Clinical and laboratory features of COVID-19 in children

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ABSTRACT

The new coronavirus infection has revealed the shortcomings of the global medicine system. To date, Covid-19 and its complications remain the most relevant for all medical specialties. The article reveals the relevance of the problem of coronavirus infection in children, investigated the risks of the disease, symptoms according to age ranges, considered options for the severe course of the disease and their prevention

Keywords: Covid -19, children Covid, post-covid syndrome, encephalopathy

Relevance. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, which causes coronavirus disease 2019 (COVID-19), has affected more than 676 million people worldwide. The World Health Organization has called it a pandemic, although it usually causes respiratory symptoms and neurological features have been described. Neurological manifestations can range from non-specific symptoms such as headache, dizziness, myalgia or fatigue, olfactory or gustatory dysfunction, to specific syndromes including meningitis, stroke, acute transverse myelitis, and Guillain-Barré syndrome .
Coronavirus disease 2019 (COVID-19) usually results in a mild infection in children, but serious complications can occur both in association with acute infection and with comorbidities such as multisystem inflammatory syndrome in children (MIS-C) .

Purpose of the study. To study clinical, neurological and laboratory features of neurological complications of COVID-19 in children.

Materials and research methods. We have carried out generally accepted clinical, neurological, instrumental, laboratory methods for studying children hospitalized with coronavirus infection at the Zangiota Specialized Hospital No. 1 in the period from 2020-2023. To fulfill the tasks of scientific research, we examined 100 children: 36 of them with infectious toxic encephalopathy (ITE) against the background of a coronovirus infection in the acute period, followed by an assessment of psychomotor development in the recovery period (group 1), as well as 10 children (group 2) with secondary encephalitis against the background of caronovirus infection, comparable with patients of the main group in terms of sex and age. In total, among the examined patients who underwent caronovirus infection, there were 57 boys (57%), 43 girls (43%). The comparison group consisted of 20 healthy children.
For this purpose, a standard clinical and neurological examination was carried out, which was carried out according to the generally accepted methodology, taking into

account the anamnestic data (features of the course of pregnancy, the nature of labor, the development of the child in the first years of life, the presence of chronic diseases of the mother, etc.). The manifestation of the first manifestations of the disease, their characteristics, the dynamics of development and the emotional background of the child were taken into account.

Results. Upon admission to the hospital, the main complaints made by parents of children with covid, in addition to complaints about the underlying disease, were anxiety (13; 43%), moodiness (7; 23%), sleep disturbance (16; 53%) or lethargy (12; 40 %), decreased activity (15 ; 50 %) , refusal to eat (18; 60%). All patients were hospitalized in the somatic department of the Zangotin hospital, 28 children were transferred to the intensive care unit due to the deterioration of their condition.

On examination, in 28 children with ITE, symptoms of excitation of the central nervous system predominated. The children were conscious, there was a strong restlessness (12; 67%), hyperesthesia of the skin (10; 56%), excited crying (17; 94%), a negative reaction to the examination (16; 89%). The condition of these children corresponded to the 1st degree of ITE. On examination, 16 children (57%) showed symptoms of depression of the central nervous system, all children were lethargic, drowsy, poorly responsive to examination, usually not expressed crying and painful grimace. In 2 children (7%), depression of consciousness was noted in the form of a soporous state: all reactions were reduced. The symptomatology of these children confirms the 2nd degree of ITE. When analyzing the age group, we determined that 18 children with grade 2 ITE belonged to the age group from 6 months to 1 year. Thus, this confirms the results of other studies cited in the literature that ITE in coronovirus infection occurs in a short time and is more difficult in young children. In 12 children (42.8%), febrile convulsions were noted during hyperthermia, they were tonic-clonic in nature. In 18 children (64.2%), there were signs of liquor -vascular distension : bulging of the fontanel, restless crying with head tilting back. Damage to the cranial nerves was observed in 6 children (20%): convergent strabismus in 3 children (10%), horizontal nystagmus in 1 (3%) child, central paresis of the facial nerve in 1 (3%) child, bulbar disorders in 1 (3%) child - choking , dysarthria was noted in 3 children. In the motor sphere, 12 children (40%) had hyperreflexia and revival of tendon reflexes, 10 children (33%) with CNS depression had a diffuse decrease in tendon reflexes and hypotension. Pathological reflexes and signs were not observed.

When collecting an anamnesis in a group of children with secondary encephalitis, as a rule, complaints of a worsening condition appeared 3-7 days after the onset of the disease. Upon admission to the hospital, the main complaints made by the parents of children with secondary encephalitis, in addition to complaints about the underlying disease, were lethargy, lethargy, drowsiness in 10 children (100%); 5 children (50%) had seizures; 9 children (90%) had general cerebral symptoms in the form of nausea and vomiting, 3 older children (30%) complained of headache; impairment of consciousness was observed in 5 (50%) children (soporous condition). All patients were hospitalized in the ICU due to their serious condition.

Laboratory tests showed that of all the studied children, PCR analysis for covid was positive, 24 (24%) patients had lymphopenia . The cumulative prevalence of leukopenia was 14 (14%), and CRP was high in 16 (16%), D-dimer was high in 36 (36%), and procalcitonin was high in 36 (36%) patients. Blood clotting disorders in children were less common than in adults. Chest x-ray showed unilateral and bilateral lesions and ground glass opacities. It should be noted that 10 children with typical FS underwent an MRI study at the insistence of their parents. As a result, 7 children had a picture of the absolute norm; 15 children with atypical FS underwent an MRI study, as a result of which various types of organic pathology were identified.

need for MRI of the brain for children with covid ITE. However, 6 children underwent MRI after discharge from the hospital. It should be

noted that there were no visible structural disorders of the brain, while in the comparison group, during MRI for diagnostic purposes, a pattern of signs of edema of the brain substance (25%) and a pronounced atrophic process in the frontal lobes (25%) were determined. Fuzzy hyperintense foci predominantly in the white matter of the brain Moderate expansion of the left lateral ventricle, a sharp expansion of the right ventricle and indirect signs of ICH were observed in 19% of patients with secondary encephalitis. The pattern of disturbances in the structures of the brain confirmed the diagnosis and contributed to the formation of persistent neurological symptoms in secondary encephalitis and contributed to the long course of the process with the disability of children.

Conclusion. An analysis of clinical and neurological manifestations showed that secondary encephalitis in case of caronovirus infection is predominantly severe and prolonged, characterized by the development of residual disabling neurological symptoms. It should be noted that the course of ITE with caronovirus infection was favorable, the critical condition lasted no more than 2-3 days.

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