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Tursunova, M. O., Khaydarov, N. K., Abdullaeva, M. B., Abdukodirov, E. I., & Nazarova, M. F. (2021). Significance of transient ischemic attacks (TIA) in the development and course of ischemic strokes. *International Journal of Health & Medical Sciences*, 4(2), 215-219. <https://doi.org/10.31295/ijhms.v4n2.1703>

Significance of Transient Ischemic Attacks (TIA) in the Development and Course of Ischemic Strokes

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Abstract---The present paper discusses the significance of transient ischemic attacks (TIA) in the development and course of ischemic strokes. Furthermore, it provides the analytical diagnosis and treatment of this disease in the Uzbekistan. Thus, the most effective treatment method for primary prevention of TIA and IS are hospitalization of patients with this TIA and standard treatment of stroke, carotid endarterectomy is performed if necessary. The use of antiplatelet drugs leads to an improvement in blood rheological parameters, but does not affect the indicators of cerebral hemodynamics.

Keywords---atherothrombosis, hemihypesthesia, hypoaesthesia, paresthesias, pathogenetic, syndrome, transient ischemic attack (TIA)

Introduction

Transient ischemic attack (TIA) is a risk factor for stroke, a dangerous manifestation of cerebrovascular insufficiency, and plays a key role in the semiology of cerebrovascular disease (CVD). TIA syndrome is currently the main sign reporting a risk of developing a stroke. 30-40% of patients who underwent TIA develop a stroke within the next 5 years. More than 20% of these strokes occur in the first month, and almost half - in the first year after TIA (Akpanova et al., 2018). The risk of stroke is 10% in the first year and 5% per year thereafter. The risk of developing a stroke increases with recurrence of TIA and as the patient gets older (the risk of developing a stroke increases 1.5 times when the patient is 10 years old) (Archipenko & Gulyaev, 2010). This condition requires treatment measures to prevent the development of IS in this category of patients. According to various publications, numerous cohort TIA in the U.S. and other countries have found that the prevalence and morbidity of TIA vary, from 0.37 to 1.1 per 1,000 population per year, the incidence among Americans is 2.3%, and from 3.4 to 4.6% with age. The incidence of TIA

increases with age in a British study, reaching 6.41 per 1,000 populations over the age of 85 years. It should be noted that 7 to 40% of stroke patients have a history of TIA. In Russia, 40,000 people are diagnosed with TIA every year (Belyavsky, 2019; Angeli et al., 2014). According to B.G. Gafurov, the incidence of TIA in Uzbekistan is 40,000 cases a year. These rates may be even higher because TIA is characterized by rapidly passing clinical symptomatology, which reduces the need for patients to seek medical attention. TIA attacks can recur frequently or occur only once or twice. In many cases, patients do not pay much attention to short-term changes and do not seek medical advice, so it is difficult to assess the prevalence of TIA. Nowadays, TIA is as urgent as a stroke. Experts from the European Organization for the Prevention of Stroke (OPS) have reconsidered the tactics of transporting these patients. TIA is a generally recognized risk factor for stroke development and is in turn associated with risk factors such as stroke. The mechanism of development of TIA is a focal decrease in blood supply to brain TIA due to damage to cerebral vessels. The pathogenetic difference of TIA from ischemic stroke is that in TIA the pathological process and organic disorders are temporary and reversible. Atherosclerotic damage of large and medium caliber arteries plays a key role in the formation of TIA (Abdullaeva et al., 2020). More sleep and spinal arteries are damaged. The basis of TIA is the process of destruction of atherosclerotic plaques, stenosis (atherostenosis), obliteration of the arterial cavity with plaque, embolism, thrombosis, atherosclerosis (atherothrombosis) complicated by plaque. However, TIA may also be associated with secondary structural changes in the blood vessels due to changes in vascular hemodynamics and calibration (Archipenko & Gulyaev, 2010).

The main features of TIA - short-term neurological symptoms (sudden onset and rapid regression of symptoms - in most cases, TIA stops within 1 hour), predominance of focal symptoms over general symptoms (less pronounced) - comparative diagnosis with hypertensive crises, acute hypertensive encephalopathy and small strokes important in the transfer. In the presence of TIA in the internal carotid artery system, hypoaesthesia on the opposite side of the ischemic lesion, paresthesias are observed, as a rule, limited to the skin of the face, limbs. In rare cases, hemihypesthesia occurs. Central paralysis may develop, often limited, involving one leg in the hand or a separate muscle group (palms, soles of the feet, fingers). The decrease in muscle strength is usually of a moderate nature, anisoreflexia, pathological reflexes are observed (Bulanova, 2013; Damulin, 2010).

When there is a TIA in the basin of the left middle cerebral artery, transient phase disturbances, sensory and motor disturbances occur. Some patients develop partial or secondary-generalized epileptic seizures. Proximal partial rupture of the internal carotid artery can be observed with the development of optico-pyramidal syndrome on the side of vascular occlusion in the form of monocular blindness (due to retinal ischemia), with contralateral central paralysis of the limbs. On the opposite side, where more TIA is localized in the cerebral cortex, transient brachyphasic paralysis, palmar numbness and/or weakness, and mild facial nerve central paralysis are observed.

In occlusive lesion of the wall of the left internal carotid artery, there are episodic non-acute apathetic changes in those who use the right arm a lot - it is called cortical dysphasia. In the presence of TIA in the vertebrobasilar system is characterized by the development of systemic dizziness, nausea in the ear and vegetative-vascular changes, nausea, hiccups, pale skin, diffuse hyperhidrosis. These changes are accompanied by statics, coordination disorders, and spontaneous horizontal nystagmus (Geraskina, 2013; Damulin et al., 2005). Most headaches usually occur in the neck area, intensifying when the position of the head changes. In VBP, TIA is three times more common than in the carotid pool, and in 50% of cases is an ischemic stroke. This is explained by the fact that in the column area there are more densely located brain centers that "react" to minimal ischemia, and in the cerebral hemispheres there are enough "quiet" areas, which reveal visual, coordination and hearing disorders (Gavrilova et al., 2011; Gudkova et al., 2013).

Photopsies, metamorphoses, visual field defects (positive and negative scotomas), and a feeling of "fog" around the eye are characteristic. When diplopia occurs, the motor innervation of the eye may be impaired. Transient disturbances of the function of the bulbar part of the brain occur in relatively small quantities (dysphonia, dysphagia, dysarthria). The development of rare alternating syndromes is also observed. Symptoms such as loss of consciousness, loss of orientation, and short-term memory loss are also observed in patients. Disorders of consciousness often occur in the form of stupor (Cacoub et al., 2009; Petri et al., 1996; Vorchheimer & Becker, 2006). Dropp-attacks develop in 15% of patients with spinal artery damage - there is a sudden fall without consciousness, as well as weakness in the legs, movement and sensory disturbances in the form of mono or paraparesis in 10%. Paroxysms like this are called Unterharnsheidt syndrome if they are accompanied by loss of consciousness (Rosini et al., 2013; Chien & Sterling, 2010).

The study of the clinical presentation of TIA is associated with certain difficulties. First, the diagnosis is based on catamnesis. Second, there are often difficulties in the comparative diagnosis of TIA and syncopal conditions. An important diagnostic criterion in favor of TIA is systemic vascular disease, instrumental research data confirming the

vascular etiology of transient disorders, and the presence of focal signs indicating organic damage to the brain or chronic cerebral ischemia (Dhand et al., 2014; Derev'yannykh et al., 2008).

The main part of comorbid conditions: arterial hypertension (87.5%), cerebral atherosclerosis (50% of cases), as well as cervical osteochondrosis of the spine (37.5% of cases). In the vertebro-basal basin, the duration of TIA is shorter and does not exceed one hour on average (Sandi et al., 2017). However, in localization in the carotid basin, they lasted from a few minutes to a day and were accompanied by confusion in consciousness in the form of surprising or simple hallucinations, some authors consider to be symptoms of "symptom irritation" (Dhand et al., 2014; Derev'yannykh et al., 2008).

The goal of treating patients with TIA is to prevent the development of TIA and AIS (acute ischemic stroke), in which the pathology caused by TIA is corrected and controlled risk factors (arterial hypertension, diabetes, hyperlipidemia, cardiac pathology) are controlled. Patients with critical stenosis of the main arteries of the head should be referred to a vascular surgeon for endarterectomy and / or stent placement. Since the 1990s, there is convincing evidence for the efficacy of carotid endarterectomy in patients with symptomatic 70–99% stenosis and asymptomatic > 60% stenosis (Akpanova et al., 2018). Prevention of ischemic stroke is of great importance in patients with TIA. The main cause of cerebral ischemia in TIA or atherothrombotic stroke is a thrombotic complication of atherosclerosis developing on the basis of phospholipid activation mechanism (associated with plasma factors - the cellular link of hemostasis and factors XII, XI). In atherothrombotic stroke, the processes of intravenous adhesion and aggregation of platelets in parallel in the bloodstream are detected, platelet factors, ADP, serotonin are released, which leads to a significant decrease in the compensatory capacity of the hemostasis system and vascular wall antiaggregation potential. Phospholipid activation develops in more newly emerging atherosclerotic plaques, where the area is most prone to cracking and damage (Akpanova et al., 2018). In addition, atherothrombosis is considered to be the cause of cerebral ischemia in 1/3 of patients with thromboembolic stroke. In the prevention of ischemic strokes, especially atherothrombotic type, there is a need to use antiplatelet drugs for the activation of the platelet-vascular link of hemostasis in thrombo- and atherogenesis (Antonyuk).

Most patients with symptoms of vascular pathology, including ischemic stroke and transient ischemic attack (TIA), should be treated with antiaggregant drugs. The choice of antiplatelet drug for secondary prophylaxis takes into account the identified risk factors and systemic vascular pathology (myocardial infarction, stroke, TIA, transient retardation, etc.), especially the characteristics of hemostasis in a particular patient, as well as efficacy, pregnancy, safety, side effects and drug intake should be obtained (Archipenko & Gulyaev, 2010).

According to the results of international multicenter studies, the most effective drug for secondary prevention of ischemic disorders of blood circulation in the brain is acetylsalicylic acid. Acetylsalicylic acid (ASA) is the "gold standard" in the prevention of circulatory disorders in the brain with ischemic genesis, which is currently the most well-known of the antiaggregants (Chien et al., 2009; Bryant & Mezine, 1999). However, in most observations, bleeding from the gastrointestinal tract was detected when ASA was taken at a dose of 300 mg or more per day. A 13% reduction in the risk of serious vascular disease in ASA therapy has been reported in meta-analytical studies. Also, reducing the daily dose of ASA to 1 mg / kg allows a significant reduction in the frequency of side effects. Patients with TIA or stroke are recommended to take a moderate dose of ASA (75–300 mg / day) for life (Akpanova et al., 2018).

In the last decade, stroke prevention and mortality reduction has been one of the major challenges worldwide. Cholesterol lowering is also important in stroke prevention along with antiplatelet and antihypertensive therapy. A statistical randomized meta-analysis showed that lowering low-density lipoproteins to 1 mmol/l (39 mg / dl) resulted in a 21.1% reduction in stroke risk. The SPARCL study showed that Atorvastatin 80 mg / day was effective in preventing strokes and other vascular diseases, regardless of the subtype of ischemic stroke. In recent years, special attention has been paid to cognitive impairments that occur in TIA (Caliandro et al., 2006; Poveda et al., 2006). Studies show that cognitive deficits are observed in 40% of patients with TIA, with no signs of focal brain damage. It should be noted that psycho-emotional disturbances increase after each TIA attack, thereby aggravating the clinical course of the disease. A comparative study of the cognitive domain in patients with cerebral hypertensive crisis and TIA showed that cognitive performance in patients with CGC was fully restored compared to patients with TIA, confirming that the neural network in TIA was not in good condition. Many authors point out that the increase in cognitive impairment in TIA makes it more difficult to control the disease, reduces the patient's ability to follow the doctor's recommendations for AII prevention, and consequently increases the risk of TIA and stroke recurrence. Nowadays, TIA is as urgent as a stroke. European anti-stroke specialists have revised the tactics of handling these patients, with the aim of standardizing treatment similar to ADP (De Groot & Rauen, 2007; McInnes & Schett, 2017; Arcentales et al., 2017).

Conclusion

Thus, the most effective treatment method for primary prevention of TIA and IS are hospitalization of patients with this TIA and standard treatment of stroke, carotid endarterectomy is performed if necessary. The use of antiplatelet drugs leads to an improvement in blood rheological parameters, but does not affect the indicators of cerebral hemodynamics. Accordingly, long-term use of antiplatelet drugs in primary II prophylaxis after TIA is recommended in patients undergoing carotid endarterectomy. After 3 months, a decrease in all parameters (AC - acute cholecystitis, TG - thyroglobulin, LDL - low density lipoprotein) was observed against the background of treatment with statins, which led to the optimal level of the lipid spectrum, which is important in the prevention of IS in patients with TIA.

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