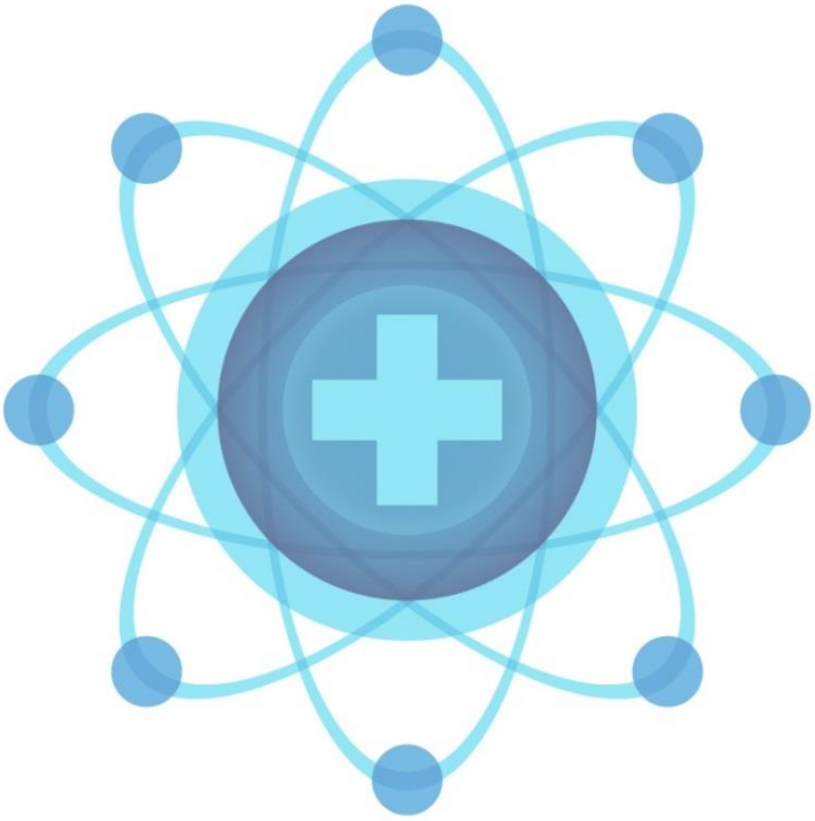

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Clinical and pathogenetic determinants of peripheral nerve disease in children.

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Abstract. Currently, there is a high frequency of organic lesions of the peripheral nervous system (PNS) in children associated with both inflammatory and hypoxic -ischemic processes resulting in demyelination and/or degeneration of nerve fibers. The severity of damage to the nervous system, the rapidity of the development of the disease, high mortality and the frequency of disability in children determine the relevance of their study.

Purpose of the study. Assess the significance of clinical and pathogenic determinants in the occurrence of peripheral nervous system disease

Materials and research methods. 100 patients aged from 3 months to 17 years were under observation. The average age of children with PNS diseases is 4.2± 1.5 years . Depending on the duration of the increase in neurological symptoms, among patients with PNS diseases, an acute course was diagnosed, in which there was an increase in symptoms within 3-14 days with a complete reverse regression within 1-2 months; protracted course, in which there were repeated relapses or continuous progression lasting from 2 weeks to 6 months with reverse partial or complete regression within 6-12 months

Research results. The acute onset of the disease with rapid progression of cerebral and / or focal symptoms within 1-4 days was more typical for polyneuritis, and was also noted in 56% of cases with plexitis. Whereas with ganglionitis , the gradual development of the clinical picture was more often noted, over several days, and sometimes weeks. Also, with ganglionitis , in 56.3% of cases, neurological symptoms were observed in children earlier (for several months - up to 2 years), and in 80% (n=64) they regressed in the absence of any treatment. Such symptoms included dizziness and ataxia, blurred vision in one eye, sensory disorders by hemitype . When analyzing outpatient cards and collecting anamnestic data on past infectious diseases in children with polyneuritis, it was found that the most common were chicken pox, otitis media, tonsillitis and / or tonsillitis and intestinal infections, the frequency of which was 72.7%, 45.3%, 44.7% and 36.0%, respectively.

Conclusions: Thus, diseases of the peripheral nervous system of an infectious lesion are of great interest in terms of clinical and neuroimaging data and allow us to differentiate these disorders from neuroinfection , which confirms the relevance of the study.

Key words: polyneuritis; ganglionites ; plexites; neuroinfection ; pathogenesis; disability ; children

Relevance. Currently, there is a high frequency of organic lesions of the peripheral nervous system (PNS) in children associated with both inflammatory and hypoxic -ischemic processes resulting in demyelination and/or degeneration of nerve fibers. The severity of damage to the nervous system, the rapidity of the development

of the disease, high mortality and the frequency of disability in children determine the relevance of their study [5-8].

A feature of childhood is the fact that the absence of general infectious , meningeal and cerebral symptoms, changes in magnetic resonance imaging (MRI) at the onset of the disease does not exclude damage to the peripheral nervous system.

is also possible in combination with the detection of infectious pathogens in the blood or CSF, and the diagnosis is not in doubt, however, this is a "mask" of the debut of a neurotumor , the trigger for the manifestation of which is the activation of the infection, or MS, the latter most often occurs in adolescence. age [1].

The presence of common causally significant factors, a number of universal pathogenetic mechanisms, the similarity of clinical manifestations at the onset of the disease, the absence of absolute diagnostically significant criteria necessitate timely differential diagnosis for the choice of management tactics, which determines the outcome of the disease [3].

In this regard, it is relevant to search for other approaches to differential diagnosis, including the use of the method of multimodal evoked potentials and diagnostic transcranial magnetic stimulation (TMS), which make it possible to assess the damage to the pathways and their prevalence, localization and severity of the lesion, to objectively test the functions of both the brain and spinal cord, the nature of changes in which may be different in different pathologies [2-4, 9,10].

The purpose of the study . Assess the significance of clinical and pathogenic determinants in the development of peripheral nervous system disease.

Materials and research methods. 100 patients aged from 3 months to 17 years were under observation. The average age of children with PNS diseases is 4.2± 1.5 years . Depending on the duration of the increase in neurological symptoms, among patients with PNS diseases, an acute course was diagnosed, in which there was an increase in symptoms within 3-14 days with a complete reverse regression within 1-2 months; protracted course, in which there were repeated relapses or continuous progression lasting from 2 weeks to 6 months with reverse partial or complete regression within 6-12 months; chronic course in which there were repeated relapses or continuous progression lasting more than 6 months with reverse partial or complete regression within 1-3 years during therapy.

Diagnosis of PNS disease was carried out on the basis of international criteria McDonald , 2005/2010 with additions McDonald 's, 2017 and took into account the international criteria for diagnosing MS in children, 2013 (Krupp LB et al ., 2013).

Patients were hospitalized at least 2 times a year for anti -relapse therapy , as well as additionally with the development of exacerbations. Monitoring of children with PNS diseases included a scoring of the neurological status according to the J. Kurtzke functional systems scale and the International Extended Disability Scale EDSS .

Magnetic resonance imaging (MRI) of the brain and/or spinal cord was performed for all children with focal disorders in the neurological status upon admission to the hospital, and subsequently, depending on the dynamics of neurostructural changes, again after 3, 6, 12 months, and then - at necessary until

stabilization or complete regression of changes. MRI was performed on ultra -high-field tomographs 1.5 and 3 Tesla on the bases: on the Signa tomograph Infiniti Echo - Speed by General Electric .

On standard sections in the axial, frontal and sagittal planes, the structure of the parenchyma of the cerebral hemispheres, the brainstem and subcortical formations, and the spinal cord was assessed. The examination program included the methods of the following impulse sequences (PI): T1 and T2-weighted images in three planes, FLAIR-IP, diffusion-weighted image (DWI)

Statistical processing of the results was carried out using parametric and nonparametric research methods.

Research results. The acute onset of the disease with rapid progression of cerebral and / or focal symptoms within 1-4 days was more typical for polyneuritis, and was also noted in 56% of cases with plexitis. Whereas with ganglionitis , the gradual development of the clinical picture was more often noted, over several days, and sometimes weeks. Also, with ganglionitis , in 56.3% of cases, neurological symptoms were observed in children earlier (for several months - up to 2 years), and in 80% (n=64) they regressed in the absence of any treatment. Such symptoms included dizziness and ataxia, blurred vision in one eye, sensory disorders by hemitype . When analyzing outpatient cards and collecting anamnestic data on past infectious diseases in children with polyneuritis, it was found that the most common were chicken pox, otitis media, tonsillitis and / or tonsillitis and intestinal infections, the frequency of which was 72.7%, 45.3%, 44.7% and 36.0%, respectively.

Chickenpox was the most common history of disease in all groups (50.8% for polyneuritis, 88% for plexitis, 86.2% for ganglionitis). Significant differences in the frequency of infectious diseases in history were found between polyneuropathies and plexitis, as well as between plexitis and ganglionitis (for 7 diseases out of 11). Less significant differences were observed between plexitis and ganglionitis - 2 out of 11 each. So, infectious mononucleosis was most common in children with ganglionitis (45%, n=36), less often with plexitis (20%, n=20).

Infectious mononucleosis syndrome, which can be caused by both EBV and HHV- 6 and CMV, was observed in pleuritis and ganglionitis in 91.9% of cases (n = 57) 1-3 years before the development of neurological symptoms, less often - 4 and over years. Angina and / or tonsillitis, as well as herpetic infection of the mucous membranes and skin, herpes zoster were more common in children with ganglionitis and polyneuritis than in patients with plexitis. Congenital malformations of the internal organs (kidneys, heart, lungs), eyes, musculoskeletal system and brain in children with inflammatory diseases of the PNS were observed rarely, but significantly more often in children with ganglionitis than in patients of other groups. In these cases, the cause of PNS disease was congenital viral infections, manifesting more often in the first year of a child's life. The significance of vector- borne infections in the development of inflammatory diseases of the PNS was assessed based on the frequency of ixodid tick bites at various times from the development of neurological symptoms. Thus, ganglionitis in 11.6% of cases was associated with infections transmitted by ticks, and the development of symptoms was observed on

average 14 ± 7 days after this episode. In children with polyneuritis, tick bites were significantly more common 1–5 years before the development of neurological symptoms. In other groups, victims of ticks were significantly less common. In addition to anamnestic data on previous infections in patients with PNS diseases, general infectious and extracerebral symptoms of inflammation of other organs, skin and mucous membranes that occur simultaneously with neurological symptoms or 1-2 weeks before their development were also evaluated in order to assess the significance of the infectious factor in the development of inflammatory diseases of the PNS .

The temperature reaction is one of the most characteristic manifestations of the infectious process, and its absence is often associated with a protracted and chronic course of the disease, background immunosuppression of the patient. Also, the absence of a temperature reaction occurs when infected with some pathogens that can suppress the synthesis of pro- inflammatory cytokines. Among patients with PNS diseases of infectious origin, an increase in temperature with the development of neurological symptoms was observed in 68.7% of cases. However, the temperature increased significantly more often in children with ganglionitis (90.2%) than in children with polyneuritis (66%), and especially in comparison with plexitis (26.3%). At the same time, febrile temperature was typical for children with ganglionitis , and subfebrile temperature with an increase to 37.5ºC was more common in patients with polyneuritis and plexitis. Other symptoms often included pharyngitis (66.7%), vesicular and maculopapular exanthems (35.7%), swollen lymph nodes (23.3%), and enanthemas on the palate and buccal mucosa (17.0%). If there were no significant differences in the incidence of pharyngitis and lymphadenitis in the groups of patients, then exanthema was significantly more common in ganglionitis than in children with polyneuritis and plexitis. The nature of exanthema in combination with laboratory diagnostics made it possible to clarify the etiology of neurological disorders. However, if in children with EF, the frequency of generalized rash was 9 times more common than local, then with polyneuritis, the frequency of local exanthems increased in relation to generalized rash, and the ratio of exanthema variants was 2.4:1. In other groups , cases of exanthema were rare and local forms were more common. It should be taken into account the fact that a generalized rash is more characteristic of a first-time infection, and a local rash is more characteristic of reactivation or reinfection. Enanthems in the form of herpangina , aphtha were significantly more common in ganlionites than in plexites, and no differences were obtained in polyenvrites . Pneumonia, carditis , hepatitis were rare extracerebral manifestations of infection and mainly developed in young patients with EF, usually in severe or extremely severe disease. Enteritis was more often observed in children with ganglionitis .

In general , the largest number and range of extracerebral infectious

manifestations were noted in children with plexitis (299/120 = 2.5; less often - with polyneuritis 162/100 = 1.6).

The smallest number of symptoms per 1 patient was observed in the group of children with radiculitis (71/80=0.9). This indicates that in the chronic course of

inflammatory diseases of the PNS, the frequency of extracerebral manifestations decreases, and in the group of patients with a predominance of the acute course of ganlionitis , it increases. Even with syndromes similar in their pathogenesis , such as DEM and MS, the frequency of extracerebral manifestations decreases by 1.8 times with repeated episodes of the disease. When evaluating clinical symptoms, it was found that in children with ganglionitis , in contrast to polyneuritis, there was a more frequent impairment of consciousness with depression to the level of soporacoma (87.5% vs. 26%) and epileptic seizures were observed (77.5% vs. 24%) .

Findings. Thus, infectious diseases of the peripheral nervous system are of great interest in terms of clinical and neuroimaging data and allow us to differentiate these disorders from neuroinfection , which confirms the relevance of the study.

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