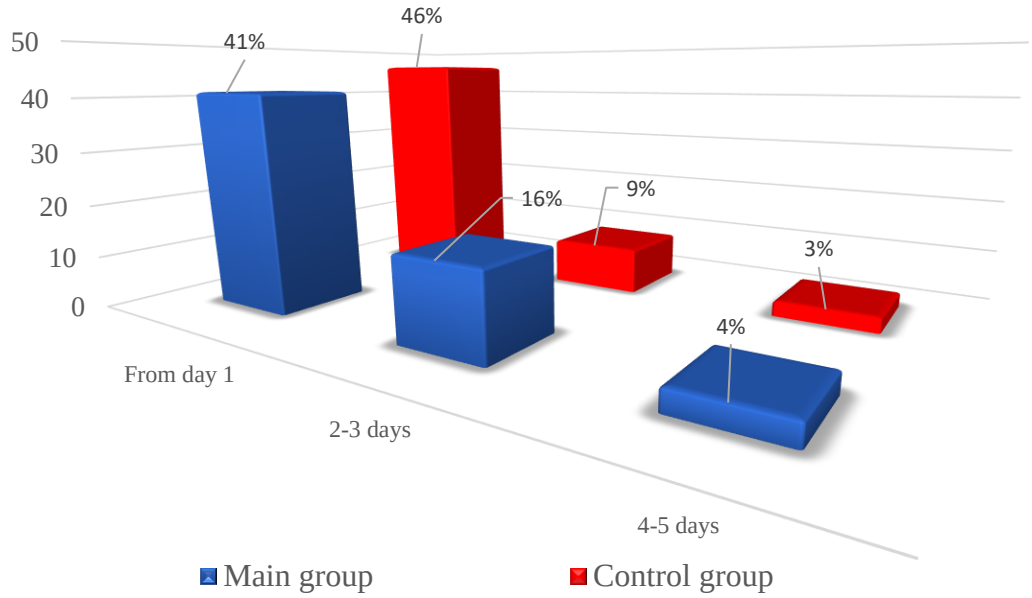
and averaged after rehabilitation on days 7-10 12.70± 0.63, 10.6±0.58 in 21-24 days and 8.7±0.5 in 57-60 days ($p<0.05$). It was found that CoG without early rehabilitation was 20.43±1.46 on days 1-2, 18.7±1.39 on days 7-10, and 16.38±0.93 on days 57-60. If we pay attention to the results, it can be observed that in all three groups, as a result of psychological rehabilitation, the average indicator of the level of anxiety decreases, in the main group and in the diabetes control group, it is possible to observe a smaller decrease in anxiety compared to the control group. In TG patients who did not undergo psychological rehabilitation, it was observed that the level of anxiety increased on the 7-10th day of the onset of the disease compared to the initial days and decreased slightly on the 21-24th and 57-60th days. Such patients who developed II on the basis of DM are explained by long years of regular treatment with DM, lack of confidence in full recovery and impaired cognitive functions as a result of diabetic encephalopathy.

4.2.2 Physiotherapy rehabilitation results

Physiotherapy procedures play an important role in many diseases, including ischemic stroke rehabilitation. While the acute phase of the disease is a contraindication to several types of physical therapy, DM and its complications are also a contraindication to physical therapy in several cases. Taking into account the above points, the types of modern physiotherapy treatments were studied and in both cases electrostimulation and low-frequency magnetotherapy methods without contraindications were selected and physiotherapy treatments were carried out using them. Physiotherapy treatments using the Tesla-3000 magnetotherapy device, frequency 50+/-0.5 Hz, magnetic field 300+/-50.0) mTl wide, treatment duration 10 minutes, electrostimulation Frequency modulation 30 Hz using the Electrostimulator Physion-Stim KA-F25 device , modulation 50%, duration "2:3", patient current 20 mA, treatment duration 15 minutes.

Figure 4.4. Periods of initiation of physiotherapeutic procedures in research groups.

In the diagram above, it can be observed that physiotherapeutic treatments from the 1st day MG (n=41), 51.3±5.9 percent, (n=46), 66±6.3 percent, MG with a



delay of 2-3 days (n=16) , 20±2.9 percent, CG (n=9), 12.9±2.0 percent and 4-5 days delay MG (n=4), 5±0.8 percent, CG (n=3), It was observed in 4±0.7 percent, ($p<0.001$) cases. The delay in the initiation of physical therapy in the main group was caused by DM complications such as unconsciousness and hyperglycemia, and in turn, the duration of the early rehabilitation process was prolonged and its effectiveness decreased.

Magnetotherapy treatment 3-5 days MG (n=34), 42.5±5.5 percent, CG (n=21), 30±5.5 percent, 6-7 days MG (n=33), 41, 3±5.5 percent, CG (n=35), 50±6.0 percent, and MG for more than 8 days (n=13), 16.3±4.1 percent, CG (n=14), 20± 4.8 percent, ($p<0.05$) were conducted in patients.

Table 4.8.

Periods of performed physiotherapeutic procedures

Type of treatment	Duration	Main group		Control group	
		n	M ± m	n	M ± m
Magnetotherapy	3-5 days	34	42.5±5.5	21	30±5.5
	6-7 days	33	41.3±5.5	35	50±6.0

	More than 8 days	13	16.3±4.1	14	20±4.8
Electrostimulation	3-5 days	28	4 5 ,9±5,5	17	29.3 ± 4 , 2
	6-7 days	27	44 , 3 ±5.4	31	5 3.4 ± 6.3
	More than 8 days	6	9 , 8 ± 1 , 5	10	17.2 ± 2.7

Electrostimulation procedure 3-5 days MG (n=28), 45.9±5.5 percent, CG (n=17), 29.3±4.2 percent , 6-7 days MG (n=27), 44.3±5.4 percent, CG (n=31), 53.4±6.3 percent, and MG for 8 days or more (n=6), 9.8±1.5 percent, CG (n=10), 17.2±2.7 percent ($p<0.01$) were conducted in patients. From the above data, it can be observed that there is no significant difference in the duration of physiotherapy procedures in both groups, that is, the same procedure and procedures were performed in both groups.

4.2.3 Results of therapeutic exercises

Therapeutic exercises are one of the most important areas of early rehabilitation. In the research groups, passive therapeutic exercises and breathing gymnastics exercises, which can be used in the acute period of ischemic stroke and are not contraindications for the use of DM, were recommended. Initiation of therapeutic exercises was carried out when the patient's consciousness, blood sugar level, results of PLR and BSP tests were taken into account, and the procedures were proportionate. Delays in the study groups caused by the conditions preventing the initiation of therapeutic exercises were recorded and studied cross-sectionally.

Table 4.9.

Periods of starting to perform inactive gymnastic exercises.

K indicator	MG (n)	MG (% m)	CG (n)	CG(%)
1-2 days	49	61.3 ± 5.4	56	80 ± 4.8

From 3 - 4 days	26	33 ± 5.2	10	14 ± 4.2
From 5 - 6 days	5	6.3 ± 2.7	4	6 ± 2.8

There have been delays in starting inactive therapeutic gymnastics exercises based on the reasons given above. Start of exercises without delay MG (n=49), 61.3±5.4 percent, CG (n=56), 80±4.8 percent, delay of 2-3 days MG (n=26), 33±5.2 percent, CG (n=10), 14±4.2 percent and from 4-5 days MG (n=5) 6.3±2.7 percent, CG (n=4), 6±2.8 percent, (p <0.001) was recommended in cases .

Pain syndrome was the most common reason for delaying the initiation of passive gymnastics in cases with positive results of the BSP test and in cases where the blood glucose level was higher than 13 mmol/l in the main group, and the use of passive gymnastics was continued even in cases of unconsciousness in patients. Delays in MG are higher than in CG.

Inactive gymnastics for 3-5 days MG (n=41), 51.3±5.6 percent, CG (n=25), 35.7±5.7 percent, 6-7 days MG (n=29) , 36.3±5.4, CG (n=36), 51.4±6.0 percent and MG more than 8 days (n=10), 12.5±3.7 percent, CG (n=9) , continued in 12.9±4.0 (p<0.01) cases.

4.10 - table.

Time to start breathing exercises.

K indicator	MG (n)	MG (percent)	CG (n)	CG (percentage)
1-2 days	38	47.5 ± 5.6	47	67 ± 5.6
From 3 - 4 days	37	46 ± 5.6	20	29±5.4
From 5 - 6 days	5	6.3 ± 2.7	3	4±2.4

Due to delays in MG, the exercises lasted 3-5 days in most cases, while in CG they lasted 6-7 days in most cases. Breath gymnastics exercises were performed in the patients, with the elimination of unconsciousness and stable hemodynamic indicators. As opposed to passive therapeutic exercises, respiratory gymnastics

required active participation of the patient, causing this process to be delayed by several days.

No delay in starting breathing exercises MG (n=38), 47.5±5.6 percent, CG (n=47), 67±5.6 percent, 1-3 days delay MG (n=37), 46±5 ,6 percent, CG (n=20), 29±5.4 percent and 4-5 days delay MG (n=5), 6.3±2.7 percent, CG (n=3), 4±2, Delays were observed in 4 percent, ($p<0.001$) cases. Also, in combination with therapeutic exercises, patients were monitored in bed mode, verticalization, and in different positions of the body in relation to the healthy and movement-restricted side. In order to prevent local blood circulation disorders and bedsores formation on the side where movement restriction was observed, the body condition was regularly monitored, and if necessary, the side load ratio was changed.

It can be observed that breathing gymnastics exercises were performed in the research groups in the following order.

Respiratory gymnastics exercises 3-5 days MG, (n=41), 51.3±5.6, CG (n=25), 35.7±5.7 percent, 6-7 days MG (n=29), 36.3±5.4 percent, CG (n=36), 51.4±6.0 and more than 8 days MG (n=10), 12.5±3.7 percent, CG (n=9), It was carried out in 12.9±4.0 percent ($p <0.001$) cases. It can be observed that CG lasted relatively long due to the high ratio of delays in MG.

§ 4.3. Characteristics of clinical and neurological changes of early rehabilitation in research groups

NIHSS scale, Barthel scale, Rivermead mobility index and MRS scale were used to evaluate the effectiveness of early rehabilitation measures in the research groups and to evaluate the effect of diabetes and its complications on the early rehabilitation process in the main group. Using the above neurovisual scales, the patient was examined at 24-48 hours of the study and during discharge from the intensive care unit.

Dynamics of NIHSS scale indicators

The NIHSS (National Institute of Health Stroke Scale) scale was used to objectively assess the level of clinical symptoms in cerebral strokes. With the scale,

patients' consciousness, vision, motor and sensory activity, coordination disorders, gnosis and speech activity are evaluated. The NIHSS scale was used to assess the dynamics of the patients' condition on the 1st-2nd, 7-10th day of hospitalization and on the 21st-24th and 57-60th day of the onset of the disease, and compared them between groups.

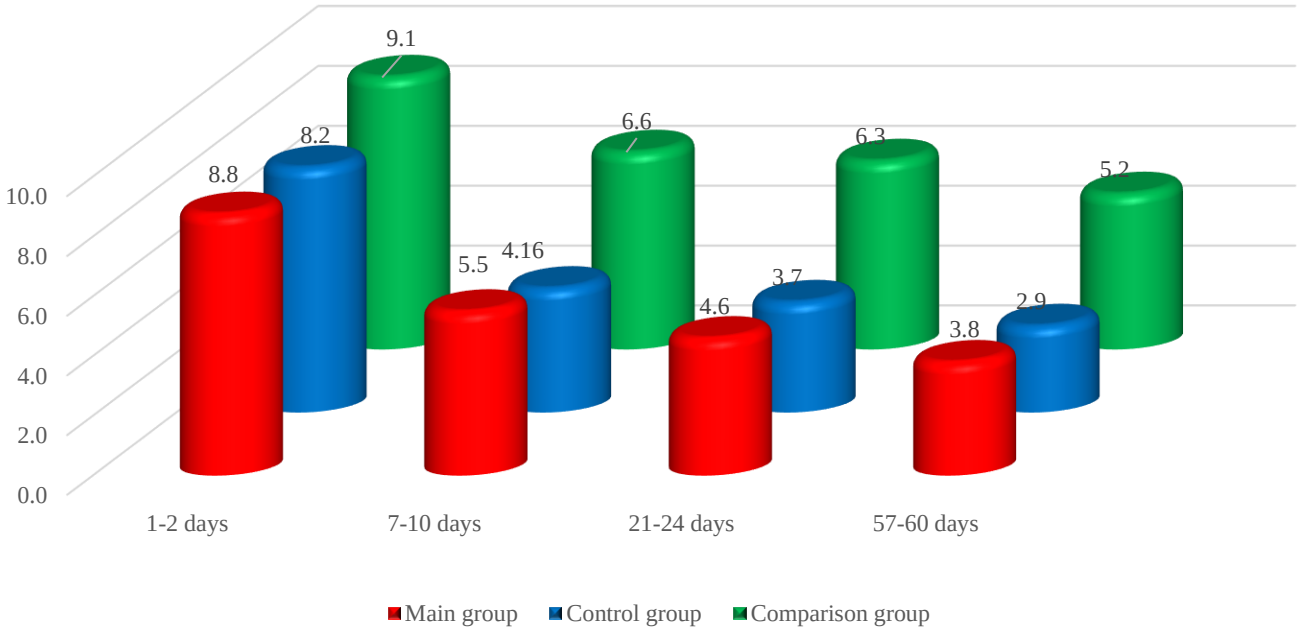


Figure 4.7. Dynamics of NIHSS scale indicators.

The average NIHSS score on days 1-2 of the study was 8.8±0.36, 5.5±0.29 on days 7-10 of the study, 4.6±0.23 on days 21-24, and 3 on days 57-60. 8±0.22, CG 1-2 days 8.2±0.37 treatment and rehabilitation measures 7-10 days 4.16±0.29 ($p<0.001$), 21-24 days 3.7 ± 0.22 and 2.9±0.19 in 57-60 days. CoG is 9.1±0.49 on days 1-2, 6.6±0.52 on days 7-10, 6.3±0.49 on days 21-24 and 5.2±0.55 on days 57-60 it was found that Patients with a satisfactory objective condition on the NIHSS scale were not observed in all three groups on day 1-2 of the study, and were observed in 12-15% less cases ($p<0.01$) in the DM background groups at the 57-60 day examinations. During the study, the dynamics of mild neurological disorders was observed in 31.2% of cases, 15.7 % in CG patients and 15% in TG patients ($p<0.001$) .

Table 4.11.

Pre- and post-test results of the NIHSS scale in study groups.

	Satisfactory		Light		Medium		Heavy	
	1-2 day	57-60 day	1-2 day	57-60 day	1-2 day	57-60 day	1-2 day	57-60 Day
MG	0	16.3 ± 4.1	41, 3 ± 5.5	72.5 ± 5	48.7 ± 6	8.8 ± 3.2	10 ± 3.4	2.5 ± 1.7
CG	0	25.7 ± 5.2	51.4 ± 6	67.1 ± 5.6	40 ± 5.9	7.1 ± 3.1	8.8 ± 3.2	0
CoG	0	12.5±5.2	40±7 , 8	55±7.9	47.5±7.9	27.5±7.1	12.5±5 , 2	5±3.5

Moderate neurologic deficits were found to be 39.9% lower in MG 1-2 days compared to 57-60 days, 32.9% in CG patients, and 20% in CoG. Severe neurologic deficits were 7.5% lower in MG patients at baseline, 8.8% in CG patients, and 7.5% in CoG patients ($p < 0.01$) than in the control group after treatment and rehabilitation. patients with severe neurological deficits were not identified. Due to the fact that patients with severe neurological deficits were not included in the study, such patients were not recorded in the groups before and after the study. Based on the NIHSS scale indicators, MG and CoG showed signs of neurological deficiency at a deeper level in the initial indicators, and after treatment and early rehabilitation measures, positive changes were observed in the patient population in all three groups. MG patients recovered less than NG, and it was found that CoG recovered less to the extent that neurological deficits were felt.

Barthel scale results

is a scale widely used by neurologists and rehabilitators to assess activities of daily living, with high accuracy and reliability evaluated in a large number of studies. The Barthel scale was used to evaluate 24-48 hours of hospitalization and 7-10 days, 21-24, and 57-60 days after completion of treatment and early rehabilitation measures in the emergency department of neurology. Based on the change of the dynamics of the average index in MG, CG and CoG in the form of

mild degree of paralysis, moderate degree of paralysis and severe degree of paralysis according to Barthel scale.

Table 4.12

Dynamics of indicators on the Barthel scale

In the results of the Bartel scale, if we pay attention to the indicators of the dynamics of recovery of neurological deficits on days 1-2 and 57-60 days, it was observed that 20% of severe deficits in MG, 11.1% in CG and 10% in CoG recover after treatment and rehabilitation measures. Moderate paralysis was 16.3 percent in MG, 32.8 percent in CG, and 12.5 percent in CoG ($p < 0.05$). it was observed that

	Severe paralysis		Medium heavy		Light	
	1-2 days	57-60 days	1-2 days	57-60 days	1-2 days	57-60 days
MG	37.5±5.4	17.5±4.2	58.8 ± 5.5	42.5 ± 5.5	3.8 ± 2.1	40 ± 5.5
CG	21.4±4.9	7.1 ± 3.1	65.7 ± 5.7	32.9 ± 5.6	12.9 ± 4	60 ± 5.9
CoG	32.5±7.4	22.5±6.6	62.5± 7.7	50± 7.9	5±3.4	27.5 ± 7.1

mild paralysis increased due to a decrease in severe and moderate paralysis in all groups. According to the results of the study, the symptoms of severe paralysis were observed more often in CoG patients, and the indicators of returning to an active lifestyle after treatment and early rehabilitation procedures were observed to be lower than in MG and CG patients. It can be observed that the ratio of indicators compared to MG improved in the post-study examinations, with more cases of mild and moderate paralysis observed in CG patients.

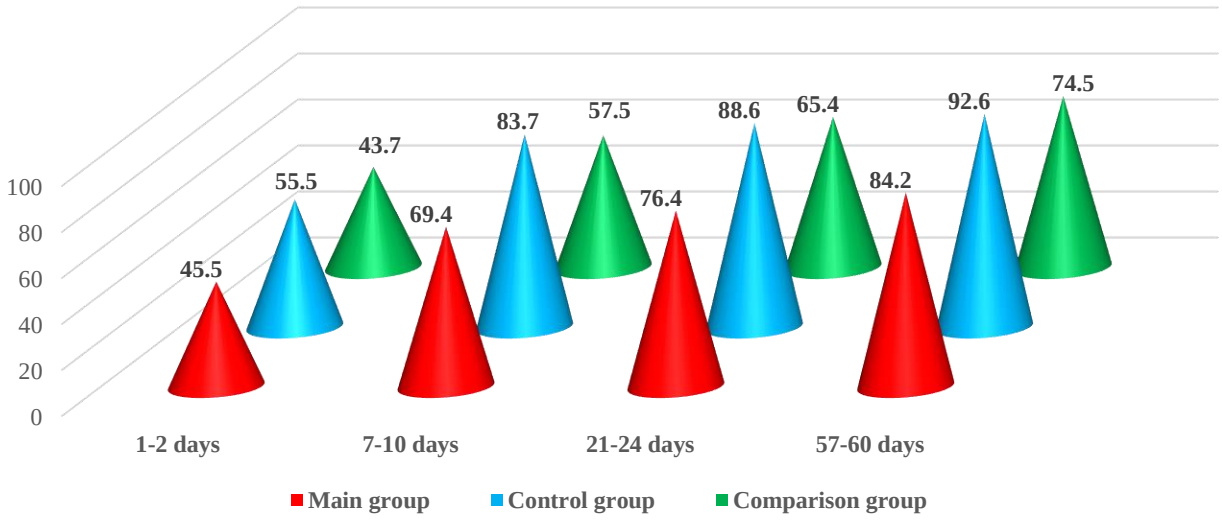


Figure 4.8. Bartel scale dynamics of average indicators.

According to the Barthel scale, at the beginning of the study, MG was 45.5±1.81 points on days 1-2 and 69.4±1.61 on days 7-10 ($p<0.001$) it can be observed that the score improved by 76.4±1.3 on days 21-24 and 84.2±1.12 on days 57-60. CG, this indicator was initially 55.5±2.38 on 1-2 days, 83.7±2.01 on 7-10 days, 88.6±1.52 on 21-24 days, and 92.6 on 57-60 days after the study. ±1.18 points ($p<0.001$) organized. CoG is 43.8±2.47 on 1-2 days, 57.5±2.7 on 7-10 days, 65.4±2.49 on 21-24 days and 74.5±2.81 on 57-60 days did The ratio of neurologic deficit level at the beginning of the study was 1.22 between MG and CG and 1.20 at the end of the study. It can be observed that the recovery of MG patients as a result of treatment and early rehabilitation measures is slower than that of CG. Taking into account that all three groups were treated in the same order, it can be observed that the return to an active lifestyle is slow in MG patients due to DM and its reasons. In CoG patients, the proportion of patients with moderate and severe neurological deficits on day 1-2 of the study was found to be significantly higher than that of MG and CG on day 57-60 of the study.

Rivermead Mobility Index and MRS scale results

Rivermead mobility index - mobility level in the range of 0 to 15 points was used in order to evaluate mobility impairments. A score of 0 indicates no movement at all, and a score of 15 indicates that the person can run 10 meters.

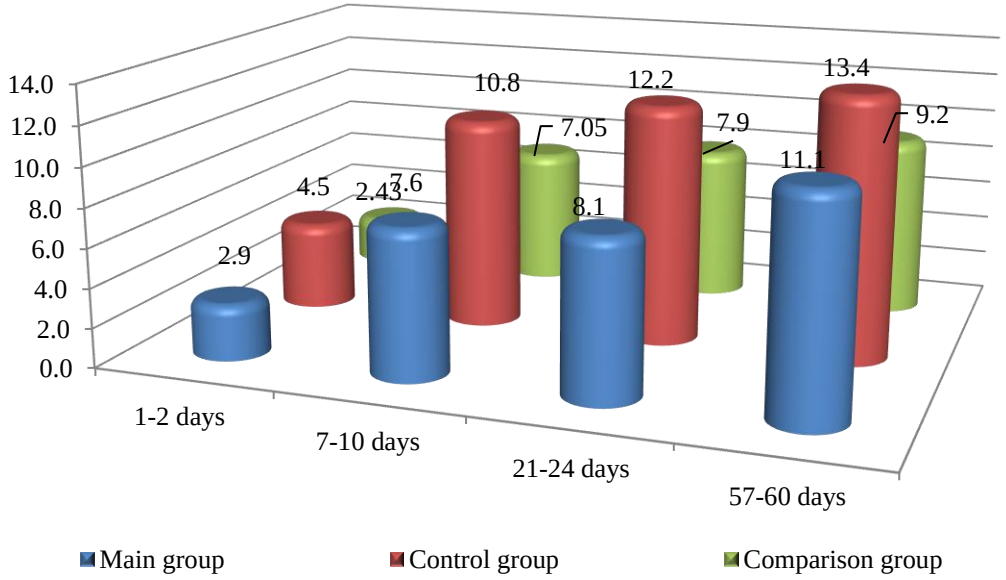


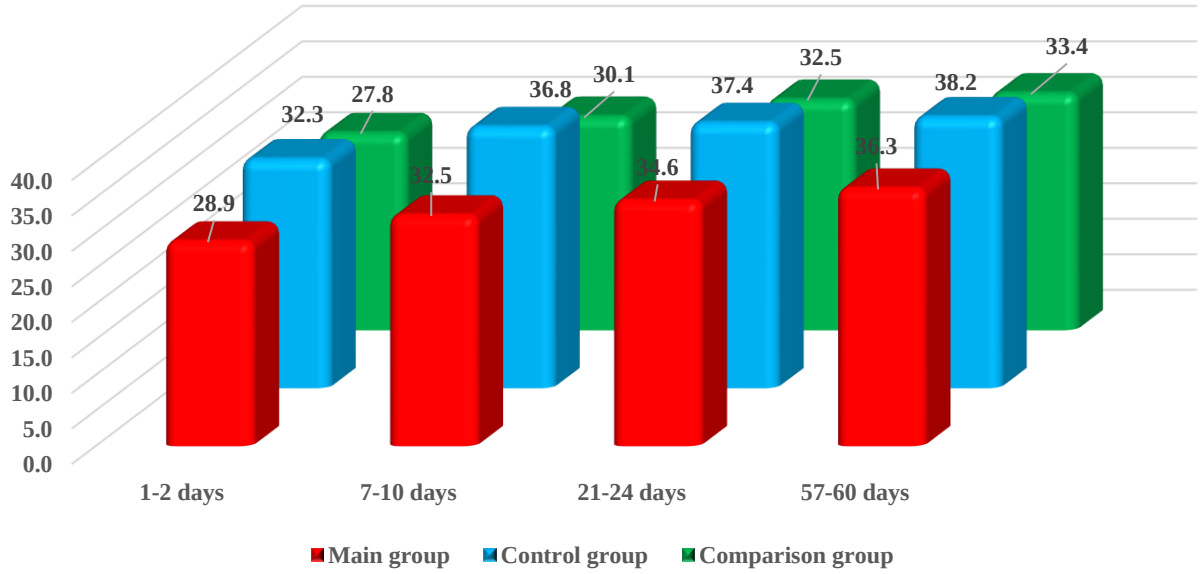
Figure 4.9. Dynamic indicators of initial and subsequent results on the Rivermid mobility index in study groups

With the help of the scale, examinations were carried out at 24-48 hours of hospitalization and at the time of discharge from the intensive care unit.

The results of the initial and post-rehabilitation interventions were compared with the ratio of the average scores on the Rivermid Mobility Index.

In the initial tests on the Rivermid mobility index, MG was 2.86±0.42, CG was 4.51±0.53 and CoG was 2.43±0.49, the results of study 7-10 were MG 7.59±0.38, CG was 10.77±0.5 and CoG was 7.05±0.56 points. On days 21-24 of the study, MG scored 8.1±0.33, CG 12.2±0.39 and CoG 7.87±0.53, on days 57-60 MG 11.1±0.27, CG 13.4 ±0.27 and CoG was 9.21±0.44 ($p<0.001$). The results showed that the level of movement limitations was higher in MG and CoG than CG, and the recovery rate after treatment and early rehabilitation measures in MG accompanied by DM was significantly lower than in CG, and the recovery rate was lower in CoG compared to both groups.

Medical research council scale (MRS). MRS is a rehabilitation scale used to assess the dynamics of muscle strength and motor activity recovery. Muscle strength



was assessed separately in the proximal and distal parts of each joint .

Figure 4.10. Dynamics of muscle strength assessment on the MRS scale.

Muscle strength on the MRS scale on day 1-2 of the study MG 28.9±0.63 points, CG 32.3±0.59 and CoG 27.8±0.9 points, on days 7-10 of the study MG 32.5±0 ,53 points, CG 36.8±0.4 points and CoG 30.1±0.57 points showed the level of movement recovery. On days 21-24 of the study, MG 34.7±1.14 points, CG 36.8±0.82, CoG 32.5±0.61 points and on days 57-60 MG 36.4±1.18, CG 38, 2±0.8, CoG was restored to 33.4±0.73 points (p>0.01).

Early rehabilitation interventions and movement disorders were assessed in the study groups at the beginning and end of the study. Taking into account the fact that early rehabilitation measures are an acute period of blood circulation in the brain, patients need immobilization syndrome, unstable hemodynamic indicators and DM accompaniment in the main group of patients, rehabilitation measures without contraindications were selected and used in practice.

After 24-48 hours of hospitalization, the practice of verticalization in MG and CG patients began, if there were no contraindications in the results of the clinical analysis of the patients, PLR and BSP tests were performed, when the test results were negative, the practice of verticalization was carried out step by step. When the

results were positive, the patients were re-tested after 24 hours, continuing the treatment in bed mode. The stage is in steps from 30º to 90º in each stage, when 15º is shown, the patient's vital signs are kept for 15 minutes without changing more than 20%, and then transferred to the bed mode again, after two hours, the next stage can be restored. It was found that the presence of orthostatic deficits, diabetic polyneuropathy and diabetic nephropathy in different degrees in MG patients caused a relatively low recovery of neurological deficits on verticalization and neurovisual scales, a longer duration of early rehabilitation processes, and a decrease in efficiency. It was found that CoG, where early rehabilitation measures were not carried out, had a significantly lower rate of recovery of neurological deficits than MG. In short, when ischemic stroke occurs on the basis of diabetes, objective examinations of patients with and without early rehabilitation procedures reveal a number of systemic pathological changes in the cardiovascular, digestive, urinary system, and neurological status, and these changes significantly worsen the patient's condition. These pathological changes accompanied by DM require clinical and laboratory analysis of the dynamics and, in turn, a specific approach to treatment and early rehabilitation. In the direction of psychological rehabilitation, taking into account the individual characteristics of patients, rational psychotherapy, emotional psychotherapy or psychological conversation methods were conducted, and the level of anxiety in patients was assessed using the Taylor scale. The level of anxiety was initially relatively high in MG and CoG patients, and after psychological rehabilitation procedures, it was observed that it decreased significantly in both MG and CG groups, despite the decrease in general anxiety in MG, a higher ratio of anxiety compared to CG was maintained. In CoG, on the 7-10th day of the onset of the disease, the level of memory increased compared to the 1-2th day, and on the 21-24th and 57-60th day, this indicator was found to decrease, and this situation is based on the adaptation of the patient to the disease.

In order to restore motor activity, electrostimulation and magnetotherapy methods were used in physiotherapeutic procedures.

Passive gymnastics and breathing exercises were used from the therapeutic exercise group. Also, taking into account the different situations of the paralyzed and healthy side of the body, appropriate approaches were made.

In order to study the effectiveness of early rehabilitation practices and the effect of DM on it, the dynamics of indicators were evaluated using the NIHSS scale, Barthel scale, Rivermid mobility index and MRS scales. In neurovisual examinations, in MG and CoG on the background of DM, neurological deficits were formed at a deeper level than in CG, recovery in early rehabilitation measures was observed to be lower in MG compared to CG, and in CoG without early rehabilitation measures, compared to both groups, it was observed that the level of anxiety was higher and neurological deficits were recovered to a lesser extent. .

CONCLUSION

Ischemic stroke today is a leading cause of disability and death. It has been found that the high efficiency of treatment depends largely on diagnosis, differential treatment and early rehabilitation measures in special intensive neurology departments from the first hours of disease detection. The coexistence of ischemic stroke with diabetes complicates the process of ischemic stroke treatment and rehabilitation due to hyperglycemia and many other complications of diabetes. The results in patients suffering from ischemic stroke against the background of diabetes deserve special attention, in which pulmonary infectious complications are observed 1-3 times more often, and vascular complications are observed 4 times more often. Today, a number of scientific studies are being carried out in the world to reduce the rates of death and disability after a stroke, early diagnosis and treatment-prophylaxis of the disease. In particular, ischemic stroke against the background of diabetes mellitus has specific clinical-neurological, neurovisualization characteristics, and requires specific approaches in the rehabilitation process due to the occurrence of a number of changes in the nervous system. In such cases, it is of great practical importance to determine the individual aspects of the diseased organism and to optimize the development of examinations, treatment and rehabilitation programs that create the possibility of adequate recovery.

As a result of the improvement of treatment and rehabilitation measures in the USA, in the first year after a stroke, costs have been reduced by 10 times, patients have been able to maintain self-service, family disability, and work activities through the restoration of impaired functions. In Russia, as a result of the organization of medical care based on the main multidisciplinary criteria, mortality in II and 24.1% in GI decreased by 11.1% in the first 30 days, and recovery after stroke increased to 80%. [133; pp. 14-15].

Results of examination and analysis of 190 patients who were admitted and treated with the diagnosis of acute circulatory disorders in the brain, ischemic type in 2020-2021 in order to solve the scientific goals and tasks envisaged by our research work in the Bukhara branch of the Republican Emergency Medical Scientific Center, emergency neurology and neuroreanimation departments provided. Ischemic stroke occurred on the background of diabetes, group I (main) consisted of 80 patients, the ratio of women to men was 1:1.1 and the average age was 62.3±6.2, group II (comparative) diabetes was not detected in the anamnesis and examinations 70 persons, with a gender ratio of 1:2.5, with a predominance of women and men, and an average age of 61.2±6.9 years. Group III (comparison group) consisted of 40 patients with an average age of 65.1 ± 10.3, with a gender ratio of 1:1.7, and patients who did not undergo early rehabilitation due to the background of diabetes.

Examination methods included clinical-neurological tests: neurostatus, NIHSS scale, Barthel scale, Rivermead mobility index, Taylor scale and MRS scale. Practice verticalization PLR and BPS based on the results of the tests. Laboratory methods: took a general analysis of blood and urine. Biochemical tests included blood coagulogram, blood glucose, urea and creatinine levels.

Instrumental research includes methods such as electrocardiography (ECG), ultrasound dopplerography of the brain's branchiocephalic vessels (BTsT UTDG), magnetic resonance imaging (MRT), computer tomography (CT).

Statistical research methods (using computer programs) were used to analyze the research results and data.

When an ischemic stroke occurs against the background of diabetes mellitus, aging is not indicated in both pathologies, and the selection of individual appropriate rehabilitation measures, their use as early as possible and their implementation in a comprehensive manner play an important role in the recovery of patients. Diabetes and its complications are one of the main factors that reduce the delay and effectiveness of rehabilitation activities.

In patients with diabetes, the process of verticalization is slow and lasts relatively long. Regular and step-by-step implementation of the practice of verticalization leads to an increase in the level of recovery and a decrease in complications in the main and control groups. The frequent occurrence and persistence of unconsciousness disorders in ischemic strokes on the background of diabetes compared to the control group leads to a delay of active passive and active verticalization processes by 3-4 days. Manifestation of orthostatic deficits, diabetic polyneuropathy and diabetic nephropathy at different levels causes relatively low recovery of neurological deficits on verticalization and neurovisual scales, longer duration of early rehabilitation processes and reduced efficiency.

Early rehabilitation interventions and movement disorders were assessed in the study groups at baseline and at the end of the study. In the direction of psychological rehabilitation, taking into account the individual characteristics of patients, rational psychotherapy, emotional psychotherapy or psychological conversation methods were conducted, and the level of anxiety in patients was assessed using the Taylor scale. The level of anxiety was initially relatively high in AG patients, and after psychological rehabilitation procedures, it was observed that it decreased significantly in both groups, despite the general reduction of anxiety in AG, a higher ratio of anxiety compared to NG was maintained. During the 7-10 days of the onset of the disease, the level of ventilation was higher than in the 1-2 days, and during the study, this indicator was kept at a higher level compared to AG and NG, who underwent psychological rehabilitation.

In order to restore motor activity, electrostimulation and magnetotherapy methods were used in physiotherapeutic procedures.

Passive gymnastics and breathing exercises were used from the therapeutic exercise group. Also, appropriate approaches were taken into account in different situations of the paralyzed and healthy side of the body.

According to the Taylor scale, the average index before psychological rehabilitation in MG (n=80) patients was 21.0±0.86 and the average index after rehabilitation was 12.3±0.48 ($r<0.001$), in CG (n=70) patients before psychological rehabilitation the average index is 17.84±0.86 and the average index after rehabilitation is 8.7±0.5 ($p<0.001$) in the CoG group 20.43±1.46 on 1-2 days, 16.38±0 on 57-60 days, It was found to be 93 points. As a result of psychological rehabilitation in both groups, the average level of anxiety decreased, the level of anxiety increased in CoG 7-10 days, and the average level decreased in this group at the end of the study.

According to the Barthel scale, MG was 45.5±2.24 points at the beginning of the study and 84.2±1.12 at the end of the study ($p <0.001$). it can be observed that the score has improved. CG this indicator was 55.5±2.45 at baseline and 92.6±1.18 at follow-up ($p <0.001$) points and CoG was 43.8±2.47 points on the 1st-2nd day of the study and 74.5±2.81 points on the 57th-60th day of the study. It can be observed that the neurologic deficit rate ratio was 1.22 at the beginning of the study and 1.20 at the end of the study. At the end of the study, it was found that CoG neurological deficits were deeply expressed compared to both groups.

The mean NIHSS score at the beginning of the study was 8.8±0.36 for MG, 3.8±0.22 at the end of the study ($p<0.001$) and 8.2±0.37 for CG before treatment and 2.9±0 after rehabilitation measures 19 ($p<0.001$) and CoG was observed to be 9.1±0.49 at the beginning and became 5.2±0.55 points.

In the initial tests on the Rivermid mobility index, MG was 2.86±0.42 points, CG was 4.51±0.53 points, CoG was 2.43±0.49 points, and the final research results were MG 7.59±0.38 points. and CG was 10.77±0.5 points and CoG was 9.21±0.44 points ($p>0.001$). The results showed that the level of movement limitations was higher in MG compared to CG, and the recovery rate after treatment and early rehabilitation measures in MG accompanied by DM was significantly lower

compared to CG. Recovery of motor activity of CoG, where early rehabilitation measures were not carried out, was less expressed than MG and CG.

The dynamics of the MRS scale was initially MG 28.9±0.63 points, CG 32.3±0.59 points and CoG 27.8±0.9 points, and in the follow-up examinations CG 32.5±0.53 points, CG 36.8±0.4 points and CoG was 33.4±0.73 points ($p<0.01$).

In order to study the effectiveness of early rehabilitation practices and the effect of DM on it, the dynamics of indicators were evaluated using the NIHSS scale, Barthel scale, Rivermid mobility index and MRS scales. In the neurovisual examinations, it was observed that in MG and CoG on the background of DM, neurological deficits were formed at a deeper level than in CG, and the recovery in early rehabilitation measures was relatively low in CG.

As a result of the conducted research and scientific research, the following conclusions were drawn:

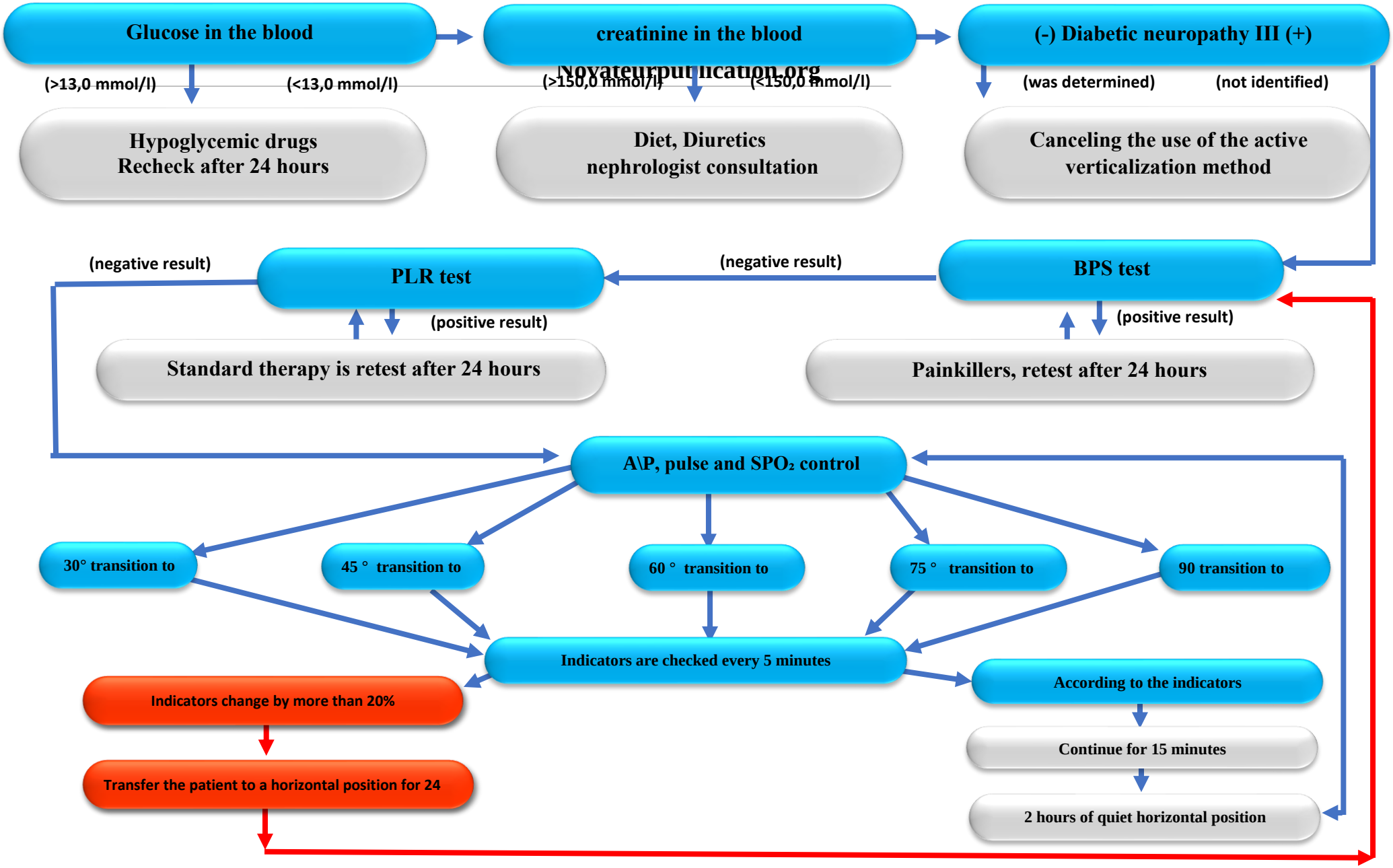
1. Movement, sensation, speech, and psychoemotional disorders in patients with ischemic stroke caused by diabetes are more pronounced compared to ischemic stroke without diabetes ($p<0.001$), macro- and microangiopathy in these patients due to high blood sugar, urea, and creatinine levels. (100 percent), diabetic retinopathy (40 percent), polyneuropathy of II-III degree (85-15 percent), nephropathy (45 percent) and aggravates the course of ischemic stroke.

2. Neurovisual examination of ischemic stroke with diabetes compared to ischemic stroke without diabetes cerebral subatrophy (72.5 vs. 58.6 percent), vascular encephalopathy (95 vs. 90 percent, respectively), a higher detection rate of the ischemic focal zone (56.3 vs. 45.7 percent), and a more severe degree of vascular stenosis ($p <0.001$) represents.

3. The practice of verticalization in patients with ischemic stroke caused by diabetes, PLR and BSP test results are negative, blood sugar level is below 13 mmol/l and creatinine level is below 130-150 μmol/l , gradual implementation after 24-48 hours of hospitalization increases the effectiveness of early rehabilitation.

4. Complex early rehabilitation (verticalization, psychological rehabilitation, physical therapy, therapeutic exercises) started in the acute period of ischemic stroke

against the background of diabetes improves the quality of life by 1.13 times according to the Barthel scale, 1.17 times according to the NIHSS scale, and the level of anxiety according to the Taylor scale by 2 .6 times, and reduced treatment days by 1.4 days.



Algorithm of verticalization in case of ischemic stroke in the background of DM

PRACTICAL RECOMMENDATIONS

1. In the acute period of ischemic stroke with diabetes, it is recommended to monitor blood sugar, creatinine analysis and perform verticalization when the blood sugar level is less than 13 mmol/l, creatinine level is lower than 130-150 μmol/l, and the mild level of diabetic polyneuropathy, PLR and BSP tests are negative.

2. The practice of verticalization is performed step by step for 15 minutes at angles of 15-30°, 30-45°, 45-60°, 60-75° and 75-90°, every 5 minutes the respiratory rate, pulse, arterial blood pressure and SPO2 are positive. based on the result, when signs of orthostatic failure appear, the patient is transferred to a horizontal position.

3. In order to accelerate the recovery of neurological deficit, it is recommended to use psychological support, physiotherapeutic treatment (magnetic wave treatment, electrostimulation), healing, breathing exercises from the first day of ischemic stroke.

4. in patients who have had an ischemic stroke against the background of diabetes and without diabetes, it is appropriate to carry out early rehabilitation measures in the acute period of the disease in a complex form.

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