

Postinfectious Neuropsychological Disorders: Clinical and Pedagogical Approaches

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Abstract: This article examines neuroinfectious diseases of the central nervous system in children and their impact on neuropsychological development and educational outcomes. Particular attention is given to meningitis and encephalitis as the most common forms of neuroinfection affecting the pediatric population. The study analyzes etiological factors, clinical manifestations, and residual complications that may result in persistent impairments of cognitive, sensory, speech, and motor functions. It is emphasized that the severity and nature of pathological symptoms depend on the causative agent, the course of the disease, the child's age at the time of infection, and the level of the organism's protective mechanisms.

The article highlights that early-life neuroinfections often lead to more severe and long-lasting consequences, including intellectual decline, emotional-volitional instability, behavioral disorders, hearing and vision impairments, and speech dysfunctions. Special attention is paid to post-encephalitic and post-meningitic conditions, which may manifest as asthenic syndrome, decreased attention and memory, impaired neurodynamics, and difficulties in mastering the general school curriculum.

The importance of timely medical intervention, rehabilitation measures, and specialized pedagogical support is substantiated. A comprehensive approach combining medical, psychological, and educational strategies is considered essential for improving the adaptive potential and learning capabilities of affected children.

Keywords: Encephalitis, meningitis, meningoencephalitis, adynamia, hyperkinesia, mimicry, hyperesthesia, Kerning symptom system, intellectually disabled, medical approach, clinical signs, clinical forms.

Introduction: Most of the neuroinfections of the nervous system in children cause several persistent neuropsychological disorders. Children affected by infectious diseases of the nervous system - most often meningitis, encephalitis, meningoencephalitis, etc. - constitute the majority of students referred to special schools. The causative agents of the disease are various types of viruses that affect the nervous system, which are combined in the clinic under the general term neuroinfection. In some cases, the nervous system may be affected by secondary diseases under the influence of various common infections. The child's experience of these diseases leads to damage to neuropsychic functions such as vision, hearing, speech, thinking. Sometimes complications are persistent and prevent

the child from studying in a public school. The characteristics of pathological symptoms that develop as a result of the disease are associated with a number of conditions, such as the rapid movement of the pathogen, the nature of the disease process, the degree of manifestation of the body's protective properties. The earlier the child experiences the disease, the more complex the degree of complications is observed, especially the slow development of mental activity. The disease in the later stages of the child's life is relatively mild due to the compensatory capabilities of the brain and does not leave serious complications. Let us proceed to describe individual forms of infectious diseases of the nervous system. Meningitis is an inflammation of the meninges. The disease is caused by

various bacterial forms, most often a group of cocci (meningococci, streptococci, pneumococci). One of the most common forms of meningitis is cerebrospinal meningitis, i.e. meningitis of the head and spinal cord, caused by a separate group of meningococci. This disease often spreads as an epidemic in winter and spring. The source of meningococcal infection is an infected person. In the outdoor environment, meningococcus quickly dies under the influence of sunlight and temperature. This meningococcal pathogen can be stored for a long time in the nasal mucosa of a healthy child.

The disease begins with fever, continues with vomiting, skin rashes, severe headaches, and sometimes impaired consciousness. One of the characteristic features of the disease is: as a result of a strong contraction of the neck muscles, the head is thrown back, the legs are bent towards the stomach with half-bent at the knee joint (Kerning's symptom), increased skin sensitivity (hyperesthesia), fear of light. The duration of the acute period is usually 1-2 weeks, a lightning-like and prolonged illness, after which the patient may recover or die. In the past, the mortality rate from meningitis was 25-50%, but the current use of antibiotics and sulfonamides in treatment has shortened the duration of the disease, reduced the number of deaths, and alleviated the appearance of residual conditions (complications).

Meningitis is characterized by the development of various complications that can occur in the acute period of the disease.

One of the most common complications is hearing loss as a result of the inflammatory process that develops in the auditory nerve. Usually, hearing loss after meningitis manifests itself in bilateral hearing loss or deafness. Hearing loss in meningitis in early childhood can lead to speech retardation and deafness. Damage to the optic nerves is relatively rare, which can also lead to partial or complete loss of vision. Seizures are often observed as one of the symptoms of meningitis that has been transferred. Mental retardation after cerebrospinal meningitis has been observed less frequently in recent years and is often a complication of damage to the emotional-volitional sphere and character. As a result, children develop high excitability, impulsivity (prone to affect), and psychopathic behavior. These behavioral features are especially

pronounced in the development of one of the most severe complications of early meningitis - hydrocephalus. Higher nervous activity disorders that occur after meningitis in preschool or school-age children may also have a number of pathological features. However, in these cases, complications are not clearly expressed, but mainly consist of a characteristic asthenia, that is, a decrease in physical and mental state. Meningitis can also occur as a result of other causes, for example, otogenic meningitis, that is, as a result of purulent processes in the ear. Most children with complications of meningitis in the form of hearing and vision impairment are educated in special schools, in some cases they are referred to special (auxiliary) schools, and finally, as a result of systemic therapeutic pedagogical special measures carried out in a group of children, they are able to study in a public school.

Another type of infectious diseases of the nervous system is encephalitis - this group includes inflammatory processes with different localization of brain damage. Encephalitis is accompanied by both general brain symptoms and focal symptoms. General brain symptoms include fainting, headache, dizziness, vomiting, changes in breathing and pulse. Focal symptoms are manifested in connection with the localization of the inflammatory process in different parts of the brain. In modern clinic, encephalitis is divided into primary or epidemic and infectious types.

As a result of examining the higher nervous activity of children with encephalitis, severe disorders in the neurodynamics of the cortex were revealed. For example, a sharp disruption of the balance between the processes of excitation and inhibition, a weakening of induction relationships as a result of a decrease in the cerebral cortex are characteristic of the acute period of the disease. Encephalitis occurs due to a number of reasons associated with a weakening of the protective properties of the child's body, including congenital defects of the nervous system, general somatic weakness, rickets, the harmful effects of living conditions, and a weakening of the immunobiological properties of the organism. Let's consider some forms of encephalitis. Epidemic encephalitis - epidemic encephalitis is associated with the entry into the body of a neurovirus that affects the central nervous system. The disease often spreads in epidemics in winter, is

characteristic of people of all ages, but is more common in childhood. The course of the disease is complicated by complications with disorders of certain functions in the field of movement, speech, and psychology. These disorders in epidemic encephalitis vary depending on which parts of the brain are affected by the disease process and with what intensity. For this reason, among the complications, motor functions, sensory and motor disorders are often observed. Disorders in the field of movement are diverse, sometimes manifested in a characteristic inhibition of movements accompanied by tremors of the hands and head, and rarely in the form of paralysis and paresis.

Usually, the child's facial expressions, gaze and general movements are inhibited. Speech is monotonous, modulation and emotional characteristics are greatly weakened.

Most often, complications after epidemic encephalitis are the appearance of general motor excitability and hyperkinesis in the form of a complex of forced movements, and disorders of higher nervous activity. In such cases, the behavior of children is dominated by emotions in the form of angry affects, increased sexual desire, a changeable, often sad mood is observed. In the pedagogical practice of special children's institutions, cases of excessive appetite and thirst (bulimia, polydipsia), pathological anger, cruelty have been noted in some children. Changes in character and emotional-volitional sphere after encephalitis can be of varying degrees. Sometimes they are severe and affect the child's academic performance (acute failure, violation of discipline, conflicts in school and family). Properly organized pedagogical and therapeutic measures allow to correct the symptoms of the disease to some extent. Only in epidemic encephalitis experienced at an early age, specific intellectual changes are observed, leading directly to oligophrenia. In children who have had a mild course of the disease, as a result of epidemic encephalitis, specific symptoms of psychoasthenia, that is, mental exhaustion, are observed, which are manifested in rapid fatigue, weakening of the ability to intellectual exertion, and deterioration of memory. Gross intellectual disorders may not occur. Sometimes epidemic encephalitis can be protracted. However, in many cases, these students cannot successfully master the general school program due to a decrease in the pace of thinking, rapid fatigue of nervous processes,

instability of the emotional-volitional sphere, and frequent headaches. These children's attention is impaired, their activity is weakened. For this reason, they often continue their education in special auxiliary schools.

In the clinic, the term infectious encephalitis refers to an inflammatory, in most cases toxic process that occurs as a result of a child experiencing various infectious diseases. In these cases, the disease process involves not only various areas of the brain, but often also the spinal cord. Therefore, these diseases often have the appearance of meningoencephalitis and encephalomyelitis. Infectious encephalitis is characterized by general and focal symptoms, and some focal symptoms, such as paresis and the development of convulsive aphasia, are manifested even in the acute period of the disease. Others may be detected later. The residual period of secondary encephalitis is characterized by a variety of pathological signs. In this case, movement disorders are observed in the form of paralysis, paresis, hyperkinesis, as well as speech defects in the form of sensory and motor aphasia and pseudobulbar dysarthria. Unlike epidemic encephalitis, in infectious encephalitis, intelligence and mental activity are significantly impaired. Age characteristics have a significant impact on the complications that arise after secondary encephalitis. For example, as a result of encephalitis experienced in early childhood, a late decrease in intelligence in the form of oligophrenia is observed. Some local disorders are characteristic of mental retardation of this etiology. The emotional-volitional sphere and character of these children are also severely impaired. The physiological mechanism of these disorders is a sharp disruption of neurodynamics, an increase in subcortical influence as a result of the weakening of intracortical inhibition. Behavioral features such as a tendency to affective outbursts and mood swings in postencephalitic children complicate educational work. There are some differences between complications of epidemic encephalitis and complications after infectious encephalitis. For example, severe emotional-volitional and character disorders that occur in the residual stage of epidemic encephalitis are rarely observed after infectious encephalitis. As complications of infectious encephalitis, intellectual, speech and motor disorders of varying degrees of manifestation are common, and

their medical and pedagogical characteristics are distinguished. For example, due to the nature of the affected areas of the disease process, a disharmonious, uneven decrease in intelligence is observed, in which some abilities are damaged, while others are preserved to varying degrees. This is especially characteristic of children, due to a decrease in phonemic analysis, a syndrome of specific paraphasic disorders that cause various writing and reading defects. The above disorders arise on the basis of neurodynamic disorders, persistent inhibition of the brain, and a decrease in the perception of the surrounding world and its analytical nature. The treatment measures used in meningitis and encephalitis are different and are effectively treated depending on the degree and stage of the disease.

In the treatment of developmental disorders in children, the relationships of family members, sometimes individual approaches, and medical, pedagogical, and psychological interventions provide effective results in restoring the defects.

CONCLUSION

Neuroinfectious diseases of the central nervous system in childhood, particularly meningitis and encephalitis, represent serious medical and pedagogical challenges due to their potential to cause persistent neuropsychological impairments. The consequences of these conditions vary depending on the etiology, severity of the disease, age of the child at the time of infection, and the level of compensatory and protective mechanisms of the organism.

Early-life neuroinfections are especially dangerous, as they may disrupt the formation of higher mental functions, leading to intellectual decline, speech disorders, motor impairments, emotional instability, and behavioral deviations. In many cases, residual symptoms such as asthenia, decreased attention and memory, and impaired neurodynamics significantly affect academic performance and social adaptation.

Timely diagnosis, adequate medical treatment, and systematic rehabilitation are crucial in reducing long-term complications. An integrated approach that combines medical, psychological, and pedagogical support plays a key role in restoring functional abilities and ensuring successful inclusion of affected children in the educational environment.

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