

**ATONIC-ASTATIC FORM OF CHILDHOOD CEREBRAL PALSY. CORRECTION  
OF MOTOR AND SPEECH DISORDERS.**

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**Abstract.** *The article presents not only general information about cerebral palsy, concerning modern ideas about its causes and pathogenesis of development, but also important data for practitioners on different classifications of speech pathology (according to the location of the lesion, clinical manifestations) and its prevalence. Particular attention is paid to the principles and tasks of diagnosing speech disorders and building treatment and correction measures, considering all possible approaches to helping patients.*

**Keywords:** *cerebral palsy, speech disorders, diagnostics, treatment and correction approach, cortexin, non-drug interventions.*

In the atonic-astatic form of infantile cerebral palsy (ICP), muscle tone, unlike other forms of this disease, is qualified as hypotension, but their characteristic static and dynamic ataxia, hypermetria and intentional tremor significantly complicate the acquisition of new motor skills. Patients with atonic-astatic form of cerebral palsy initially find it difficult to maintain balance and master the creation and inclusion of physiological synergies in the process of movement. In most cases, morphological studies indicate underdevelopment of the cerebellum, its atrophy or dysplasia in patients with this group of cerebral palsy. However, vestibular functions, and above all, the sphere of coordination of movements and maintaining a posture, are subject to positive changes as a result of targeted training and comprehensive rehabilitation. With the localization of the pathological process in the frontal lobes of the brain in the clinical picture, mental retardation prevails over delayed motor development with pronounced motor demotivation. In these cases, an integrated approach is required in the treatment and rehabilitation of patients in order to improve vestibular functions and increase the functional activity of motor zones located in the frontal sections of the cerebral cortex. In recent years, in the rehabilitation of patients suffering from atonic-astatic form of cerebral palsy, modern methods of treatment have been used that not only correct muscle tone and reflex activity, but also have a direct impact on the restoration of neurophysiological functions of the brain due to the normalizing effect on cerebral metabolism and fine neurochemical regulation. To correct motor and speech disorders, the effect of microcurrent reflex therapy (MCRT) on the muscles of the musculoskeletal

and articulatory apparatus, which are in a state of hypotonicity, is actively used. Exposure to a stimulating alternating current makes it possible to activate trophic processes and start the mechanism of reinnervation of the hypotonic muscles of the musculoskeletal system. The impact on the zones of craniotherapy with a current of the microampere range improves the functional activity of the frontal cortex affected by hypoxia. Providing a therapeutic effect on corporal biologically active points (BAP) of the craniospinal region contributes to the stabilization of the reflex activity of the cerebellum.

In conditions of oxygen and energy deficiency that occurs with cerebrovascular lesions, the drug actovegin is of particular value - an antioxidant, a deproteinized extract of the blood of young calves. Its main action is to improve the utilization of oxygen and glucose. Under the influence of the drug, oxygen diffusion in neuronal structures is significantly improved, which reduces the severity of secondary trophic disorders, cerebral and peripheral microcirculation is significantly improved against the background of improved aerobic energy exchange of vascular walls and the release of prostacyclin and nitric oxide. The use of Cavinton also contributes to an increase in the concentration of acetylcholine in the structures of the brain, which is a necessary factor for improving neuromuscular transmission. Thus, the use of the drug Cavinton will also increase the effectiveness of stimulation of hypotonic muscles using MTRT by restoring the balance of the neurotransmitter acetylcholine in the body.

However, to date, no clinical trials have been conducted to evaluate the effectiveness of Cavinton in the complex treatment of patients with atonic-astatic form of cerebral palsy.

To study the effectiveness of complex treatment in the form of a combination of Cavinton with MCRT in patients with a diagnosis of cerebral palsy, atonic-astatic form, chronic residual stage, 23 children aged 3 to 7 years were examined and treated. The treatment was carried out on an outpatient basis at the Children's Department of Neurology of the clinic of Samarkand State Medical University.

All 23 patients underwent preliminary magnetic resonance imaging (MRI) of the brain and electroencephalogram (EEG). MRI revealed signs of organic brain damage in the form of combined hydrocephalus with a predominance of the external form, with a characteristic expansion of the subarachnoid cerebrospinal fluid spaces along the convex, up to atrophy of the frontal lobes; identified areas of demyelination and/or cystic changes in the white matter of the frontal regions of the cerebral hemispheres of the cortex; hypo- or dysplasia of the vermis and cerebellar hemispheres, expansion of the large occipital cistern or the presence of a retrocerebellar cyst. The EEG revealed signs of disorganization of the cortical rhythm, a slowdown in the rate of development of the bioelectrical activity of the brain, the presence of dysfunction of the mid-stem structures of the brain, and, in some cases, a decrease in the threshold for convulsive readiness.

All patients in the study of neurological status underwent palpation examination of muscle tone, as well as monitoring of the motor activity of the child in a familiar environment to assess the volume of active movements in the limbs. In all 23 patients, neurological examination revealed signs of static and dynamic ataxia, dysmetria, intentional tremor, severe hypotension of the muscles of the upper and lower extremities. In 9 patients, signs of static ataxia predominated — balancing movements of the head and torso were noted, the children did not sit or stand on their own, when they were deprived of support, the protective reaction of the hands and compensatory movements of the torso aimed at maintaining balance were absent. Motor skills were formed in 8 patients — the children held their heads, sat independently and stood at the support, however, they showed signs of dynamic ataxia (shaky gait, legs wide apart, jerky, excessive, awkward movements). In 6 patients with a predominance of organic damage to the frontal parts of the cerebral hemispheres, a sharp decrease in motor, mental and speech initiatives was also noted. In all patients, during a standard speech therapy examination, a general underdevelopment of speech with elements of cerebellar dysarthria was revealed: asynergy of the muscles of the speech apparatus with characteristic signs - a weak air jet, chanted speech, and in severe cases, pronunciation of only the first syllable from the word. All 23 patients received basic treatment: MCRT, repeated courses of manual limb massage with elements of exercise therapy. They were randomized into 2 groups. The first group included 12 patients who received, against the background of the basic treatment, repeated course treatment with Actovegin according to the method described below. The second included 11 patients who received basic treatment.

To conduct microcurrent reflexology, we used a device approved for serial production and use in medical practice “Microcurrent electroacupuncture computer stimulator “MECS”, which allows you to use the required number of acupuncture points per treatment session, since when an acupuncture point is exposed to a constant alternating current of microampere range, there is no destruction of the structures of biologically active points (BAP), which is characteristic of acupuncture. The use of MCRT allows you to control the location of the BAP. As a monitoring of the treatment process, electropuncture diagnostics according to I. Nakatani is used, with the help of which the state of acupuncture meridians is assessed and control points are selected based on objective data on the state of the patient's autonomic nervous system.

MCRT was carried out in 3 courses, consisting of 15 procedures, the duration of each procedure was 40-50 minutes. The courses of treatment were carried out intermittently: 1 month after the 1st course and 2 months after the 2nd course of treatment. The method of treatment was as follows: the impact was carried out sequentially on the BAP of the craniospinal region, on the zones of cranioacupuncture, on the BAP over the hypotonic muscles. The impact was carried out in two modes: braking mode - a constant negative current, with a power of 80  $\mu$ A; excitation mode -

alternating current, with a polarity reversal frequency of 0.5 Hz, a power of 80  $\mu$ A. The exposure time for each BAP is 60 sec. The inhibition mode was applied when the corporal BAPs were exposed to the classical meridians (English abbreviation) of the craniospinal region: GB20, GB21, GB12, BL11, LI15. The excitation mode was used when acting on the zones of cranioacupuncture and when acting on local BAP located in the center of the projections of the paretic muscles on the skin. During the MRI procedures, the patients were in a state of calm wakefulness, in the supine position.

Cavinton (Nycomed, Austria, 2 ml ampoules, 200 mg tablets) was used as intramuscular injections at a dose of 0.2 ml/kg/day, but not more than 5 ml once. The treatment course consisted of 10 injections once every other day in the morning. Drug treatment was carried out in 2 courses, after the completion of the 1st and 3rd courses of MCRT.

During the study, the following positive dynamics was revealed in all patients with atonic-astatic form of cerebral palsy: a decrease in the phenomena of static and dynamic ataxia in the form of a decrease in the amplitude of balancing movements of the head and trunk, elements of overshooting and intentional tremor was noted in all 12 patients of group I and 11 patients of group II groups. At the same time, some patients developed new motor skills: 9 people (75%) from group I and 6 people (55%) from group II learned to hold their heads and sit independently, and 8 people (67%) from group I and 6 people from group II (55%). Patients also showed an improvement in speech function: an increase in the air stream, an increase in the volume of speech and the appearance of the skill of continuous pronunciation of words, an expansion of vocabulary and the development of the skill of constructing phrases and simple sentences of 2–3 words. Thus, in group I, positive dynamics in the form of a decrease in the degree of speech underdevelopment was observed in 9 patients (75%), and in group II, in 6 patients (67%). A decrease in the degree of dysarthria, taking into account the severity of neurological dysfunction, was noted in group I from  $21 \pm 3$  points to  $7 \pm 2$  points, in group II from  $22 \pm 3$  points to  $17 \pm 2$  points.

The results of the study demonstrated the high efficiency of the combined use of Cavinton and MCRT in patients with atonic-astatic form of cerebral palsy due to the correction of hypotonic muscle tone, reflex activity of the cerebellum, and an increase in the functional activity of the motor areas of the frontal parts of the brain.

Thus, the combined use of Cavinton with MCRT is advisable to use in the complex rehabilitation of patients with atonic-astatic form of cerebral palsy.

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