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RESULTS OF TREATMENT OF PATIENTS WITH INITIAL MANIFESTATIONS OF CEREBRAL BLOOD SUPPLY INSUFFICIENCY

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ABSTRACT

In patients with initial manifestations of cerebral blood supply insufficiency endonasal electrophoresis with cerebrolysate has a positive effect not only on the clinical condition of patients, but also on hemodynamics, bioelectrical activity of the brain and functional state of the central nervous system, reduces the severity of neurological deficit.

KEY WORDS: *Initial Manifestations Of Cerebral Blood Supply Insufficiency, Cerebrolysate, Endonasal Electrophoresis.*

Due to the continuing growth of cerebral vascular diseases ("epidemic"), one of the urgent problems of modern neurology is the prevention of chronic cerebral vascular insufficiency. According to epidemiological studies in the general structure of cerebral vascular pathology 68% of the initial manifestations of insufficiency of blood supply to the brain [6, 13, 14, 15]. Active work with this category of patients prevents further development of stroke.

Diagnosis of the initial manifestations of insufficient blood supply to the brain at the first stage is based on subjective manifestations: headache, dizziness, noise in the head, memory impairment, decreased efficiency. The basis for the diagnosis is the presence of two complaints or more, existing for a long time, constantly or frequently recurring (at least once a week for the last three months). The present complaints should most likely have a vascular genesis and should not be due to other causes (head trauma, infections, severe somatic diseases). Initial manifestations of cerebral blood supply insufficiency are a compensated stage of cerebral vascular lesions, clinically manifesting only at increased demand of the brain for blood flow (strenuous mental work, especially in conditions of hypoxia, pronounced fatigue). However, this compensation is not reliable, because it is at a critical level, and the mechanisms of cerebral blood flow self-regulation function in an unstable mode. It should be borne in mind that the initial manifestations of cerebral blood supply insufficiency do not always indicate the early stages of cerebral vascular lesions and may be an expression of incomplete compensation in patients with already formed vascular process. At the initial manifestations of insufficiency of cerebral blood supply there are significant deviations of haemodynamic parameters, which leads to a persistent decrease in performance, creative activity and deterioration of quality of life [8, 9, 16 19].

Today, there are many good, effective medications that can correct the changes in the body, but they are not always available or the method of administration is not comfortable [4]. Using physiotherapeutic methods of drug administration, it is possible to eliminate these difficulties to some extent. For example, under the action of electric current, drugs under endonasal administration penetrate through the nasal mucosa, travelling pereneurally and along the lymphatic pathways, enter the liquor of the subarachnoid space and have an effect primarily on the hypothalamus [3, 11, 12].

Cerebrolysate is a preparation of bovine brain tissue; it contains 22 amino acids and biologically active peptides that cross the blood-brain barrier and directly reach nerve cells [10]. Cerebrolysate improves metabolic processes in brain cells, activates protein synthesis in neurons, improves haemodynamics. Increases the resistance of brain tissue to intoxication, hypoxia, hypoglycaemia. Widely used in neurological practice by intramuscular administration. In the treatment of cerebrovascular diseases, including the initial manifestations of insufficient blood supply to the brain, nootropic drugs are widely used. They are administered orally, by injection and physiotherapeutic methods [1, 2, 18]. Borisova N.A. et al. proposed a method of cerebrolysate treatment by endonasal administration (patent No. 22200033 dated 18.01.01).

We offer treatment of initial manifestations of insufficient blood supply to the brain by endonasal electrophoresis with cerebrolysate. As a source for electrophoresis of cerebrolysate we use galvanisation apparatus "Potok-1". Gauze turundas heavily soaked in 1 ml of 5% solution of cerebrolysate (diluted in 15 ml of distilled water at room temperature) are inserted into both nostrils of the patient, their free ends are placed over a small oilcloth on the upper lip, a conductive plate 1.5 by 2 -3 cm in size is placed on

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them, connected to the terminal of the apparatus. The lower edge of the cloth is folded over the conductive plate to prevent its contact with the body. And all this is fixed with several turns of bandages. The second electrode, with an area of 80 - 100cm2, is placed on the back of the neck. The first three procedures - current strength of 1 mA, for 12 - 15 minutes. Subsequent procedures - current strength of 3 mA, for 15 - 20 minutes. The first six days the drug is administered from the anode, the next six days from the cathode. The number of procedures is 12 - 14. By alternation of poles the transport of differently charged components of the drug into the brain tissue is achieved [1, 2, 17, 20].

Contraindications to treatment with endonasal electrophoresis with cerebrolysate: 1). High blood pressure (more than 160/100). 2) Heart rhythm disorders. 3) Acute and chronic renal pathology. 4) Individual intolerance [1, 2, 20].

The method is effective, comfortable, economical and does not cause adverse reactions. Under the action of electric current, drugs in endonasal administration penetrate through the nasal mucosa, travelling perineurally and along the lymphatic pathways, enter the liquor of the subarachnoid space and have an effect, primarily on the hypothalamus. Thus, a pronounced and prolonged neurophysiological effect is ensured due to the creation of a kind of drug depot in the brain structures [1, 2, 17, 20].

We have treated 84 patients with initial manifestations of cerebral blood supply insufficiency. Each patient before and after treatment was thoroughly examined clinically with assessment of general condition, neurological status with scoring of the vegetative nervous system according to A.M. Vein (2003). It was carried out: examination of haemodynamic indices by rheovasography and rheoencephalography on a computer rheograph "Rheo-Spectrum" by "NeuroSoft" company; ultrasound Dopplerography and transcranial Dopplerography of the main arteries of the head were performed on ultrasound Doppler systems "Sonicaid Vasoflo 4" (Oxford Sonicaid, England) and "Companion" (EME-Nicolet, Germany - USA); ultrasound Doppler scanning was performed on ultrasound scanner "Sonoline SL 450" (Siemenes, Germany). To record brain biopotentials, we used a 16-channel encelograph (Hungarian production). To evaluate the obtained results we used the classification of Zhirmunskaya E.A. 1967. The initial data before treatment for most parameters in patients with initial manifestations of cerebral blood supply insufficiency differed significantly (p=0,05) from the results obtained in the control group: disturbance of blood filling of cerebral vessels and venous outflow according to rheoencephalography, disorganisation of alpha - rhythm and presence of slow waves on electroencephalograms; disturbance of orthostatic stability of cerebral blood flow; metabolic reactivity of cerebral vessels, cerebral autoregulation according to ultrasound Dopplerography. The degree of expression of deviations was more pronounced depending on clinical manifestations.

At endonasal electrophoresis with cerebrolysate the patients showed: decrease in the severity of headaches, dizziness, sleep disturbance, increased efficiency (p=0,05); improvement of alpha - rhythm expression, decrease in the expression of delta and beta rhythms; normalised blood flow and tone of cerebral vessels, improved venous outflow according to rheoencephalography (p=0,05); according to Doppler data positive effects were registered in the form of expansion of compensatory possibilities of cerebral blood flow, the state of regulation system improved in the form of increase of cerebral blood flow reactivity to metabolic influences, increase of orthostatic stability. These data lead to the conclusion that in the initial manifestations of cerebral blood supply insufficiency it is most appropriate to use drugs that have a positive effect on regulatory mechanisms (such as cerebrolysate).

Catamnestic study with a depth of up to 1 -3 years showed the persistence of the therapeutic effect. The proposed method of treatment by endonasal electrophoresis with cerebrolysate in patients with initial manifestations of cerebral blood supply insufficiency has a positive effect on hemodynamics, bioelectrical activity of the brain, favourably affects the functional state of the central nervous system, reduces the severity of neurological deficit, which allows its wider use in medical practice. The advantage of endonasal administration over intramuscular injection is that the procedure is comfortable. The use of the method is possible in inpatient conditions of hospitals and day care centres of polyclinics.

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