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CURRENT ASPECTS OF INFANTILE CEREBRAL PALSY

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Annotation: Infantile cerebral palsy (ICP) is a concept that unites a group of motor disorders resulting from damage to various brain structures in the perinatal period. Pediatric cerebral palsy may include mono-, hemi-, para-, tetra-paralysis and paresis, pathological changes in muscle tone, hyperkinesis, speech disorders, shaky gait, movement coordination disorders, frequent falls, and the child's lagging behind in motor and mental development.

Key words: infantile cerebral palsy, speech disorders, hyperkineses.

Introduction. In cerebral palsy, intellectual impairment, mental disorders, epilepsy, hearing and visual impairment may be observed. Cerebral palsy is diagnosed mainly on the basis of clinical and anamnestic data. The algorithm of examination of a child with cerebral palsy is aimed at identifying concomitant pathology and excluding other congenital or postnatal pathology. People with cerebral palsy should undergo rehabilitation therapy for life, as necessary to receive medication, surgery and physical therapy.

According to world statistics, infantile cerebral palsy occurs with a frequency of 1.7-7 cases per 1000 children under one year of age. In Russia, according to various data, this figure is 2.5-6 cases per 1000 children. Among premature babies the incidence of cerebral palsy is 10 times higher than the statistical average. According to recent studies, about 40-50% of children with cerebral palsy were born as a result of premature births. If we talk about chronic diseases of childhood, cerebral palsy is one of the leading problems in modern pediatrics. Among the reasons for the increase in the number of cerebral palsy patients is quite rightly called not only the deterioration of the environment, but also the progressive development of neonatology, which now makes it possible to nurse infants with various pathologies, including premature newborns weighing 500g or more.

The main risk factors for cerebral palsy in the postpartum period are asphyxia and hemolytic disease of the newborn. Asphyxia of the newborn resulting in cerebral palsy can be associated with amniotic fluid aspiration, various lung malformations, and pregnancy pathology. A more common postpartum cause of cerebral palsy is toxic brain damage from hemolytic disease that develops as a result of blood incompatibility or immunologic conflict between the fetus and mother.

Classification of cerebral palsy

According to the location of the affected area of the brain, cerebral palsy is classified into 5 types in neurology. The most common form of cerebral palsy is spastic diplegia. According to various data, infantile cerebral palsy of this form makes from 40 to 80% of the total number of cerebral palsy cases. The basis of this form of cerebral palsy is damage to the motor centers, leading to the development of paresis, more pronounced in the legs. When the motor centers of only one hemisphere are damaged, a hemiparetic form of cerebral palsy occurs, manifested by paresis of the arm and leg on the side opposite to the affected hemisphere.

In about a quarter of cases of cerebral palsy has a hyperkinetic form associated with damage to subcortical structures. Clinically, this form of cerebral palsy is manifested by involuntary movements - hyperkineses, which increase when the child is excited or tired. With violations in the cerebellum, an atonic-astatic form of cerebral palsy develops. This form of cerebral palsy is manifested by disorders of statics and coordination, muscle atonia. It accounts for about 10% of cerebral palsy cases.

The most severe form of cerebral palsy is called double hemiplegia. In this variant, cerebral palsy is the result of total damage to both hemispheres of the brain, leading to muscle rigidity, because of which children are unable not only to stand and sit, but even to hold their head independently. There are also mixed variants of cerebral palsy, including clinical symptoms characteristic of different forms of cerebral palsy. For example, there is often a combination of hyperkinetic form of cerebral palsy with spastic diplegia.

Symptoms of cerebral palsy

Child cerebral palsy can have a variety of manifestations with varying degrees of severity. The clinical picture of cerebral palsy and its severity depend on the localization and depth of damage to brain structures. In some cases, cerebral palsy is noticeable in the first hours of a child's life. But more often the symptoms of cerebral palsy become obvious after a few months, when the child begins to lag significantly behind in neuropsychiatric development from the accepted pediatric norms. The first symptom of cerebral palsy may be a delay in the formation of motor skills. A child with cerebral palsy does not hold his head for a long time, does not turn over, is not interested in toys, can not consciously move limbs, does not hold toys. When trying to put a child with cerebral palsy on his feet, he does not put his foot on the full foot, but stands on tiptoe.

Paresis in cerebral palsy can be only in one limb, have a unilateral character (arm and leg on the side opposite to the affected area of the brain), cover all limbs. Insufficiency of innervation of the speech apparatus causes a violation of the pronunciation side of speech (dysarthria) in a child with cerebral palsy. If cerebral palsy is accompanied by paresis of the muscles of the pharynx and larynx, there are problems with swallowing (dysphagia). Often cerebral palsy is accompanied by a significant increase in muscle tone. Expressed spasticity in cerebral palsy can lead to complete immobility of a limb.

In the future, children with cerebral palsy, paretic limbs lag behind in physical development, as a result of which they become thinner and shorter than healthy ones. As a consequence, skeletal deformities typical for cerebral palsy (scoliosis, chest deformities) are formed. In addition, cerebral palsy occurs with the development of joint contractures in paretic limbs, which aggravates motor disorders. Motor disorders and skeletal deformities in children with cerebral palsy lead to chronic pain syndrome with localization of pain in the shoulders, neck, back and feet.

Hyperkinetic cerebral palsy is manifested by sudden involuntary motor acts: turning or nodding of the head, twitching, facial grimaces, fancy poses or movements. The atonic-astatic form of cerebral palsy is characterized by discoordinated movements, instability in walking and standing, frequent falls, muscle weakness and tremors.

In infantile cerebral palsy may be observed strabismus, functional disorders of the gastrointestinal tract, respiratory disorders, urinary incontinence. About 20-40% of cases of cerebral palsy occurs with epilepsy. Up to 60% of children with cerebral palsy have vision problems. There may be hearing loss

or complete deafness. In half of cases, cerebral palsy is combined with endocrine pathology (obesity, hypothyroidism, growth retardation, etc.).

Often cerebral palsy is accompanied by various degrees of oligophrenia, mental retardation, perceptual disorders, learning disabilities, behavioral abnormalities, etc. However, up to 35% of children with cerebral palsy have normal intelligence, and in 33% of cerebral palsy cases, intellectual impairment is expressed in a mild degree.

Infantile cerebral palsy is a chronic but not progressive disease. As the child grows and his CNS develops, previously hidden pathological manifestations may be revealed, which create a sense of so-called "false progression" of the disease. Deterioration of a child with cerebral palsy may also be due to secondary complications: epilepsy, stroke, hemorrhage, use of anesthesia or severe somatic disease.

Diagnosis of cerebral palsy

There are no specific diagnostic criteria for infantile cerebral palsy yet. However, some symptoms typical of cerebral palsy immediately draw the pediatrician's attention. These include: low Apgar score immediately after birth, abnormal motor activity, muscle tone disorders, lagging behind the child in psychophysical development, lack of contact with the mother. Such signs always alarm doctors about cerebral palsy and are an indication for mandatory consultation of the child by a pediatric neurologist.

If cerebral palsy is suspected, a thorough neurological examination of the child is necessary. In the diagnosis of cerebral palsy, electrophysiological methods of examination are also used:

- electroencephalography
- electromyography and electroneurography
- evoked potential study
- Transcranial magnetic stimulation.

They help to differentiate cerebral palsy from hereditary neurological diseases manifested in the 1st year of life (congenital myopathy, Fredreich's ataxia, Louis-Bar syndrome, etc.). The use of neurosonography and MRI of the brain in the diagnosis of cerebral palsy makes it possible to detect organic changes associated with cerebral palsy (e.g., optic atrophy, foci of hemorrhage or ischemia, periventricular leukomalacia) and diagnose brain malformations (microcephaly, congenital hydrocephalus, etc.).

A complete diagnosis of cerebral palsy may require the participation of a pediatric ophthalmologist, pediatric otolaryngologist, epileptologist, pediatric orthopedist, speech therapist, and psychiatrist. If it is necessary to differentiate cerebral palsy from various hereditary and metabolic diseases, appropriate genetic studies and biochemical tests are used.

Rehabilitation treatment for cerebral palsy

Unfortunately, cerebral palsy is still an incurable pathology. However, timely, comprehensive and continuous rehabilitation measures can significantly develop the motor, intellectual and speech skills available to a child with cerebral palsy. Thanks to rehabilitation treatment, the neurological deficit of cerebral palsy can be compensated to the maximum extent possible, the likelihood of contractures and skeletal deformities can be reduced, the child can be taught self-care skills and his/her adaptation can be improved. Brain development, cognitive development, skill acquisition and learning are most active up to the age of 8 years. It is during this period when cerebral palsy requires maximum rehabilitation efforts.

The program of complex rehabilitation therapy is developed individually for each cerebral palsy patient. It takes into account the localization and severity of brain damage, the presence of concomitant cerebral palsy hearing and vision impairments, intellectual disorders, epileptic seizures, individual opportunities and problems of the child with cerebral palsy. It is most difficult to carry out rehabilitation measures when cerebral palsy is combined with cognitive impairment (including

blindness or deafness) and intellectual impairment. For such cases of cerebral palsy, special methods have been developed that allow the instructor to establish contact with the child. Additional difficulties in the treatment of cerebral palsy arise in patients with epilepsy, in which active stimulation therapy for cerebral palsy can cause the development of complications. For this reason, children with cerebral palsy and epilepsy should be rehabilitated using special "soft" methods.

The basis of rehabilitation treatment for cerebral palsy is LFK and massage. It is important that children with cerebral palsy should have them every day. For this reason, parents of a child with cerebral palsy should master the skills of massage and LFK. In this case, they will be able to exercise their child on their own between professional cerebral palsy rehabilitation courses.

For more effective LFK and mechanotherapy with children suffering from cerebral palsy, special apparatus and devices are available in the respective rehabilitation centers. Among the latest developments in this area in the treatment of cerebral palsy, pneumocombisons have been used to fix joints and provide muscle stretching, as well as special suits that allow for some forms of cerebral palsy to develop the correct motor stereotype and reduce muscle spasticity. Such devices help to maximize the compensatory mechanisms of the nervous system, which often leads to the child with cerebral palsy mastering new movements that were previously unavailable to him or her.

Rehabilitation measures for cerebral palsy also include so-called technical rehabilitation devices: orthodeses, shoe inserts, crutches, walkers, wheelchairs, etc. They make it possible to compensate for motor disorders, limb shortening and skeletal deformations present in cerebral palsy. Individual selection of such aids and teaching a child with cerebral palsy how to use them is important.

As part of the rehabilitation treatment of cerebral palsy, a child with dysarthria requires speech therapy to correct FFN or ONR.

Medical and surgical treatment of cerebral palsy

Treatment of cerebral palsy with medications is mainly symptomatic and is aimed at controlling a particular symptom of cerebral palsy or complications. For example, in the combination of cerebral palsy with epileptic seizures are prescribed anticonvulsants, with increased muscle tone - antispastic drugs, in cerebral palsy with chronic pain syndrome - analgesics and antispasmodics. Drug therapy of cerebral palsy may include nootropics, metabolic drugs (ATP, amino acids, glycine), neostigmine, antidepressants, tranquilizers, neuroleptics, vascular drugs.

Conclusions: Indications for surgical treatment of infantile cerebral palsy are contractures formed as a result of prolonged muscle spasticity and limiting the patient's motor activity. Conclusions: Thus, tenotomies are most often used in cerebral palsy to create a supporting position of the paralyzed limb. Bone lengthening, tendon grafting and other surgeries may be used to stabilize the skeleton in cerebral palsy. If cerebral palsy is manifested by gross symmetrical muscle spasticity leading to the development of contractures and pain syndrome, a patient with cerebral palsy may undergo spinal rhizotomy to interrupt pathological impulsation coming from the spinal cord.

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