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CLINICAL CASE OF MULTISYSTEM INFLAMMATORY SYNDROME IN A CHILD

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Abstract

Coronavirus infection in children is characterized by a relatively mild course. However, in rare cases in children, it can proceed according to the adult variant in the form of a severe course of pneumonia in combination with a multisystem inflammatory syndrome. The article presents a description of a clinical case of COVID-19 in a child in the form of a multisystem inflammatory syndrome with co-infection with herpes simplex virus, cytomegalovirus.

This article is intended for pediatricians, general practitioners, infectious disease specialists.

Key words: children, COVID-19, multisystem inflammatory syndrome, SARS-Cov-2.

Резюме

КЛИНИЧЕСКИЙ СЛУЧАЙ МУЛЬТИСИСТЕМНОГО ВОСПАЛИТЕЛЬНОГО СИНДРОМА У РЕБЕНКА

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Коронавирусная инфекция у детей характеризуется относительно легким течением. Однако, в редких случаях у детей может протекать по взрослому варианту в виде тяжелого течения пневмонии в сочетании с мультисистемным воспалительным синдромом. В статье представлено описание клинического случая COVID-19 у ребенка в виде мультисистемного воспалительного синдрома с коинфекцией вирусом простого герпеса, цитомегаловирусом.

Данная статья предназначена для педиатров, врачей общей практики, инфекционистов.

Ключевые слова: дети, COVID-19, мультисистемный воспалительный синдром, SARS-Cov-2.

Түйіндеме

БАЛАДАҒЫ МУЛЬТИЖҮЙЕЛІ ҚАБЫНУ СИНДРОМЫНЫҢ КЛИНИКАЛЫҚ ЖАҒДАЙЫ

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Коронвирусты инфекция балаларда салыстырмалы түрде жеңіл өтеді. Дегенмен, сирек жағдайда, ересектерде кездесетін мультисистемдік қабыну синдромымен қосарланған ауыр пневмония түрінде де кездеседі. Бұл мақалада баладағы COVID-19 мультисистемдік қабыну синдромының жай герпес вирусы және цитомегаловируспен коинфекциясы түріндегі клиникалық жағдайы берілген.

Бұл мақала педиатрларға, жалпы тәжірибе дәрігерлеріне, инфекционисттерге арналған.

Түйінді сөздер: балалар, COVID-19, мультисистемдік қабыну синдромы, SARS-Cov-2.

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Introduction

Modern acute respiratory diseases are characterized by polyetiology, high infectability and variability [2, 11]. In the structure of childhood infectious morbidity, acute respiratory infections range from 60 to 90%, in the vast majority of cases they are caused by a viral infection that affects various parts of the respiratory tract, differing in etiology, but having similar epidemiological, pathogenetic and clinical characteristics [12, 14, 20]. Complications of respiratory infections during the epidemic occur in 25-30% of cases [6,15]. Coronavirus infection COVID-19 in children in most cases is milder than in adult patients, but this does not exclude the possibility of developing severe forms of the disease. Children make up 1-11% of patients with confirmed cases of the disease, among them severe and extremely severe forms are observed in less than 1% of cases [16, 19]. Coronavirus infection in children is most characterized by a mild course, however, the development of severe variants of the disease is not excluded. Risk factors for a more severe course in children may have an unfavorable premorbid background, co-infection with other viruses and pathogens [1].

The aim of the study: to describe the observation of a severe case of COVID-19 in a child with the development of bilateral pneumonia, areas of pneumofibrosis of the lungs, exudative bilateral pleurisy, pericarditis and multisystem inflammatory syndrome.

The management of the clinic has no objections to the publication of this clinical case in the open press.

Case

Patient R., aged 4 years and 4 months, was in a children's hospital for 17 days. He was in the State Enterprise "Aktobe Medical Center" from 08/04/2020 to 08/21/2020.

The patient was admitted on the 5th day of the disease with complaints of an unproductive cough, an increase in body temperature to febrile figures, headaches, abdominal pain, skin rash, weakness, lethargy, decreased appetite.

Past medical history: a child from 4 pregnancies, 3 births at 42 weeks. Birth weight: 3800 g, body length: 55 cm. The child grew and developed according to age and gender. The child has normal physical and neuropsychic development. Preventive vaccinations were obtained with medical exemptions. He was not registered with specialists at the dispensary. Anamnesis morbi: chickenpox at the age of 2 years, right-sided bronchopneumonia (outpatient treatment) - at the age of 4 years 2 months. The living conditions are satisfactory. There were no previous blood transfusions. Allergy history is without features.

Epidemiological history: denies contact with patients with acute respiratory viral infections and other respiratory diseases. Analysis of swabs from the oropharynx and nasopharynx by the polymerase chain reaction method for the determination of SARS-Cov-2 RNA at the outpatient stage was negative.

It is known from the anamnesis that the child had a fever up to 39C, weakness, the child's mother brought down the temperature with paracetamol and ibufen. The child was observed by a district doctor with a diagnosis of Acute respiratory viral infection, outpatient treatment was prescribed according to the clinical protocol, but there was no positive effect from the use of nonsteroidal anti-inflammatory drugs. Rashes appeared on the body on the third day, after the examination an infectious disease specialist made the diagnosis: "Herpesvirus infection", and acyclovir, ceftriaxone were prescribed. There was no effect from the outpatient treatment. On the 5-th day, with the above complaints, the child is admitted to a children's hospital.

Objectively: the condition at admission is severe due to symptoms of intoxication and multiple organ pathology. Poor well-being. The skin is pale in color, there is a widespread erythematous rash, there are multiple focal petechial rashes, merging in some places (capillarotoxicosis). The subcutaneous fat layer is developed satisfactorily, distributed evenly, turgor and elasticity of tissues are preserved. No swelling. Peripheral lymph nodes are not enlarged. The osteoarticular system without visible pathology. The pharynx is slightly hyperemic, the tonsils are not enlarged, there are no plaque. In the lungs, breathing is weakened, wet wheezing is more on the left. Respiratory rate – 30 per 1 minute. The area of the heart and main vessels is not visually changed. The heart tones are sonorous, rhythmic. Heart rate – 120 beats per minute. Blood pressure is 100/80 mm Hg. The tongue is dry, overlaid with a white coating. The abdomen is swollen, painful on palpation. The liver and spleen are not enlarged. The Tinel's symptom is negative on both sides. Stool is normal. Urination is free, urine is light. No meningeal signs.

When interpreting the general blood test at admission, it was revealed: the presence of anemic syndrome: a decrease in hemoglobin to 86 g / l, erythrocytes – 3.39×10^{12} / l; color index – 0.76, hematocrit up to 24.9%; thrombocytopenia up to 85×10^9 / l, which is most characteristic of hemorrhagic syndrome; an increase in ESR - 14 mm /hour (norm up to 10 mm /hour), an increase in segmented neutrophils up to 70.2%, which indicates the addition of bacterial infection (against the background of normal leukocyte counts - $7,0 \times 10^9$ / l); There were no deviations in other indicators in the general blood test.

Coagulogram: INR 1.17, which indicates a tendency to thrombosis; lengthening of the APTT value of 60.7 (norm 38-55); increase in fibrinogen 4.7 g/l (norm up to 3.5g/l);

EIA for CMV, HSV, chlamydia, toxoplasmosis: HSV IgM – 0.330 (norm 0.256); HSV IgG 0.536 (norm 0.093); CMV IgG – 0.86 (norm 0.50);

EIA for antibodies to COVID-19 on the 8th day of treatment: Ig G is positive.

Chest X-ray: strengthening of the pulmonary heart in the basal zones, expansion of the mediastinal shadow.

Computed tomography of the thoracic segment: CT signs characteristic of bilateral pneumonia, areas of pneumofibrosis of the lungs, exudative bilateral pleurisy and pericarditis, regional lymphadenopathy, abdominal effusion.

ECG: sinus rhythm, heart rate – 100 per minute. The vertical position of the EHP. Dysmetabolic changes in the myocardium.

Consultation of an infectious disease specialist: COVID – 19. Community-acquired pneumonia on the left, acute course. Respiratory depression of 1st degree. Kawasaki's disease. Acute myocarditis of viral and bacterial etiology. Cardiac distress FR I-II. Secondary coagulopathy. Secondary thrombocytopenia. Deficiency anemia of mild degree.

Consultation of an optometrist: subconjunctival hemorrhage.

Received treatment: eufillin solution 2.4% 3.0 ml + sodium chloride solution 0.9% 100 ml 2 times in / in drip; digoxin 0.0008 x 2 times by mouth; ibufen 100 mg / 5 ml 1 tsp x 3 times by mouth; ambrobene solution 7.5 mg / ml 1 ml x 3 times through the mouth; glucose solution 5% 170 ml + potassium chloride 4% 3.0 ml x 2 times in / in drip; meropenem 300 mg x 3 times in / in; aldarone 25 mg x 1 time through the mouth; heparin 500 units + sodium chloride solution 0.9% 20 ml x 4 times in / in; Cef3 850 mg x 2 times in / in; albumin 20% 30 ml x 1 time / in drip;

General blood test on day 13: positive dynamics is noted: an increase in hemoglobin to 99 g/l, erythrocytes – $3.69 \times 10^{12} / l$; color index up to 0.8, hematocrit up to 29.6%, platelets – $280 \times 10^9 / l$; Leukocytes $5,89 \times 10^9 / l$; decrease in segmented neutrophils up to 18.5%;

The child was discharged from the hospital with a positive clinical effect. Upon discharge, the condition is satisfactory. Body temperature 36.5 C. The breathing rate is 25 breaths per minute. The heart rate is 100 beats per minute. No complaints. In the lungs, breathing is vesicular, there are no wheezes. The heart tones are rhythmic, clear. The abdomen is soft, painless. Stool is normal. Urination is free. No changes in organs. Recommended: observation of a pediatrician, prevention of colds; observation of a cardiologist at the place of residence; ECG, EchoCG in 1 month.

Discussion

Clinical features of COVID-19 infection in children were manifested by less pronounced clinical symptoms, unlike adults, the course was milder, and less often required hospitalization [10, 18]. In the work of O.V. Borisova and co-authors, the features of the clinical manifestations of COVID-19 in children of the Samara region were revealed [5]. According to them, the coronavirus infection in that development proceeded in a measured form (72.5%) with

damage to the upper respiratory tract, a decrease, the presence of gastrointestinal symptoms without a critical course and deaths. Although coronavirus infection in children during the pandemic was noted in a smoother course, there were also analogues of a severe course of infection in the form of a multisystem inflammatory syndrome. Several clinical cases from the practice of doctors around the world have been described [4,7,8,12,17]. In a clinical case of doctors from the city of Omsk, Russian Federation, the peculiarity of the course of a coronavirus infection in a teenager with the development of a multisystem inflammatory syndrome with prolonged fever, maculopapular rash, and multiple organ lesions was described [13]. In the work of L.N. Mazankova and co-authors, a severe form of COVID-19 was described in a teenager [9], where they revealed a feature of the clinical picture of a severe form in a teenager without an aggravated premorbid background, the features of which were the discrepancy between the physical data of a large degree of damage to the lung tissue, the development of hemorrhagic syndrome, low efficiency of antibacterial and antiviral therapy, positive effect of tocilizumab. Our given clinical case also not only shows that coronavirus infection can occur in severe form in children, but also allows us to identify the features of the clinical picture of severe form in children without a burdened premorbid background. In this child, clinical manifestations of coronavirus infection in the form of a multisystem inflammatory syndrome may be associated with co-infection with herpes simplex virus, cytomegalovirus.

Conclusion

Multisystem inflammatory syndrome in children associated with coronavirus infection, apparently, is an analogue of a severe course, and occurs in single children in the world. Multisystem inflammatory syndrome can develop in the late stages of the disease and not all PCR detects SARS-COV-2, but it is possible to detect antibodies to this pathogen. Thus, it is necessary to be wary of outpatient doctors regarding multisystem inflammatory syndrome in children with prolonged hyperthermia, signs of a serious condition.

Authors contributions

Seipenova A.N.: Literature search, data collection, data analysis, manuscript writing.

Abenova N.A.: Conceptualization, manuscript editing, manuscript review, supervision of the project.

Zhumabayeva A.S.: manuscript editing, manuscript review.

Competing interests

The authors declare no conflict of interest.

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