DOI: 10.38096/2181-5674.2020.5.00292

УДК: 616.831-009.11.

CHILD CEREBRAL PARALYSIS: OVERVIEW OF ETIOPATHOGENESIS, PREVENTION AND PHYSICAL REHABILITATION

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БОЛАЛАР БОШ МИЯ ФАЛАЖЛИГИ: ЭТИОПАТОГЕНЕЗИ, ПРОФИЛАКТИКА ВА ЖИСМОНИЙ РЕАБИЛИТАЦИЯСИ ШАРҲИ

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ДЕТСКИЙ ЦЕРЕБРАЛЬНЫЙ ПАРАЛИЧ: ОБЗОР ЭТИОПАТОГЕНЕЗА, ПРОФИЛАКТИКИ И ФИЗИЧЕСКОЙ РЕАБИЛИТАЦИИ

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Аннотация. *"Бош мия фалажлиги" атамаси болалардаги асаб касалликларининг хилма-хиллигини акс эттирмасдан, балки бола туғулгунича ривожланувчи етилмаган бош миянинг шикастланишидан келиб чиқадиган мия фалажини эрта ташхислаш ва реабилитация қилишга қаратилган тадбирларни режалаштиришга имкон беради. Болалар бош мия ярим фалажлиги бутун дунёда болаларнинг неврологик ногиронлигининг асосий сабаби бўлиб, 1000 тирик туғилган чақалоқларнинг ўртача 2-3,6 ҳолатда ривожланади. Бироқ, бош мия фалажининг тарқалиши ҳақидаги маълумотлар оз ва қарама-қаршидир. Шу билан бирга, ушбу касалликнинг ривожланишининг этиологик омиллари аниқ белгиланмаган ва улар кўпинча ирсий нерв-мушак касалликлари билан аниқ қиёсий ташхислаш ўтказилмасдан, уни полиэтиологик касаллик сифатида сўз юритилади. Бундан ташқари, касал болани туғилишининг олдини олиш учун хавф омилларини эрта аниқлаш бўйича профилактика ишлари самарадорлигининг натижалари ҳақида унутмаслик керак. Ушбу мақола нафақат болалар бош мия фалажлиги ривожланишининг патогенетик жиҳатларини, балки касалликнинг асосий аломатларини тавсифини ўрганишга қаратилган бўлиб, унда болалар орасида унинг ривожланиш частотасини камайтириш бўйича профилактика чоралари рўйхати, шунингдек ушбу тоифадаги беморларни даволаш учун ишлатиладиган жисмоний реабилитация дастурининг ҳажми келтирилган.*

Калит сўзлар: *бош мия фалажлиги, полиэтиологик касаллик, профилактика, даволаш.*

Abstract. *The term "cerebral palsy" does not reflect the whole variety of neurological disorders in children, allows you to plan the organization of measures aimed at the early diagnosis and rehabilitation of child cerebral palsy caused by damage to the immature brain as it develops, most often before birth. As the leading cause of childhood neurological disability in the world, childhood cerebral palsy develops in an average of 2-3.6 cases per 1000 live births. However, data on the prevalence of cerebral palsy are small and contradictory. At the same time, the etiological factors of the development of this disease are not clearly defined, and they often speak of it as a polytheological disease, without conducting a thorough differential diagnosis with a number of hereditary neuromuscular diseases. In addition, do not forget about the possible tangible results of the effectiveness of preventive work on the early detection of risk factors in order to prevent the birth of a sick child. This article is aimed at studying not only the pathogenetic aspects of the development of childhood cerebral palsy, a description of the main symptoms of the disease, it provides a list of preventive measures to reduce the frequency of its development among children, as well as the scope of the physical rehabilitation program used to treat this category of patients.*

Key words: *cerebral paralysis, polyetiologic disease, prevention, treatment.*

Introduction. Cerebral palsy (CP) - a group of stable disorders development of motor skills and posture maintenance, leading to motor defects, due to non-progressive damage and / or anomaly a developing brain in a fetus or newborn baby [15]. Cerebral palsy unites a group of different clinical manifestations pits of syndromes that arise as a result of non-additional development of the brain and its damage to various stages of ontogenesis and are characterized by the inability maintaining a normal posture and performing arbitrary movements [6,7]. The term "cerebral paralysis "does not reflect the diversity and essence neurological violations, but their combination in nosolo-group allows you to plan an organization

activities aimed at early diagnosis and treatment of cerebral palsy different. Data on the prevalence of cerebral paralysis are few in number and contradictory. Some- some authors note a downward trend morbidity by improving obstetric technology, prevention and treatment [13].

Epidemiology. Cerebral palsy develops, according to various sources, in 2-3.6 cases per 1000 live births and is the main cause childhood neurological disability in the world. Among premature babies the frequency of cerebral palsy is 1%. In newborns weighing less than 1500 g the prevalence of cerebral palsy increases to 5-15%, and with extreme low body weight - up to 25-30% [12,15]. Multiple pregnancies increase your risk development of cerebral palsy: the frequency of cerebral palsy in singleton pregnancy is 0.2%, with twins - 1.5%, with triplets - 8.0%, with four-fetal pregnancies - 43%. However, over the past 20 years, in parallel with an increase in the number of children born from multiple pregnancies with low and extremely low body weight, there is a tendency to decrease the incidence of cerebral palsy in this population [3].

Etiological factors. Cerebral palsy is a polyetiologic disease. Leading cause of development Cerebral palsy is damage or abnormalities in the development of the fetal brain and newborn. The pathophysiological basis for the formation of cerebral palsy is brain damage at a certain period of its development with the subsequent formation of pathological muscle tone (mainly spasticity) while maintaining postural reflexes and the accompanying violation of the formation of chain installation rectifying reflexes. The main difference between cerebral palsy and other central paralysis - the time of exposure to a pathological factor. The ratio of prenatal and perinatal lesion factors the brain with cerebral palsy is different. Up to 80% of observations of brain lesions, causing cerebral palsy, occurs in the period of intrauterine fetal development; later intrauterine pathology is often burdened by intranatal. More than 400 biological and environmental factors have been described that affect the course of normal development of the fetus, but completely their role in the formation Cerebral palsy has not been studied [10]. A combination of several adverse factors both during pregnancy and childbirth. Intrauterine the reasons for the development of cerebral palsy, first of all, include acute or chronic extragenital diseases of the mother (hypertension, malformations heart disease, anemia, obesity, diabetes and thyroid disease glands, etc.), taking medications during pregnancy, occupational hazards, parental alcoholism, stress, psychological discomfort, physical injury during pregnancy. A significant role belongs to the effect on the fetus of various infectious agents, especially viral origin. Among the risk factors are uterine bleeding, abnormalities of placental circulation, presentation placenta or its detachment, immunological incompatibility of the mother's blood and fetus (according to ABO systems, Rh factor and others). Most of these adverse factors of prenatal period leads to intrauterine fetal hypoxia and impaired uterine placental circulation. Oxygen deficiency depresses synthesis of nucleic acids and proteins, which leads to structural violations of embryonic development [2]. Various complications in childbirth: weakness of contractile activity uterus, rapid or protracted labor, caesarean section, prolonged waterless period, breech and pelvic presentation of the fetus, long the period of the head in the birth canal, instrumental obstetrics, as well as preterm birth and multiple births pregnancy is also considered a high risk factor for developing cerebral palsy [5, 9, 10].

Until recently, birth asphyxia was considered the leading cause brain damage in children. Study of the anamnesis of children who have undergone birth asphyxia, showed that 75% of them had an extremely unfavorable background intrauterine development, burdened by additional risk factors chronic hypoxia. Therefore, even in the presence of a severe birth asphyxia causal relationship with the subsequently developed psychomotor the deficit is not absolute. An essential place in the etiology of cerebral palsy is occupied by intracranial birth trauma due to mechanical effects on the fetus (compression brain, crush and necrosis of the medulla, tissue rupture, hemorrhages in the membranes and substance of the brain, disorders of the dynamic cerebral circulation) [9]. However, one cannot fail to take into account that birth trauma most often occurs against the background of a previous fetal defect, with pathological, and sometimes even physiological childbirth.

Discussion and acknowledgement. A completely unresolved issue remains the role of hereditary predisposition and genetic pathology in the structure of cerebral palsy. Often behind the diagnosis of cerebral palsy are undifferentiated genetic syndromes, which is especially typical for ataxic and dyskinetic forms of cerebral palsy. So the presence of athetosis and hyperkinesis, which are usually strictly associated with kernicterus, in the absence of reliable anamnestic data may have a genetic basis. Even the "classic" spastic forms of cerebral palsy with a distinct progression s) clinical symptoms should alert the doctor in terms of the child's possible presence of spastic paraplegia and other neurodegenerative diseases [1].

Cerebral palsy is primarily a descriptive term in connection with these are usually enough manifestations to make a diagnosis of cerebral palsy specific non-progressive movement disorders that usually become noticeable in the initial residual stage and presence one or more risk factors and complications in the perinatal period. However, a wide range of differential diagnoses of cerebral palsy and high risk of missing hereditary diseases (including those with

pathogenetic treatment), especially in young children, requires a thorough diagnostic search for any differences in clinical symptoms and anamnesis from the "classic" picture of cerebral palsy. "Alarming" factors include: the patient's absence of perinatal risk factors, disease progression, loss of acquired skills, repeated cases of cerebral palsy or early death children in a family without an established cause, multiple anomalies development in a child. In this case, a mandatory neuroimaging examination (MRI of the brain), consultation genetics followed by additional laboratory tests. In the presence of hemiparesis, signs of local stroke are shown study of factors of the blood coagulation system, including polymorphism of coagulation genes. All patients with cerebral palsy require examinations for the presence of visual and hearing impairments, delays mental and speech development, assessment of nutritional status. Elimination of hereditary metabolic diseases other than specialized biochemical tests, implies imaging internal organs (ultrasound, MRI of internal organs, according to indications). With a predominance in the clinical picture symptom complex of a "flaccid child" ("spread" posture, resistance in joints during passive movements, increase in amplitude joint movements, delayed motor development) should be careful differential diagnosis of cerebral palsy with hereditary neuromuscular diseases [4]. This diagram shows the main pathogenetic mechanisms of the development of clinical manifestations of cerebral palsy in children (table 1).

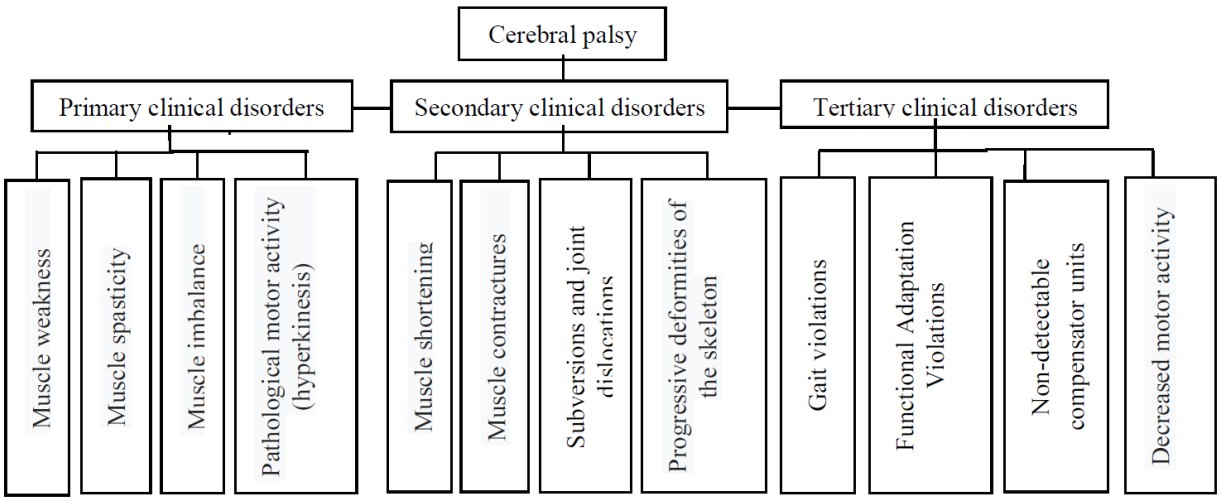

Table 1. Mechanism of motor disorders development in child cerebral palsy.

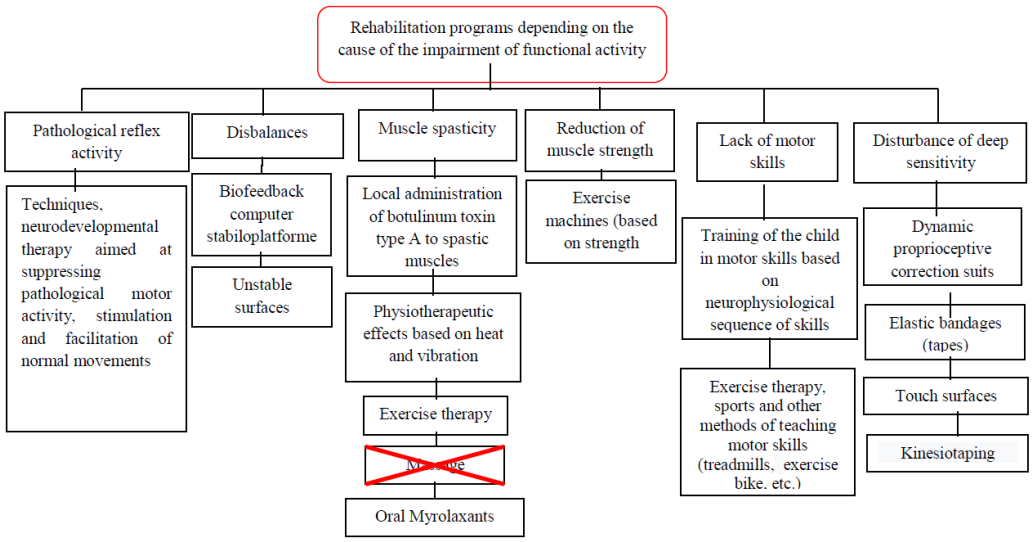

Table 2. Rehabilitation program depending on prevailing functional disorders in child cerebral palsy.

Prevention. Prevention of cerebral palsy includes both antenatal and postnatal activity. Antenatal refers to improving somatic health mothers, prevention of obstetric and gynecological pathology, premature birth and complicated pregnancy, timely detection and treatment of infectious diseases of the mother, promoting a healthy lifestyle for both parents. Timely identification and prevention of a complicated course of labor, competent childbirth can significantly reduce the risk of intrapartum damage to the central nervous system of the newborn. Increasingly important in the last time is given to the study of the role of hereditary coagulopathies in the formation of focal brain damage in children with unilateral forms of cerebral palsy and the prevention of these complications. Postnatal measures for the prevention of cer-

ebral palsy include use of corporal controlled hypothermia in nursing prematurity, controlled steroid use in prematurity newborns (reducing the risk of developing bronchopulmonary dysplasia, corticosteroids increase the risk of cerebral palsy), intense measures to reduce hyperbilirubinemia and prevention dyskinetic forms of cerebral palsy [6].

Basic preventive measures for reducing the frequency of infantile cerebral palsy are aimed at maximum elimination of the rank of its development. Most tangible results preventive work can be obtained only with early detection of risk factors with the purpose of preventing the birth of a patient benka. According to most experts, following the procedures below may reduce the incidence and complications of childhood cerebral palsy. These include:

1) timely detection, accounting and correction extragenital diseases of the mother;

2) improving the work of the obstetric service;

3) carrying out magnetic resonance or computer tomography in a child, relating going to the risk group, immediately after his birth, as movement disorders become obvious, mainly, only by the end of the first years of life and older. In this regard, it is necessary dimo improvement of technical equipment for dairy houses with modern diagnostic equipment;

4) limiting the stimulation of labor in general headquarters. Indications for induction of labor should be clearly documented and registered obstetrician. Funds used for stimulation of labor should be put on strict account;

5) expansion of indications for cesarean sections to avoid birth trauma and hypoxia of a child with impaired childbirth mother's activity, especially in the case of previous pre-term onset of labor (less than 37 weeks gestation). Reducing the incidence of birth trauma in the United States promoted the use of caesarean va sections instead of complex turns of the fetus, vacuum extraction, overlay medium and high juicy forceps during childbirth. For the underdog any stimulation from the mother uterine contractions are a huge possibility birth trauma and hypoxia during childbirth [5].

Physical rehabilitation for cerebral palsy in children.

Physical exercise with medical as a target for diseases and nerve palsies have the following tasks:

- to provide health-improving and general strengthening; influencing the body to restore working capacity;
- improve blood circulation and metabolic processes, processes in the affected area to eliminate or reduce neurovascular and metabolic disorders;
- to prevent the formation of adhesions between the nerve lobes and surrounding tissues;
- prevent the formation of muscle and fixed contractures;
- strengthen weakened muscles, restore to improve coordination of movements, to fightbassociated disorders - curvature lengthening the spine and limiting it mobility, etc. [12].

Table 2 shows a rehabilitation program depending on the cause of functional activity disorders.

A specialist, having carefully analyzed the special the strength of the motor environment of each patient cerebral palsy, should be gram, which makes it possible to stimulate movement gual functions. When making up complexes exercise you need to be attentive to the sick with cerebral palsy, as performed their exercises require more activity, than involuntary muscle movements [13,14].

In patients with cerebral palsy, lack of power of perception, and it can be eliminated thread to some extent through implementation exercise programs. Perceptual defects in mostly replenished with exercises for development tia of visual and tactile sensations. Program- MA corrective work is aimed at reducing primitive reflexes, increased motor strength, development of the ability to maintain balance body, performing rhythmic movements. General and binding principles for all methods of physiotherapy exercises are blowing:

- regularity, consistency and continuity the use of medical gymnastics;
- strict individualization of exercises in according to the stage of the disease, its the severity, age of the child, his mental sky development;
- gradual, strictly dosed increase physical activity.

The main methods and content of exercises for work with children with cerebral paralysis:

1) muscle stretching exercises: lifting muscle tension, range expansion movement;

2) exercises to develop sensitivity muscles; to develop the strength that makes it possible ability to regulate a specific area muscles;

3) exercises to improve functional the state of the nervous tissue through training stimulation of nerve sensitivity;

4) mutual influence exercises to strengthen leading and antagonistic muscle groups;

5) endurance exercises to support the effectiveness of the functioning of the body new;

6) relaxation training to eliminate spasms, tension and seizures;

7) walking training (for teaching normal walking);

8) training the senses: exercises for stimulating the senses through an increase increased muscle sensitivity;

9) exercises for lifting on an inclined plane to improve balance and motor strength;

10) resistance exercises - gradually increasing resistance training for the development of muscle strength [1,2].

Conclusion. Cerebral palsy (CP) is a group of permanent movement disorders that appear in early childhood. Signs and symptoms vary among people and over time. Often, symptoms include poor coordination, stiff muscles, weak muscles, and tremors. It is caused by several factors including alcohol, childbirth complication, bleeding in the fetus and other abnormalities. In order to prevent the disease a mother should be under medical control during pregnancy and healthy lifestyle should be promoted by both parents.

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ДЕТСКИЙ ЦЕРЕБРАЛЬНЫЙ ПАРАЛИЧ: ОБЗОР ЭТИОПАТОГЕНЕЗА, ПРОФИЛАКТИКИ И ФИЗИЧЕСКОЙ РЕАБИЛИТАЦИИ

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Аннотация. Термин «церебральный паралич» не отражая всего разнообразия неврологических нарушений у детей, позволяет планировать организацию мероприятий, направленных на раннюю диагностику и реабилитацию детского церебрального паралича, вызванного повреждением незрелого мозга по мере его развития, чаще всего до рождения. Являясь основной причиной детской неврологической инвалидности в мире, детский церебральный паралич развивается в среднем в 2-3,6 случаях на 1000 живорожденных. Однако данные о распространенности церебрального паралича немногочисленны и противоречивы. Наряду с этим, четко не определены этиологические факторы развития данного заболевания, и зачастую о нем говорят, как об полиэтиологическом заболевании, не проводя тщательную дифференциальную диагностику с целым рядом наследственных нервно-мышечных заболеваний. Кроме этого, не стоит забывать также о возможных ощутимых результатах эффективности профилактической работы по раннему выявлению факторов риска с целью предотвращения рождения больного ребенка. Данная статья направлена на изучение не только патогенетических аспектов развития детского церебрального паралича, описание основных симптомов заболевания, в ней приводится перечень превентивных мероприятий для снижения частоты его развития среди детей, а также объем программы физической реабилитации, используемой для лечения данной категории больных.

Ключевые слова: церебральный паралич, полиэтиологическое заболевание, профилактика, лечение.