



Cognitive Disorders in Children with Cerebral Palsy

Karimova Dilobar

3rd year Master's Degree in Child Neurology
Department of Neurology and Child Neurology
Andijan State Medical Institute

**Nasridinova Nargiza
Askarovna**

Associate Professor of the Department of Neurology and Child
Neurology
Andijan State Medical Institute

ABSTRACT

Diagnosis of cognitive disorders in children with cerebral palsy is a difficult task due to the diverse combination with motor, speech and sensory pathology, and therefore requires a differentiated approach. The authors have developed differential diagnostic criteria for distinguishing between mental retardation and mental retardation in children with cerebral palsy. The proposed comprehensive system for the rehabilitation of cognitive disorders includes medical-social and psychological-pedagogical correction and is aimed at compensating for cognitive deficits, developing mental functions, and restoring the mechanisms of social integration in children with cerebral palsy.

Keywords:

Cerebral palsy, cognitive impairment, mental retardation.

Introduction. About 30,000 children currently live in Uzbekistan a disabled person with cognitive impairments (including mental retardation, speech disorders, other psychological disorders) - 32.8% of the total number of disabled children, which determines the high social significance of this problem [1, 2]. It is known that in 60% of cases, childhood neurological disability is associated with pathology of the perinatal period, while 24% are patients with cerebral palsy (CP) [3]. According to foreign authors, the incidence of cerebral palsy is noted in the range of 2.9–5 (average 2.5) per 1000 children [4, 5]. In Uzbekistan, the prevalence of cerebral palsy is 2.2-3.3, in Tashkent - 1.9 per 1000 children. In total, there are more than 3 thousand patients with cerebral palsy in Tashkent, of which 4 thousand are children and adolescents [3]. Cerebral palsy is a polyetiological disease of the central nervous system that develops as a result of a lesion that occurs in the prenatal, intranatal, early postnatal periods or as a

result of an anomaly of the brain. At the same time, the effect of damaging factors on the immature brain determines the variety of combinations of motor and sensory disorders, and also underlies cognitive dysfunctions, which must be taken into account when justifying restorative treatment and social rehabilitation of patients [6–8].

Main part. According to the classification of K. A. Semenova (1978), the following forms of cerebral palsy are distinguished: hemiparetic, atonic-astatic, hyperkinetic, spastic diplegia, double hemiplegia [9]. According to ICD-10, there are [10]: • G80.0 Spastic cerebral palsy (corresponding to double hemiplegia); • G80.1 Spastic diplegia; • G80.2 Children's hemiplegia (corresponds to the hemiparetic form); • G80.3 Dyskinetic cerebral palsy (corresponding to the hyperkinetic form); • G80.4 Ataxic cerebral palsy (corresponding to atonic-astatic form); • G80.8 Other type of cerebral palsy (mixed syndromes); • G80.9 Cerebral palsy,

unspecified. The data on the frequency of occurrence of cognitive impairments in children with cerebral palsy are different: disorders of spatial perception affect up to 80% of patients, body schema - up to 75%, constructive activity and kinesthetic praxis - up to 60%; decreased concentration of attention is noted in 88%, memory loss — in 60%, speech disorders — in 80% of patients [11–14]. Motor and sensory disorders in cerebral palsy from the first days of a child's life create unfavorable conditions for further mental development [6–8]. Motor insufficiency, limitation or impossibility of voluntary movements due to damage to the motor-kinesthetic analyzer, pathology of vision and hearing prevent adequate perception of space, the formation of a body scheme, knowledge of the shape and properties of objects, that is, spatial gnosis and praxis. In addition, motor insufficiency prevents the development of visual perception due to a violation of the motor apparatus of the eyes, underdevelopment of statokinetic reflexes, which, in combination with impaired hand function, interferes with the formation of visual-motor coordination, hinders the development of manipulative activity, design and drawing, and further inhibits the formation of educational skills (reading, writing) and cognitive activity [15, 16]. According to the literature, disturbances of various types of sensitivity occur in 80% of children with cerebral palsy, dysfunctions of sensory modulation in 75%, decreased visual acuity is detected in 32–51%, disturbances in the fundus in 19% [13, 17]. In order to study the prevalence of visual pathology in cerebral palsy, we examined 5336 patients under the age of 18 years (26% of them under the age of 1 year, 27% - up to 3 years, 18% - up to 7 years, 24% - up to 15 years, 5% - up to 18 years). The results of the study showed that no pathology was observed only in 30% of patients, the rest had visual impairments, which in most patients were of a combined nature: refractive errors - in 29.3%, strabismus - in 39.3%, diseases of the optic nerve - in 11.3% (of which congenital anomaly of development - optic nerve hypoplasia in 1%), lens disease - in 0.015%, nystagmus - in 3.2%, amblyopia - 10.2%,

retinopathy of prematurity - in 1.5%. Among the refractive errors, 22.5% were mild myopia, 4.3% - medium, 7.5% - high; astigmatism was detected in 52.7% of patients, and hyperopia in 13% [3]. In patients with cerebral palsy, hearing impairment is observed in 6–23% of cases (with hyperkinetic form - in 60%); there is a lack of auditory memory and auditory attention, underdevelopment of phonemic hearing, which leads to a delay in speech development, and in severe cases, to underdevelopment of speech [6, 15]. Thus, not only motor, but also sensory pathology in children with cerebral palsy is a significant factor underlying impairments in the formation of cognitive functions. Restriction of communication, lack of information and ideas about the world around due to social deprivation, hospitalism also lead to a distortion of the process of mental development in children. The main types of intellectual development disorders in cerebral palsy are mental retardation of varying severity and borderline forms of intellectual insufficiency, characterized by milder and, to a large extent, reversible impairment of cognitive activity — mental retardation [11, 15, 18]. Data on the occurrence of intellectual disorders in patients with cerebral palsy are contradictory, which is due to the difference in methodological approaches to solving this problem. According to the results of most researchers, up to 1/3 of patients with cerebral palsy are mentally intact, mental retardation is observed in 19–40%, mental retardation - in 13–40% [15, 16, 18]. On the basis of the SCCH RAMS, a study was made of the prevalence and structure of mental disorders in 135 patients with cerebral palsy (59 patients with spastic diplegia, 26 with double hemiplegia, 23 with hemiparetic form, 18 with hyperkinetic form, 9 with atonic -astatic form) aged from 1 year to 18 years old. It was found that intellectual development close to the norm is observed in 50% of patients with hemiparetic form, 33% with spastic diplegia, 23% with hyperkinetic form, 4% with atonic-astatic and 3% of patients with double hemiplegia. Mental retardation was observed in 27% of children with atonic -astatic form, 25% with

hemiparetic , 19% with spastic diplegia , 16% with hyperkinetic form of the disease, 14% with double hemiplegia . Mental retardation of varying severity was observed in 83% of patients with double hemiplegia, in 65% of patients with atonic-astatic form, in 61% with hyperkinetic form and 48% with spastic diplegia [3]. Thus, an analysis of the frequency of occurrence and structure of intellectual disability in patients with various forms of cerebral palsy shows that intellectual disorders are least often observed in the hemiparetic form of the disease and spastic diplegia , while borderline disorders and a mild degree of mental retardation prevail, and most often in double hemiplegia (especially moderate and severe forms) with a predominance of mental retardation. Our results are consistent with the data available in the literature that the most severe disorders of the intellect are observed in double hemiplegia and the atonic -astatic form of the disease [12].

Diagnosis of cognitive disorders in cerebral palsy is a difficult task and has a number of specific features [15, 19]: • gross impairment of speech and motor functions (especially fine motor skills) prevent the use of widely used, verified and valid methods; • the presence of cerebrastrhenic syndrome determines the need to use short versions of test tasks (up to 5–7 years, the duration of a single examination should not exceed 20–30 minutes); • during the examination, it is necessary to take into account the physical capabilities of a patient with cerebral palsy, it should be carried out in a position convenient for the patient; • up to 3–4 years of age, psychological examination of a child is based on methods of fixed observation in natural or experimentally modeled situations, from 4–5 years of age, a test psychological examination begins to be applied (tasks are given orally and are carried out individually), from 12–14 years of age it is possible to use questionnaires; • the tasks presented to the child should be adequate not only to his biological age, but also to the level of sensory, motor and intellectual development.

The main principles for diagnosing cognitive impairments in cerebral palsy are [15, 19, 20]:

1. Activity principle (a psychological examination is carried out in the context of activities available to a child with cerebral palsy: subject-practical, playful, educational).

2. The principle of a qualitative analysis of the data obtained from a psychological examination (not only the final result of the test task is important, but also the way the child works, his ability to transfer the acquired skills to a new task, the child's attitude to the task, his own assessment of his results).

3. The principle of a personal approach in the process of diagnosis (not a single symptom is analyzed, but the personality of the child as a whole).

4. The principle of a comparative approach in the study of impaired development (knowledge of the characteristics of the mental development of a healthy child is necessary).

5. The principle of an integrated approach to the diagnosis of mental development (taking into account many factors that underlie the developmental disorders of a child with cerebral palsy: neuromorphological, clinical, pedagogical, psychological, social).

According to the results of psychological diagnostics [15]:

- violations of mental activity, their mechanisms for determining the prospects for rehabilitation should be identified;

- the most preserved mental functions have been determined in order to “activate” compensatory mechanisms, which is extremely important, especially when the impaired function is difficult to restore or not subject to it at all;

an assessment was made of those features of mental activity that will contribute to the successful social integration of the child at different stages of age development. Due to the diversity of cognitive disorders in patients with cerebral palsy, it is necessary to use a variety of interchangeable and complementary diagnostic methods. Most often, the following diagnostic methods are used to detect cognitive impairment in cerebral palsy [12, 15, 16, 19]: experimental psychological study of higher

mental functions (according to the method of A. R. Luria, adapted to childhood); for the diagnosis of perceptual disturbances (assessment of subject gnosis) - Poppelreiter figures, the Missing Details test; to assess visual-constructive activity - tests for the execution of drawings, simple geometric shapes, the Bender test (visiomotor gestalt test), Taylor test; study of the sensory, motor, emotional, behavioral, cognitive spheres of a child aged from 1 month to 3 years using the observation method, scales of psychomotor development, clinical and psychological methodology "Gnome"; in order to study attention, the sensorimotor sphere, visual-effective thinking - proofreading test, Schulte tables, methods "Koos Cubes", "Segen Boards"; to identify violations of the body scheme - tests "Mannequin" and "Face", DAP (draw a person); the study of thinking using the method of classifying objects according to generic and functional characteristics, understanding the content of plot pictures; to assess the level of mental development - the children's version of the Wexler test (adapted by V. Panasyuk), Binet-Simon tests, Stanford Binet, a short version of the Raven test, Amthauer intelligence test, school maturity tests; for the study of performance and fatigue - the methods of Kraepelin, Landolt; for the purpose of studying memory - techniques based on the reproduction of images of pictures or numbers (visual memory), words (auditory memory); for a comprehensive study of cognitive functions - a set of test computer systems "Rhythm about -", "Mnemo -", "Binatest", "Psychomat".

Diagnosis of intellectual disabilities in children with cerebral palsy is one of the most significant tasks, since it determines the features and prognosis of both medical and social rehabilitation, while differentiation of mental retardation and mental retardation is of exceptional importance. Factors that make it difficult to distinguish between mental retardation and mental retardation in cerebral palsy are: 1) motor, speech disorders, visual and auditory disorders (create the impression of a greater severity of the pathology than it actually is, especially with double hemiplegia and

hyperkinetic form of cerebral palsy); 2) pronounced cerebrasthenic syndrome (often causes low rates of psychometric methods, despite the safety of the function under study); 3) dependence of the level of mental operations on insufficient familiarity with objects and phenomena the surrounding reality, which causes difficulties in the formation of generalized ways of thinking and determines the need for long-term observation of the child in order to identify the dynamics of their development; 4) weakness of volitional impulses (patients often need external stimulation for productive activity); 5) pedagogical neglect due to ignoring by parents of an intellectual defect in a child (defensive reaction), social disadvantage of the family; 6) the appearance of the patient (the paucity of facial expressions and gestures, malocclusion, salivation) - in some cases creates a deceptive impression of pseudo-mental retardation. To distinguish between mental retardation and mental retardation, we have proposed the following differential diagnostic criteria (Table). Mental retardation in patients with cerebral palsy has both common clinical features and specific features characteristic of each form of the disease. Ilevaniya. Common characteristics of mental retardation in various forms of cerebral palsy are [15, 16, 20]: a) the uneven nature of intellectual disability (delay in the formation of some functions with the relative safety of others); b) an uneven decrease in the stock of information and ideas, which is due to: a feature of a motor defect that makes it difficult not only to move, but also to understand the world around in the process of manipulating objects and studying their properties; difficulty fixing the gaze due to the weakness of the binocular optical reflex and the presence of unreduced stem reflexes; social deprivation of the patient; c) inertia of mental processes, insufficient concentration of attention, perceptual disturbances. Specific characteristics of mental retardation are [15, 16]: 1) in spastic form of cerebral palsy: satisfactory development of verbal thinking, the ability to abstract and generalize; the predominance of violations of spatial gnosis and praxis (they do not assimilate the body

scheme, cannot dress due to apraxia; they confuse up-down, right-left, poorly oriented in space; they have difficulty drawing and mastering writing, counting - up to acalculia; frequent functioning disorders frontal areas - insufficient planning, slowing down the pace of thinking); narrow outlook - they do not know things that are not used in everyday life, but due to their great interest in work, they can compensate for an intellectual defect; 2) with hyperkinetic form of cerebral palsy: speech and auditory disorders (hyperkinetic dysarthria against the background of sensorineural hearing loss, sensory alalia); lack of development of verbal thinking, which is pathogenetically associated with frequent auditory and auditory speech disorders due to bilirubin encephalopathy and damage to n. cochlearis , as well as auditory pathways; relative preservation of visual-figurative thinking, spatial functions (drawing, design, despite hyperkinesia); dissociation between short-term visual and auditory memory (the volume of auditory memory is reduced by 2–2.5 times). The prognosis is favorable with timely diagnosis and correction of hearing impairment; 3) with right-sided hemiparetic form of cerebral palsy: Gerstmann - Schilder syndrome (mirror drawing and writing, digital agnosia, violations of the body scheme and counting); mild transient speech disorders (delayed speech development, dyslalia , erased dysarthria, phonemic hearing impairment, phonemic dysgraphia , stuttering, decreased verbal thinking). In the left-sided hemiparetic form of cerebral palsy, spatial disorders predominate, speech disorders are 2 times less common than in the right-sided form; characteristic defect anosognosia - ignoring diseased limbs. Mental retardation in patients with cerebral palsy in most cases manifests itself in an atypical form, which is characterized by an uneven structure of cognitive deficit, which has features for each form of cerebral palsy, against the background of a total underdevelopment of intellectual functions, psychopathic behavior, the frequent presence of local phenomena (mirror forms of writing, impaired phonemic hearing and etc.) [3, 15]: Thus, the variety of cognitive and speech

disorders associated with cerebral palsy determines the relevance of a differentiated approach to the use of rehabilitation treatment. The factors influencing the effectiveness of the correction of cognitive disorders in patients with cerebral palsy are early diagnosis, the complexity and adequacy of correction methods, continuous and long-term continuation of work with the child and family [15, 20, 21]. Timely comprehensive rehabilitation of cognitive impairments in cerebral palsy makes it possible to prevent the occurrence of further deviations, correct existing disorders, significantly reduce the degree of disability and achieve the highest possible level of social adaptation for each child. The system of complex rehabilitation of cognitive disorders with cerebral palsy includes medical, psychological, pedagogical and social rehabilitation and involves the implementation of activities aimed at the formation of mental functions and abilities that allow the child to learn and perform various social roles, adapt in society, that is, aimed at restoring medical and psychological mechanisms of social integration.

The main principles of psychological, medical and pedagogical correction of cognitive impairment in patients with cerebral palsy are [3, 15, 20–24]:

1. The unity of diagnosis and correction (the scheme and selection of diagnostic and psycho-corrective methods and techniques must correspond to the nosology of the disease).

2. The complex nature of correctional work (combined correction of motor, speech and mental disorders of development and behavior).

3. Early onset of ontogenetically consistent impact, based on preserved functions, with the mandatory inclusion of a motor-kinesthetic analyzer.

4. Organization of work within the framework of the leading activity (up to 1 year - emotional communication with an adult; at 1–3 years - subject activity; at preschool age - game activity; at school age - educational).

5. Logical-sequential principle (purposeful formation of psychological

neoplasms, which requires maximum activity of the child and is of a proactive nature, since the correction is aimed not only at the actual zone, but also at the zone of proximal development of the child).

6. Personal approach (assessment of the child's personality as a whole).

7. Causal (depending on the root cause, a psycho-correction strategy is developed).

8. Dynamic (observation of the child in the dynamics of ongoing psychoverbal development).

9. Unity of correctional work with the child and his environment (family). A significant place in the recovery and correction of cognitive impairment is traditionally occupied by drug therapy using nootropic drugs [3, 15, 21]. There is a group of "true nootropics", for which the ability to improve cognitive functions is the main effect, as well as a group of mixed-action nootropic drugs (the so-called neuroprotectors), in which the nootropic effect is complemented by other actions. A drug that combines these properties and is widely used in neuropediatrics is Cortexin, a high-tech product, a complex polypeptide drug of biological origin [25, 26]. Has a pronounced metabolic activity: normalizes the exchange of neurotransmitters; regulates the balance of inhibitory / activating amino acids and levels of serotonin and dopamine; has GABAergic action, antioxidant effect; normalizes the bioelectric activity of the brain. As numerous studies have shown, having a pronounced tissue-specific effect on the cells of the cerebral cortex, this neuropeptide drug has a cerebroprotective, nootropic, neurotrophic, neurometabolic, stimulating, antistress, and antioxidant effect [25].

Cortexin is a multicomponent drug, the composition of which is not limited to neuropeptide substances. In addition to neuropeptides, the ingredients of the drug are represented by at least three groups of substances: amino acids, vitamins and minerals. Obviously, the positive effects of the drug are explained not only by the action of amino acids and polypeptides, but also by the neurochemical activity of macro- and microelements, vitamins [25]. Unlike most

nootropics, the appointment of a neuroprotector is also possible in the afternoon due to the fact that this drug is balanced in terms of the composition of stimulating and inhibitory amino acids. Taking into account the spectrum of therapeutic action, its use is indicated for various forms of cerebral palsy, taking into account deviations in motor, mental, emotional, and speech development [26–29]. A positive effect of Cortexin in combination with kinesitherapy on impaired motor and cognitive functions was shown when administered to 118 patients with cerebral palsy aged from 1 to 18 years [28], in combination with reflex therapy — on speech disorders in cerebral palsy [26]. L. A. Pak et al. during the observation of 25 children with cerebral palsy aged 6–15 years, it was revealed that against the background of the use of Cortexin (5 courses of 10 injections at intervals of 3 months), the volume of motor activity, a set of motor skills significantly increased, hand-eye coordination improved, the cycle normalized "sleep-wakefulness", the emotional background improved, disturbances from the articulatory apparatus decreased. A cumulative effect of the drug was revealed: with repeated courses of therapy, its positive effect persisted for 6 to 18 months [27]. N. V. Ivannikova et al. when examining 22 patients with cerebral palsy aged 11–18 years in the process of complex rehabilitation with a 20-day use of a neuroprotective agent (a course dose of 200 mg), a significant improvement in well-being, behavior, sociability and integrative functions was noted in 62.1% of the examined, a moderate improvement in the form of decrease in the severity of subjective manifestations - in 33.3% [29].

psychocorrection, psychological support, and psychological vocational guidance, is of paramount importance in the treatment of cognitive impairment in children with cerebral palsy [13, 20]. The expediency of rehabilitation, its priority areas, optimal methodological techniques are determined primarily by what areas of mental activity were disturbed and which mental functions should be restored and developed in the first place. The implementation of an individual program for

the rehabilitation of cognitive disorders in a patient with cerebral palsy is provided by a system of interaction between various specialists for the rational organization of work.

Medical-psychological-pedagogical impact on children should be carried out comprehensively, by the efforts of a doctor, a teacher-psychologist, a speech therapist, a defectologist. The main tasks of psycho-corrective work with patients with cerebral palsy are [6, 18, 20]:

- development of safe aspects of cognitive activity;
- development of prerequisites for intellectual activity (attention, memory, imagination);
- development of kinesthetic and tactile perception;
- stimulation of sensory functions (development of visual, auditory, kinesthetic and tactile perception - shapes, sizes, colors and textures of objects, as well as the development of stereognosis);
- formation of spatial and temporal representations;
- development of auditory perception of non-speech sounds;
- development of tempo-rhythmic feeling: recognition and reproduction of tempo-rhythmic structures;
- development of visual-effective and visual-figurative forms of thinking: establishing the identity of objects, comparing objects, modeling in size and shape, developing the ability to correlate parts and the whole, classifying objects according to one or two features;
- development of verbal-logical forms of thinking: defining concepts, classifying objects into categories, excluding objects, guessing riddles, understanding the figurative meanings of words, determining the sequence of events, forming mathematical representations;
- development of visual-motor coordination and functionality of the hand and fingers; preparation for mastering writing;
- development of emotional, verbal, objective and game communication with others;
- education of self-care and hygiene skills.

The leading principle of correctional work in cerebral palsy is sensory education, aimed at shaping the child's full perception of the surrounding reality (visual, auditory, tactile-motor, etc.). On its basis, full-fledged ideas about the external properties of objects, their shape, size, position in space, smell and taste are formed, which contributes to the

development of the child's thinking (operating with sensory information coming through the senses is carried out in the form of thought processes) [6, 18, 20, 24]. The main tasks of the sensory education of children with cerebral palsy are:

- development of all types of perception (visual, auditory, tactile-motor, etc.);
- formation of sensory standards of color, shape, size, temporal and spatial standards, and muscular-articular feeling;
- formation of full-fledged ideas about the world around;
- development of higher mental functions (attention, thinking, memory) and correction of their disorders;
- development of speech, transfer of acquired knowledge to the verbal level, enrichment of the child's vocabulary, including the expansion of colorful vocabulary.

The following features of correctional and pedagogical measures are distinguished depending on the form of cerebral palsy and the structure of the intellectual defect [15, 16]:

- 1) with spastic diplegia : the development of hand-eye coordination, orientation in space, learning the counting function, developing self-service skills (dressing, etc.);
- 2) in hemiparetic form: correction of mirror writing using a special technique; correction of speech insufficiency (pronunciation, expansion of vocabulary, development of narrative speech, phonemic hearing, sound analysis of a word); development of manipulative activity of the affected limb, friendly movements, stereognosis , exercises to suppress imitative synkinesis ; correction of attention to the left (right) part of objects and images falling into the field of view;

in the hyperkinetic form: timely correction of hearing impairment, development of speech using special methods, development of verbal thinking. Correctional work should be built not only taking into account age, but also with an understanding at what stage of psychoverbal development the child is. The need for early corrective work in cerebral palsy arises from the characteristics of the child's brain - its plasticity and universal ability to compensate for impaired functions, and also due to the fact that the most optimal time for maturation of the speech functional system is the first three years of a child's life. The main areas of correctional and pedagogical

work in infancy are [6, 15, 20]:

- development of emotional communication with an adult (stimulation of the “revitalization complex”, the desire to prolong emotional contact with an adult, including the child in practical cooperation with an adult);
- normalization of muscle tone and motility of the articulatory apparatus (decrease in the degree of manifestation of motor defects of the speech apparatus - spastic paresis, hyperkinesis, ataxia, tonic disorders such as rigidity);
- development of mobility of organs of articulation;
- stimulation of voice reactions, sound and speech activity (undifferentiated voice activity, cooing, babble and babble words);
- correction of feeding (sucking, swallowing, chewing);
- stimulation of reflexes of oral automatism (in the first months of life - up to 3 months), suppression of oral automatisms (after 3 months);
- development of sensory processes (visual concentration and smooth tracking; auditory concentration, sound localization in space, perception of an adult's differently intoned voice; motor-kinesthetic sensations and finger touch);
- development of speech breathing and voice (vocalization of exhalation, increase in the volume, duration and strength of exhalation, development of the rhythm of breathing and movements of the child);
- formation of hand movements and actions with objects (normalization of the position of the hand and fingers necessary for the formation of visual-motor coordination; development of the grasping function of the hands; development of the manipulative function - nonspecific and specific manipulations; differentiated movements of the fingers);
- formation of preparatory stages of speech understanding.

The main directions of correctional and pedagogical work at an early age are [6, 15, 20]:

- the formation of objective activity (the use of objects according to their functional purpose), the ability to voluntarily engage in activity;
- formation of visual-effective thinking, arbitrary, sustained attention;
- formation of speech and subject-practical communication with others (development of understanding of addressed speech, activation of one's own speech activity);
- formation of all

forms of non-verbal communication - facial expressions, gestures and intonation;

- development of knowledge and ideas about the environment (with the generalizing function of the word);
- stimulation of sensory activity (visual, auditory, kinesthetic perception);
- formation of functionality of hands and fingers; development of hand-eye coordination;
- development of neatness and self-care skills.

The main areas of correctional and pedagogical work at preschool age are [13, 15, 20]:

- development of gaming activities;
- development of verbal communication with others (with peers and adults), an increase in passive and active vocabulary, the formation of connected speech, the development and correction of violations of the lexical, grammatical and phonetic structure of speech;
- expanding the stock of knowledge and ideas about the environment;
- development of sensory functions, formation of spatial and temporal representations, correction of their disturbances, development of kinesthetic perception and stereognosis;
- development of attention, memory, thinking (visual and abstract-logical elements);
- formation of mathematical representations;
- development and preparation of the hand to master the letter;
- education of self-care and hygiene skills;
- preparation for school.

The main tasks of correctional and pedagogical work at school age are [6, 15, 20]:

- consistent development of cognitive activity and correction of its disorders;
- correction of higher mental functions, education of stable forms of behavior and activity, prevention of personality disorders;
- professional orientation.

The life-forming component of correctional work in patients with cerebral palsy is the right choice of a preschool and school educational institution. Children with cerebral palsy can study both in general education and correctional educational institutions. The experience of existing special institutions has shown that it is advisable to complete groups that are clinically and psychologically heterogeneous both in terms of musculoskeletal pathology and in terms of intellectual development. This not only allows solving organizational problems, but has a

positive effect on the personal development of children [30].

Conclusion. The results of our examination of 135 children with cerebral palsy aged 11–18 years showed that as a result of the proposed complex psychological, medical and pedagogical correction of cognitive disorders, there is a positive dynamics in the structure of intellectual deficit: 64% have improved memory, 50% have the possibility of replacing the diagnosis of severe mental retardation to moderate, in 28% of patients with cerebral palsy it is possible to refuse the diagnosis of mental retardation, 44% - to prepare for preschool education, 62% - for school [3]. The presence of cognitive disorders should be taken into account when justifying rehabilitation treatment, as well as in the social rehabilitation of patients with cerebral palsy. The development of differentiated measures of influence makes it possible to increase the effectiveness of rehabilitation measures, which depends on the timely diagnosis and correction of cognitive impairment in children with cerebral palsy.

Literature

1. Зокиров М.М. & Касимова, С. А., & Рустамова, И. К. (2019). Нейропсихологическое исследование пациентов с длительной посттравматической эпилепсией. *Молодой ученый*, (4), 116-118.
2. Sarvinoz, T., & Muzaffar, Z. (2022). Rehabilitation aspects of water therapy in modern medicine. *Uzbek Scholar Journal*, 6, 102-106.
3. Sarvinoz, T., & Muzaffar, Z. (2022). Rehabilitation for childhood cerebral palsy. *Uzbek Scholar Journal*, 6, 97-101.
4. Nabievna, M. Y., & Muzaffar, Z. (2022). Literatural review of the relevance of the problem of neurosaisds. *Modern Journal of Social Sciences and Humanities*, 4, 558-561.
5. Nabievna, M. Y., & Muzaffar, Z. (2022). Modern View on the Pathogenesis of Hiv Encephalopathy. *Spanish Journal of Innovation and Integrity*, 6, 478-481.
6. Muzaffar, Z., & Okilbeck, M. (2022). Dementia and arterial hypertension. *Modern Journal of Social Sciences and Humanities*, 4, 19-23.
7. Muzaffar, Z., (2022). Chronic Obstructive Pulmonary Disease in Combination with Cardiovascular Diseases. *European Multidisciplinary Journal of Modern Science*, 6, 150-155.
8. Зокиров, М., & Мухаммаджонов, О. (2022). Особенности развития тревожных и депрессивных расстройств при заболеваниях, сопровождающихся хроническим болевым синдромом. *Barqarorlik va yetakchi tadqiqotlar onlayn ilmiy jurnali*, 841-844.
9. Зокиров, М., & Мухаммаджонов, О. (2022). Вич энцефалопатия и его патогенетические аспекты. *Barqarorlik va yetakchi tadqiqotlar onlayn ilmiy jurnali*, 855-858.
10. Muzaffar, Z. (2022). HIV Encephalopathy and its Pathogenetic Aspects. *European Multidisciplinary Journal of Modern Science*, 4, 843-846.
11. Зокиров, М. М., Рустамова, И. К., Касимова, С. А., & Кучкарова, О. Б. (2019). Жароҳатдан кейинги талвасада кечки нейровизуализацион ўзгаришлар. In *Современная медицина: новые подходы и актуальные исследования* (pp. 56-60).
12. Zokirov M., Mukhammadjonov, O. (2022). Cognitive Impairments in Patients with HIV-Associated Encephalopathy. *Central asian journal of medical and natural sciences*, 3(2), 401-405.
13. Zokirov, M. M., & Mukhammadjonov, O. (2022). Cognitive impairment in patients with Parkinson's disease and optimization of its treatment. *Eurasian Scientific Herald*, 7, 177-180.
14. Зокиров, М., & Туланбоева, С. (2022). Когнитивные нарушений у

- пациентов с ВИЧ-ассоциированной энцефалопатией. *Barqarorlik va yetakchi tadqiqotlar onlayn ilmiy jurnali*, 68-73.
15. Muzaffar, Z. (2022). Literature reviews on nervous system damage during hiv infection. *Barqarorlik va yetakchi tadqiqotlar onlayn ilmiy jurnali*, 2(9), 141-147.
16. Muzaffar, Z. (2022). Correction of cognitive disorders in patients with hiv encephalopathy. *Web of Scientist: International Scientific Research Journal*, 3(12), 402-411.
17. Muzaffar, Z. (2022). Psychological State in Patients with HIV Infection. *Amaliy va tibbiyot fanlari ilmiy jurnali*, 1(6), 52-56.
18. Зокиров, М., & Мадмаров, Д. (2022). Корреляция ээг картины головного мозга и когнитивного статуса у пациентов с эпилепсией. *Theoretical aspects in the formation of pedagogical sciences*, 1(5), 227-230.
19. Зокиров, М. (2021). Medical sciences. *scientific ideas of young scientists*, 21
20. Зокиров, М. (2022). Анализ когнитивных нарушений у пациентов с ВИЧ-энцефалопатией. *Barqarorlik va yetakchi tadqiqotlar onlayn ilmiy jurnali*, 2(10), 251-260.
21. Muhammadjonov, O., & Zokirov, M. 2-toifa qandli diabet bilan og'rigan bemorlarda yurak-qon tomir kasalliklarining xavf omillarining tarqalishi. *Студенческий вестник Учредители: Общество с ограниченной ответственностью "Интернаука" Тематическое направление: Other social sciences*, 53-54.
22. Зокиров, М. (2021). Коррекция когнитивных нарушений у больных с ВИЧ-ассоциированной энцефалопатией. *Дж. Теор. заявл. Науки*, 7, 62-66.