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ISCHEMIC STROKE SYMPTOMS AND TREATMENT

Begbutayeva Sokhila Bakhtiyor kizi
Department of Neurology
Samarkand State Medical University
Eshpulatov Sherbek Sunnatullo ugli
Department of Neurology
Samarkand State Medical University
Musurmonova Guzaloy Olmosovna
Department of Neurology
Samarkand State Medical University
Eshankulova Zebiniso Zokirjon kizi
Department of Neurology
Samarkand State Medical University
Kasimov Arslanbek Atabayevich
Department of Neurology
Samarkand State Medical University
Mamurova Mavludakhon Mirkhamzayevna
Department of Neurology
Samarkand State Medical University

Abstract. Stroke is a collective term referring to several types of cerebral circulatory disorders: ischemic stroke (aka brain infarction), hemorrhagic stroke (cerebral hemorrhage), venous infarction, and subarachnoid hemorrhage (bleeding into the space between the inner and middle layer of tissue covering the brain).
Keywords: Physical rehabilitation of upper limb function after stroke.

Introduction. An ischemic stroke is the dying off of an area of brain tissue as a result of an inadequate supply of blood and oxygen to the brain due to a blocked artery.

Brain vascular lesions are commonly divided into two groups:

- Vascular occlusion (ischemia, infarction), which leads to softening of an area of brain matter due to decreased blood supply. The cause of such blockage can be the formation of a clot on the atherosclerotic plaque (thrombosis), ingress of a clot that formed in another organ (embolism), dissection (dissection) of cerebral arteries, arteritis (inflammation of the walls of the arteries).
- Hemorrhage (hemorrhagic stroke) when a cerebral vessel ruptures and part of the brain matter is soaked with the blood that has spilled out

Causes of stroke

Causes of ischemic stroke:

- atherosclerosis - most often develops after age 60;
- hypertension - a frequent etiologic factor in strokes; in hypertension, strokes develop at the stage of arteriosclerotic changes;
- changes in the coagulation properties of blood (hyperprothrombinemia), which contribute to the development of thrombosis;
- atrial fibrillation is the most frequent cause of cerebral artery thromboembolism;
- impaired patency of cerebral veins - a rare cause of ischemic stroke.

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Causes of stroke at a young age: arterial dissections, coagulopathies on the background of, for example, antiphospholipid syndrome or taking oral contraceptives, cerebral arteritis on the background of systemic rheumatic diseases or infectious processes, thromboemboli from vegetations on heart valves in drug addicts with endocarditis.

Symptoms of ischemic stroke

Stroke is always sudden and transient, you can not be prepared for it. Focal (disorders of movement, sensation, speech, coordination, vision) and general cerebral (impaired consciousness, nausea, vomiting, headache), neurological symptoms of ischemic stroke occur suddenly and instantly, last more than a day, can cause death.

The first signs of stroke:

A person cannot fulfill the request to smile because facial expressions are disturbed. His smile will be crooked, with one side down.

Speech is slurred, slurred, it may even seem like a drunk is trying to talk to you.

It is difficult to raise your hands to the same level. You can tell which arm is lower by which side is affected.

A person with a stroke will not be able to stick out their tongue. He will fall down.

If any of the above signs appear, an ambulance should be called. From the onset of the first stroke symptoms to the administration of medication should take no more than 4.5 hours, so rapid hospitalization is important.

Eye changes:

one pupil is dilated;

eyeballs move erratically;

pupils are unresponsive to movement;

the patient feels squeezing of the eyes, surrounding objects and people may appear to be bifurcated.

Other symptoms may also be observed in stroke:

Dizziness due to damage to the vestibular centers of the nervous system.

Visual disturbance: double vision, narrowing or loss of visual fields.

Numbness of the limbs on one side.

Weakness in half of the body.

Violation of swallowing and speech. Thus, the patient begins to slur his words, stutter, and in some cases can not say anything at all.

Changes in gait and coordination disorders. In this state, it is difficult for the patient to even stand up on his own.

During loss of consciousness, seizures may appear.

In severe cases, doctors note such signs of stroke as short-term memory loss and coma.

Unlike ischemic stroke, which occurs due to a disruption of blood flow through a cerebral artery, hemorrhagic stroke develops as a result of a ruptured blood vessel. These types of stroke differ in their manifestations and require different treatment strategies. The most prominent symptoms of hemorrhagic stroke are sudden severe headache. This type of stroke occurs in 20% of all strokes.

According to the depth of the neurological defect and the time of regression of neurological symptoms are distinguished:

transient ischemic attack - complete recovery occurs within 24 hours;

minor stroke - clinical symptoms disappear within three weeks, i.e. when the cycle of pathogenetic changes in the ischemia center is completed;

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completed stroke - persistence of symptoms for more than three weeks.
The clinical picture of stroke depends on the affected vessel and the level of the developed occlusion.
Middle cerebral artery lesion
Obstruction of the middle cerebral artery due to embolism or stenosis disrupts blood flow in the entire region of the artery and is expressed by:
complete or partial speech disorder (aphasia);
paralysis of muscles of one half of the body (hemiplegia);
decreased sensitivity of one half of the body (hemihypesthesia);
inability to move the eyes in a horizontal direction (gaze paresis) contralaterally.
In case of obstruction of the upper branches of the middle cerebral artery there is a speech disorder (aphasia) due to the lesion of the motor center of the brain (Broca's center) with hemiparesis of the limbs, mainly the hand and mimic muscles of the lower half of the face on the opposite side of the affected cerebral hemisphere.
If the lower branches of the middle cerebral artery are obstructed, then a speech perception disorder (Wernicke's aphasia) develops with impaired movements of the hand and mimic muscles of the lower third of the face contralateral to the affected cerebral hemisphere.
Anterior cerebral artery lesion
An embolization of the anterior cerebral artery causes:
limb weakness (hemiparesis) on the opposite side, with more weakness in the leg than in the arm;
Robinson's symptom (unconditional grasping reflex), increase in pyramidal tonuson artery muscles, apraxia contralaterally (violation of movements for their own purpose - for example, the patient brings a glass of water not to the mouth, but to the ear);
impairment of volitional impulsion (abulia);
loss of the ability to walk or stand (abasia);
intrusive repetition of a phrase, action, or emotion (perseveration);
urinary incontinence.
Sometimes both anterior cerebral arteries branch from a single trunk, and if occlusion occurs, severe neurologic disorders develop.
There are clinical cases when obstruction of the anterior cerebral artery is not manifested by neurological symptoms, because there is an anastomosis (connections of arteries inside the skull between each other and the connection of internal and external arteries).
Carotid artery lesions
Stenosis of the carotid artery and destruction of atherosclerotic plaques becomes the cause of emboli.
Sometimes occlusion of the carotid artery does not cause neurologic symptoms due to compensated collateral circulation.
If focal neurological disorders have occurred, they are a consequence of a drop in blood flow in the middle cerebral artery basin or its part.
The pronounced stenosis of the B carotid artery and the deficit of collateral circulation affect the end sections of the middle cerebral artery, PM, and sometimes the posterior cerebral artery.
Lesion of the posterior cerebral artery
The cause of occlusion of the posterior cerebral artery can be either embolism or thrombosis.
Neurologic symptoms are more common:
Alternating hemiparesis or hemiplegia;

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upper quadrant bilateral blindness in half the visual fields,
amnesia;
dyslexia (reading problems) without dysgraphia (writing skills are normal);
amnestic aphasia (including color aphasia);
paresis (paralysis) of the oculomotor nerve on his/her side;
involuntary movements and ataxia (uncoordinated movements in the absence of muscle weakness) on the opposite side of the lesion.
Lesion of the arteries of the vertebro-basilar basin (vertebro-basilar basin)
Atherosclerosis, thrombosis or embolism is the cause of deterioration of blood flow in the vertebro-basilar basin.
Occlusion of branches of the main (basilar) artery (BA) causes dysfunction of the brainstem bridge and cerebellum on one side.
On the side of the stroke develops ataxia, weakness of facial expression muscles, eye muscles, nystagmus (uncontrolled oscillatory eye movements), dizziness, hyperkinesis of the soft palate, sensation of movement of objects in space, and opposite - weakness of the limbs and hypoesthesia. In hemispheric stroke on its side - paresis of gaze, on the opposite side - weakness of limbs, on the side of the focus - weakness of facial muscles, eye muscles, nystagmus, dizziness, nausea, vomiting, hearing loss or tinnitus, hyperkinesis of the soft palate and sensation of movement of objects in space.
The process of stenosis or occlusion of the main BA trunk is manifested by bilateral focal neurological symptoms in the form of tetraplegia, gaze paresis in the horizontal plane, cerebral coma or decortical syndrome. The same clinic will be in the occlusion of two vertebral arteries and in the lesion of the dominant vertebral artery, if it was the main blood supply to the cerebral structures. Occlusion of the main artery causes death from dysfunction of the respiratory center in the GM trunk.
Stenosis and occlusion of vertebral arteries (PA), passing in the skull, gives neurological focal symptomatology, characteristic of the clinic of dysfunction of the medulla oblongata, in the form of dizziness, dysphagia (swallowing disorders), hoarseness of the holonasal artery, Gorner's symptom and loss of sensitivity on its side, and on the opposite side, pain and temperature sensitivity is disturbed. Similar symptomatology occurs in lesions of the posterior cerebellar artery (posterior cerebral artery).
Cerebellar Infarction (CI)
Cerebellar infarction is manifested by nystagmus (uncontrolled oscillatory eye movements), impaired coordination of movements, dizziness, nausea, and vomiting.
Lacunar infarcts (LI)
LI in most cases occur in people suffering from carotid arterial diabetes and hypertension due to lipohyalinosis with occlusion of lenticulostriary arteries of the brain.
Blockage of such vessels leads to the formation of small deep-seated LI with subsequent formation of cysts in this place.
Embolism or atherosclerotic plaque may also occlude the vessel. The course of LI may be asymptomatic or manifest its own symptom complex.
Spinal cord stroke
A condition in which blood flow to the spinal cord is impaired is called spinal cord stroke. This condition is rare and also has hemorrhagic and ischemic varieties. Precursors of stroke:
acute spinal pain, against the background of which weakness of the limbs appears, their sensitivity is disturbed;

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cease to function naturally some internal organs, most often manifested by failure of defecation, urination;
paralysis of the arms and legs, as well as a feeling of pain in them.
Signs of coma
In some cases, coma develops after the disease, its symptoms are:
sudden loss of consciousness;
the face turns a purple color;
loud breathing, wheezing;
tense pulse, increased blood pressure;
constriction of the pupils and their sluggish response to light;
decreased muscle tone;
urinary incontinence.
Stroke can lead to irreparable consequences, evidenced by:
A complete lack of any response when attempts are made to bring the person to consciousness;
a drop in body temperature;
no pupillary response.
Conclusion. Thus, the main factor that determines the consequences of occlusive procession of the arteries feeding the brain is not the size of the occluded artery or even its role in the blood supply of the brain, but the state of collateral circulation.
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