

УЛЬТРАСТРУКТУРНЫЕ ИЗМЕНЕНИЯ В РАЗЛИЧНЫХ ФОРМАХ ДЕТСКОГО ЦЕРЕБРАЛЬНОГО ПАРАЛИЧА

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УЛЬТРАСТРУКТУРНЫЕ ИЗМЕНЕНИЯ В РАЗЛИЧНЫХ ФОРМАХ ДЕТСКОГО ЦЕРЕБРАЛЬНОГО ПАРАЛИЧА. ЖКМП.-2025.-Т.2.-№2.-С

Поступила: 14.04.2025

Одобрена: 05.05.2025

Принята к печати: 05.06.2025

Аннотация: При детском церебральном параличе (ДЦП) морфологические признаки изменений в головном мозге зависят от возраста, пола, конституционального строения, длительности воздействия факторов и тяжести заболевания и проявляются в основном в зависимости от плотности клеток в слое мозга и снижения степени тяжести. В большинстве случаев головной мозг проявляется множественными стромами с фибриллярной структурой и множественными глиальными клетками. Ангиоархитектоника сосудов и капилляров, содержащих серое вещество, также проявляется в измененной, менее разветвленной капиллярной сети. Наиболее распространенными областями астроцитов являются эти области.

Ключевые слова: морфология, церебральный паралич, астроциты, головной мозг.

BOLALAR SEREBRAL FALAJINI TURLI SHAKLLARIDA YUZAGA KELADIGAN ULTRA STRUKTUR O'ZGARISHLAR

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BOLALAR SEREBRAL FALAJINI TURLI SHAKLLARIDA YUZAGA KELADIGAN ULTRA STRUKTUR O'ZGARISHLAR. KPTJ.-2025-N.2.-№2-M

Qabul qilindi: 14.04.2025

Ko'rib chiqildi: 05.05.2025

Nashrga tayyorlandi: 05.06.2025

Annotatsiya: Bolalar serebral falajida (BSF) bosh miyadagi o'zgarishlarning morfologik jixatlari bemorning yoshiga, jinsiga, konstitutsional tuzilishiga, ta'sirlovchi omillarning davomiyligiga va kasallikning og'irligiga bog'liq bo'lib, asosan, bosh miya po'stloq qavatidagi xujayralarning zichligi va xajmiy jixatlariga bog'liq ravishda kamayishi bilan namoyon bo'ladi. Asosan, bosh miya po'stloq qavatida astrotsitlarning kam sonli bo'lgan, ko'p xollarda fibrillyapir tuzilishli stromalarning ko'pligi va glial xujayralarning ko'p sonli bo'lishi bilan namoyon bo'ladi. Kulrang modda tarkibidagi qon tomir va kapillyarlarning angiоarxitektonikasi xam o'zgargan, kam tarmoqlangan kapillyar tarmoqlarining to'laqonli ko'rinishi namoyon bo'ladi. Astrotsitlarni eng ko'p joylashgan soxalari bu chakka va ensa soxasi hisoblanadi.

Kalit so'zlar: morfologiya, serebral falajlik, astrotsitlar, bosh miya.

ULTRA STRUCTURAL CHANGES IN DIFFERENT FORMS OF INFANTILE CEREBRAL PALSY

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ULTRA STRUCTURAL CHANGES IN DIFFERENT FORMS OF INFANTILE CEREBRAL PALSY. JCPM.-2025.P.2.№2-A

Received: 14.04.2025

Revised: 05.05.2025

Accepted: 05.06.2025

Abstract: In infantile cerebral palsy (ICP), the morphological signs of changes in the brain depend on age, sex, constitutional structure, duration of exposure to factors, and severity of the disease, and appear mainly depending on the density of cells in the brain layer and the decrease in severity. In most cases, the brain presents multiple stromas with fibrillary structure and multiple glial cells. Angioarchitectonics of vessels and capillaries containing gray matter also manifests in an altered, less branched capillary network. The most common areas of astrocytes are these areas.

Keywords: morphology, cerebral palsy, astrocytes, brain.

Introduction: The most common childhood disability affecting motor function are infantile cerebral palsy and traumatic brain injury. A brain lesion developing rapidly before, during, or after childbirth affects the body's neurological and musculoskeletal systems, resulting in abnormal muscle contraction, neurodynamic impairment, limitation of movement and activity, emotional impairment, cognitive problems, inability to communicate, behavioral problems, epilepsy, and secondary problems in the musculoskeletal system. In the past, the cause of brain paralysis was thought to be a lack of oxygen, but with the advent of new research, it has been found that there are many other causes and risk factors responsible for the development of brain paralysis. Brain paralysis can be prenatal, perinatal, and postnatal. There are diagnostic clinical tools for the detection of cerebral palsy from 5 months. Due to the heterogeneity of the expected results, the child has various problems related to each other, and behavioral disorders are observed, which should be assessed and treated by a multidisciplinary group of specialists.

Materials and methods: At the Republican Center for Pathological Anatomy, during autopsy of corpses aged 5-9 years who died from PTF, brain fragments measuring 1x1x1 cm from the tissue are cut off from symmetrical sections of the temporal lobe and anterior hypothalamus of both hemispheres [2,4,5]. The samples are dried and placed in a growing concentrated alcohol, alcohol-chloroform, poured into kerosene blocks, and glued to oily cubes [1,3]. In the pre-block projection, there are consecutive cuts with a thickness of 8-10 mkm. Hematoxylin is isolated in eosin oil, and the nuclear structures of the hypothalamic region of the brain are morphologically determined: the thickness, length (height) of the cortical layers, and the width of neurons in the layers, the density of neurons and neuroglia, 1 mm².

Results and Discussions: In the hyperkinesia form of infantile cerebral palsy (ICP), sharp changes are observed, mainly a quantitative decrease in mitochondria from oligodendrocyte cell organelles, roundness of the form, and a decrease in crystals. Polymorphic electron-dense osmiophilic granules are found in most cells. A sharp increase in the structure of granular endoplasmic meshes, the presence of expanded foci of network tanks and their proximity to the membrane of the nuclear element and invagination of the nuclear membranes are determined [6]. It is the endoplasmic structures that increase in size, synthesis, and

mobilization of fats and carbohydrates. This indicates that acute metabolism develops in the cell [2]. Cytoplasm reveals the presence of droplet bodies of different sizes, such as osmiophilic and osmiophobic, as well as an increase in neutral fats, glycerides, and mucopolysaccharides, and fewer protein structures [7,8].

A decrease in the area of the Golgi complex, the presence of small cylindrical nodes in the distal parts of the tanks, indicates a decrease in the synthesis of special secretions (biologically active substances, hormones) in cells and a functional decrease in cells (Fig. 1).

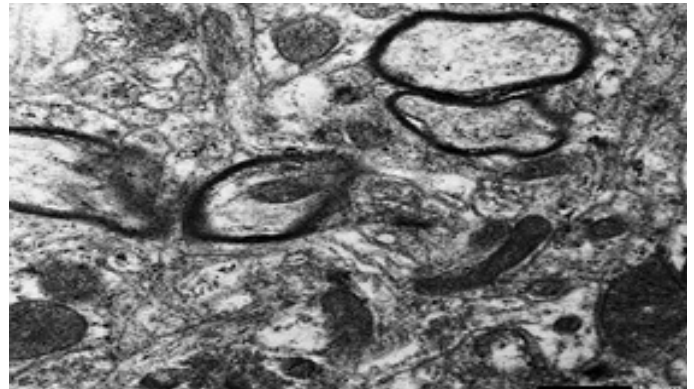


Figure 1. 7-year-old boy. Change in ultrafast brain type in seizure syndrome. Gray matter, at the stage of myelination of the myelin sheath of the neuronal axon, is a type of dense, electron-optical osmiophilic structure with uneven relief (1). The round shape of dentin has an uneven arrangement of light-fiber structures. Size 6000x.

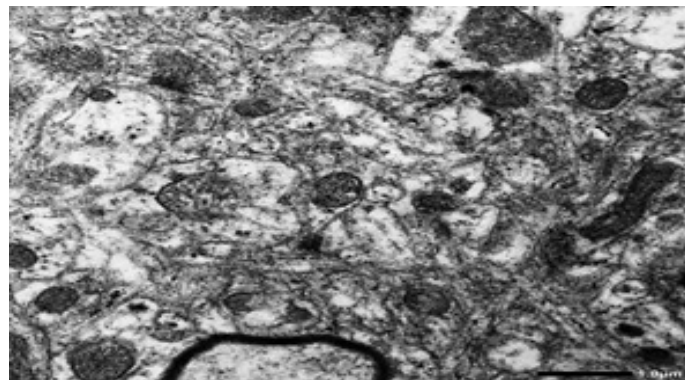


Figure 2. A 3.5-year-old boy. In seizure syndrome, cerebral matter with white flow in the border substrate, round mitochondria, crystals, pale glial cell nucleus, osmiophobic introductions, and osmiophilic particles in the pericyon region are found.

Mitochondria are rounded (in the meridian, they have a long filamentous shape, crystals are greatly increased, dense, osmiophilism is increased) [9], cartilage decreased, mitochondria scattered, which indicates a relative decrease in the respiratory cycle. (Fig.2).

It turned out that there were a few fibrous structures [10]. In the karyoplasm, heterochromatin condensation is found in the region close to [11,12,14] karyolemia, with an enlarged nucleus, clear borders of the karyolem membranes, slightly enlarged pores, an unclear shape of the nucleus, and increased osmiophilia [13]. These “changes” mean they are preparing for a cycle of constant breeding. The contours of the cell membrane boundaries are uneven, the exact contrasting appearance of dessems has been changed, and narrow and extended areas between dessems (Fig. 3). Near the nucleus of the cytoplasm, it is found that in combination with different forms and sizes of osmiophilicity, an abnormal structure is formed.

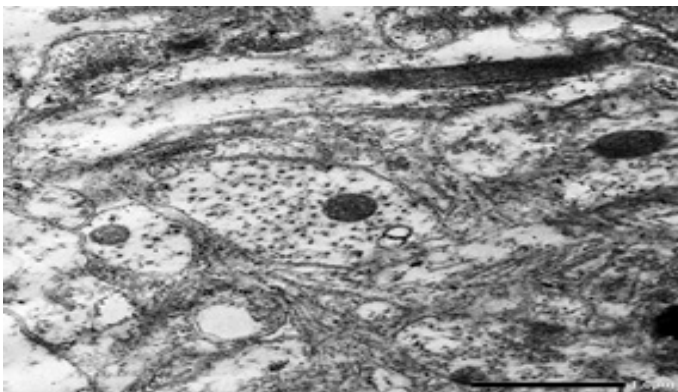


Figure 3. Infantile cerebral palsy (ICP) in spastic diplegia. 6-year-old boy. With gliosis, dense electron-dense optical bodies are found in the glial cell nucleus, and osmiophilic, small osmiophilic dense bodies are found in the cytoplasm. In left mitosis, the cytoplasm of microglial cells contains only a small number of osmiophilic bodies. Size 1000x.

Elsewhere in the cytoplasm, relatively small osmiophilic grains appear. In the cytoplasm of the cell adjacent to this cell, it was found that dark-black osmiophil deposits formed in it, and some of them were associated with the nucleus [15]. The presence of glial cells in direct contact around the neuron leads to an increase in structures in the extracellular matrix, located in an uneven fibrous form, to a sharp increase in functional indicators as a result of the invasive arrangement of connections between cells, with decreased and imminent apoptosis or necrosis of the neuron. (Fig. 4).

In the conductive fibers contained in the intermediate substance, structures of collagen fibers adjacent to thick bundles of different electron density and the basal plate are determined. This means that “an increase in the number of glial scars, and a morphofunctional decrease in neurons in the gap, leads to an increase in the number of single neurons pigmented

as a result of an increase in osmiophobic lipofuscin”.

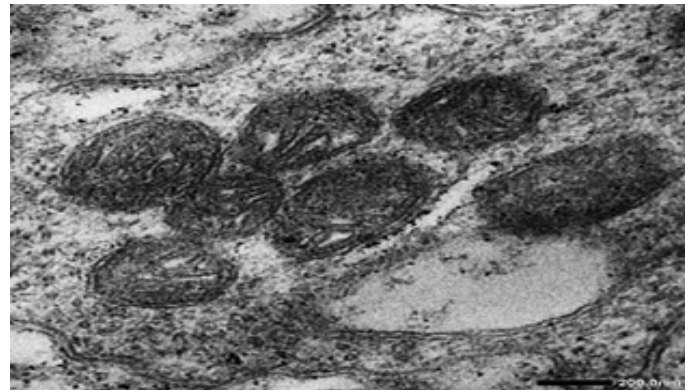


Figure 4. Infantile cerebral palsy in spastic diplegia. An 8-year-old boy. In the higher morphofunctional macroglial cell, an accumulation of mitochondria is found in one place, and small, dense optical osmiophilic inclusions are found in the perimeter of mitochondria. Size 1000x.

It turned out that between the fibers, there are many osmiophobic bodies of different sizes. Therefore, in these neurons, a large number of droplets of neutral fat is explained by the fact that the respiratory cycle decreases in cells, and the amount of glycogen increases [9,14,15]. A decrease in the number of mitochondria, a decrease in rounded crystals mean that a hypoxia process occurs, and morphological studies as a result of ischemia in the vessels first cause neurons, oligodendrocytes, and then sharp hypoxia in glial cells and an accumulation of intermediate metabolites, the presence of chromophobic reactions and dense electronic particles in the cytoplasm indicates that mitochondria underwent fragmentation and destruction.

This means that in each form that occurs with a seizure syndrome, mainly in oligodendrocytes, mitochondria sharply decrease, crystals disintegrate and granular structures with small electron-optical dense structures form, and the microcirculator in this area is a violation of blood circulation, neuronal necrosis is found with an increased content of tonofilaments in organelles and mitosis of microglial cells around them [18]. Fat particles in the form of small droplets around the smooth endoplasmic reticulum and glycogen particles are in an adhesive state. In the cytoplasm, a large number of polysomal bodies and an increase in the shape of some ribosomes can lead to the development of an atypical process in cells [16]. The diffusely marginal arrangement of major heterochromatins in the large nucleus and karyoplasm forms a thickened picture of the nuclear membrane [17].

Granular endoplasmic and smooth endoplasmic tissues have a slow formation, have a very low trophotium, and most stages of the cytoplasm occupy invaginated nuclear membranes. Most undifferentiated cells are nodular or solid. On the basis, the location of the basement membrane and its surface, it invaginates into the pericytic region of the vessels [18,19].

Conclusion: It is in the cytoplasm of cells that a large number of lipid inclusions are found, as well as the accumulation of dense, electron-dense, osmiophilic granules with protein around lipid droplets, forming a protein-lipid cohomglomerate. The ratio of lipid and protein inclusions is different and is characterized by a large number of fat inclusions. They can freely be located in the intercellular false glandular tract and stroma. In some cells with strong atypism, the presence of two nuclei with an ambiguous nuclear shape, less pronounced euchromatin, is found.

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