

Retrospective analysis of clinical course of covid-19 in children

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Abstract

Despite the fact that COVID-19 is mild in children, joint damage of several organs, asymptomatic onset of myocarditis and pneumonia, as well as prolonged isolation of the virus from biological fluids after symptoms disappear and the unknown complications of the disease indicate the need for long-term monitoring of these children. The purpose of study was to determine the clinical features of the disease in children of different ages who have coronavirus disease. The examination provided a retrospective analysis of the medical histories of children treated at 144 Tashkent Children's Infectious Diseases Hospital No. 3. Children from 1 to 18 years of age with a positive coronavirus test were taken as the object of examination. Analyzes show that COVID-19 impairs the function of internal organs and the central nervous system, multisystemic inflammatory syndrome in children and requires dispensary control.

Keywords: COVID-19, children, clinical signs.

Introduction

Studies conducted in February-March 2020 revealed that new coronavirus infection (SARS-CoV-2) causes disease in children of all ages, but severe complications of the disease are less common than in adults [1]. A group of scientists connects this condition with the anatomical-physiological features of children's bodies and their lifestyle [2]. According to another group of scientists, to young childrens’ respiratory tract and to lung mucosa at the same time can enter several viruses and as a result, the activity of SARS-CoV-2 decreases as a result of the interaction and competition of different viruses [3].

Another theory of the conversion of COVID-19 to milder forms in children is related to the difference in the expression of the angiotensin-converting enzyme (ACE) 2 required for binding of SARS-CoV-2 [4]. Despite the fact that COVID-19 is mild in children, the combined damage of several organs, the asymptomatic onset of myocarditis and pneumonia, as well as the long-term isolation of the virus from biological fluids

after symptoms disappear and the unknown complications of the disease indicate long-term dynamic monitoring in children [2].

Patients develop hypercoagulable syndrome in the form of thrombosis and thromboembolism. In addition, damage to organs and systems (myocardium, central nervous system, kidneys, liver, gastrointestinal tract) is observed [5]. Coronavirus infection is as dangerous in children as it is in adults. Because this disease is new to humanity and its course and consequences have not yet been fully studied. [3]. Although the disease usually disappears over time, it is observed that some of their symptoms and complications persist. This prolongs the recovery period from the disease, leading to the addition of other diseases. It is no secret that patients who are treated in an inpatient setting, after a certain period of time with secondary complications, turn to specialists in a narrow field. [4]. Few deaths have been reported in children around the world. In many cases, the disease is transmitted to children from sick adults in the family. [5, 15-18]. In children, the following symptoms of the disease were observed: fever, dry cough, general intoxication (myalgia, weakness, profuse sweating, etc.), in some cases, sore throat, nasal congestion, disorders of the digestive system. Complicated forms of the disease have been observed in patients with comorbidities. [6,7].

The purpose of the study: To determine the clinical features of the disease in children of different ages who have coronavirus disease.

Research materials and methods. Retrospective analysis of the medical history of 144 Covid-19 patients aged 1 to 18 years treated at the Children's Infectious Diseases Hospital No. 3 in Tashkent.

General blood test, blood clotting time, bleeding time, biochemical tests, ASLO, rheumatoid factor, S-reactive

protein, coagulogram, ECG, medical ultrasound of liver and gallbladder. The examination provided a retrospective analysis of the medical histories of children treated at 144 Tashkent Children's Infectious Diseases Hospital No. 3.

In order to study these patients, the following anamnestic data were collected: comorbidities, from whom they were infected, past diseases, allergological anamnesis, premorbid background of the child and general condition at the time of illness, laboratory and instrumental examinations. All patients were examined by a cardiologist, neurologist, infectious disease specialist.

Results

As a result of the analysis of medical histories in 144 retrospective methods, the course and severity of Covid-19 disease in children were determined. Of the 144 children infected with Covid-19, 83 were boys and 61 were girls.

According to the anamnestic data, 98 of these children were frequently ill, of which 75 were diagnosed with anemia, 8 with allergodermatitis, 13 with perinatal lesions of the CNS, 1 with meningoencephalitis, and 1 with diabetes mellitus. Of the children, 44 were born from the I fetus, 62 from the II fetus, 29 from the III fetus, and 9 from the IV fetus. The gestation period was satisfactory for most mothers.

Patients on examination were hospitalized in varying severity.

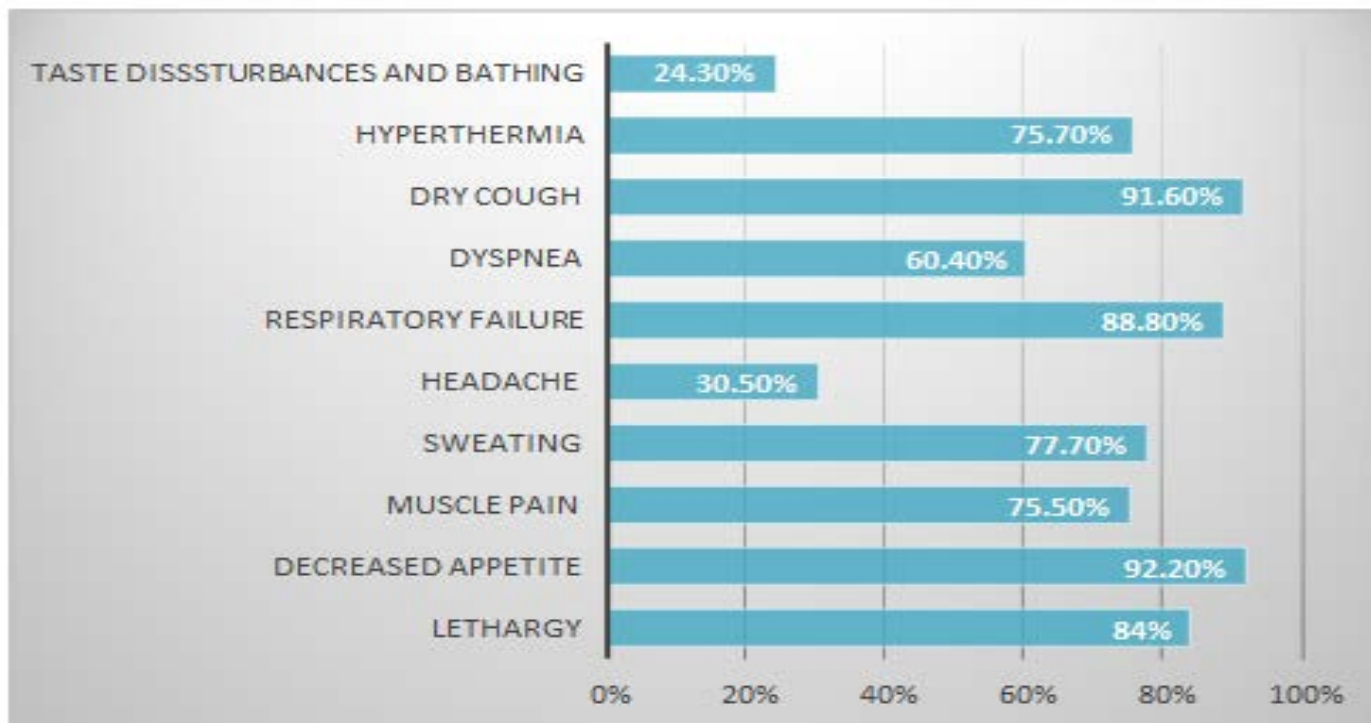
Weight/age	1-3 years	4-7 years	8-11 years	12-17 years	Total
Medium severe	36	18	15	28	97(67,4%)
Severe	11	7	3	14	35(24,3%)
Too severe	2	3	2	3	8(5,55%)

Most patients were admitted to the hospital late and hospitalization was delayed. Medium-severe patients were admitted to the hospital on days 7-8. All patients received antiviral drugs, various vitamins, antibiotics before hospitalization. He was hospitalized after no effect of the drug was observed.

The main complaints of patients admitted to the hospital: general intoxication symptoms weakness, loss of appetite, irritability, muscle pain in 84%, profuse sweating 112 (77.7%), headache 44 (30.5%), upper respiratory tract symptoms are few observed in patients, symptoms of respiratory failure were detected in 128 (88.8%) patients, of which respiratory distress, shortness of breath 87 (60.4%), involvement of auxiliary muscles in respiration, the presence of

cyanosis around the mouth and diffuse, dry cough 132 (91,6%) were characteristic of the majority of patients. Hyperthermic syndrome was observed in 109 (75.7%) patients, of whom 61 (55.9%) (42.4%) had febrile, 48 (44%) (33.3%) had subfebrile fever, odor and 35 (24.3%) sick children complained of taste disturbances, of which 18 were girls and 17 were boys. Cardiovascular examination revealed an increase in arterial blood pressure in a small number of patients, with a pulse rate of 69.4%. Most patients have developed varying degrees of intestinal dysbacteriosis in the gastrointestinal tract. This condition was accompanied by irregular bowel movements, abdominal pain, and anorexia.

Basic complaints of patients upon admission to the hospital



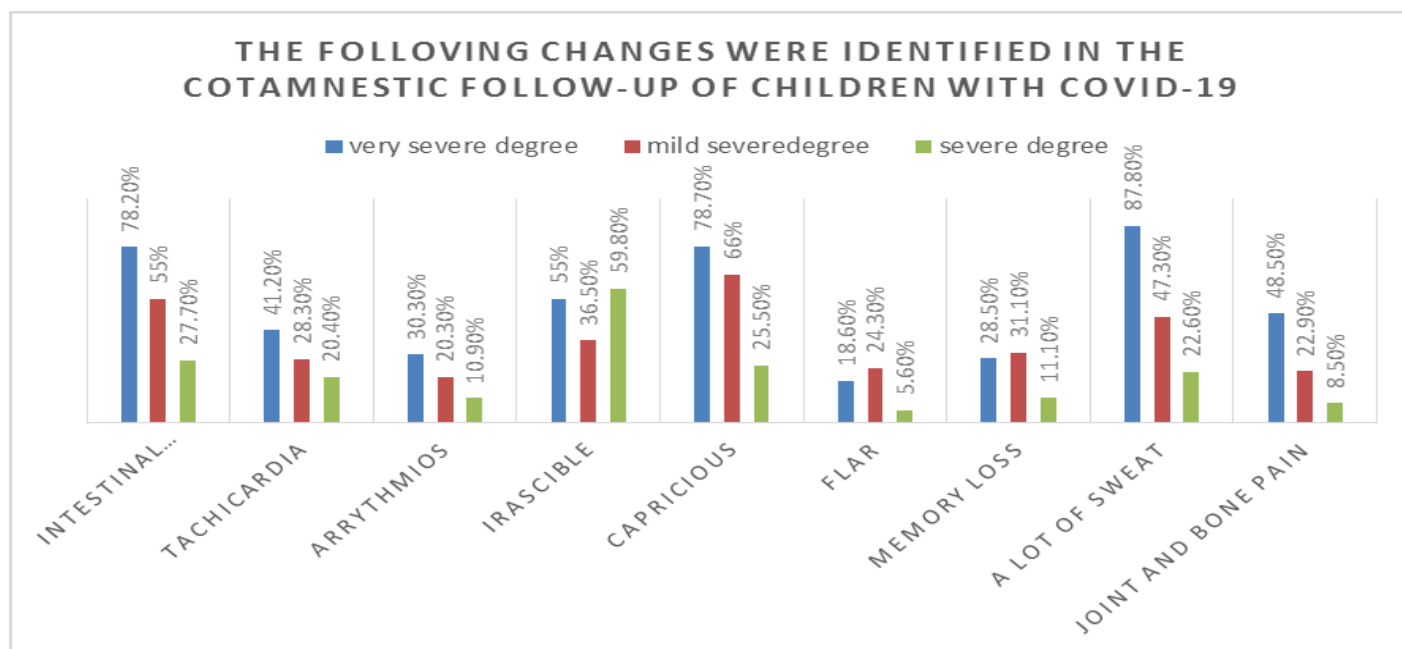
Patients admitted to the hospital underwent a series of examinations. According to the results of radiological examination, the disease in children of different ages was divided into the following groups according to the degree of lung lesion. That is bilateral pneumonia 45(31,25%), unilateral pneumonia 82(56,94%), acute bronchitis 10(6,94%), others 7(4,86%).

According to the results of electrocardiogram examination, were detected 68 (47.2%) sinus tachycardia, 9 (6.25%) sinus arrhythmias, 17 (11.8%) blockades of various degrees in the cardiovascular system, 11 (7.63%) substances metabolic disorders, hypoxic changes in 32 (22.2%) myocardium. Ultrasound examination of the abdominal organs revealed reactive liver changes in 7 (4.86%) patients, biliary tract dyskinesia in 12 (8.33%), and gallbladder stasis. According to the neurologist, 34 (23.6%) patients had central nervous system intoxication, cephalic syndrome, 29 (20.1%) patients had astheno-

neurotic syndrome, 7 (4.86%) cerebrospinal syndrome, 15 (10.4%) % of febrile seizures and neurosis, as well as depressive states in a small number of patients. Pediatric multisystemic inflammatory syndrome was detected in 2 patients with an allergic history.

Laboratory analyzes revealed varying degrees of anemia in 75 (52%) patients, and increased markers of inflammation in 62 (43%): leukocyte count, erythrocyte sedimentation rate, and S-reactive protein. Examination of the coagulation system revealed hypercoagulable changes in 34 (23,6%).

Catamnestic follow-up was performed for 3–6 months in 74 of the patients studied on the basis of retrospective analysis. Complications of varying degrees were observed in 49 (66%) patients with severe COVID-19 disease



Discussion

According to O.Irfan et al severe and critical cases are less common in children with COVID-19 than in adults [23]. In China, 728 cases of COVID-19 were diagnosed

severe in 5% of laboratory-confirmed children and very severe in 1%[13]. We examined hospitalized patients and found that 24.3% of them had a severe, 5.5% had a very severe clinical case. Increased markers of

inflammation and lymphocytopenia were observed less frequently in children than in adults [14]. In 38 studies in China, chest computed tomography revealed changes in 63% of cases [15]. Changes were detected in 83% of the 144 children in our study. CT revealed more bronchial wall enlargement and focal changes in the lungs in children [16]. There is currently no conclusive evidence that coronavirus infection is severe due to comorbidities [23]. However, a number of studies indicate that children with comorbidities are more likely to be hospitalized and admitted to intensive care units [17]. In North America, 83% of children hospitalized with COVID-19 in 48 were found to have chronic diseases, including diseases of the nervous system, genetic diseases, obesity, and children receiving immunosuppressive therapy [9-12, 18].

In 68% of the children in our study, comorbidities were identified, including perinatal CNS damage, anemia, diabetes mellitus, and so on. On May 6, 2020, British scientists reported that 8 patients were diagnosed with multisystemic inflammatory syndrome [19]. The European Center for Prevention and Control of COVID-19 reported 15 multisystemic inflammatory syndromes as of May 15, 2020. The majority of these patients had a history of coronavirus infection, or had a positive SARS-CoV-2 Polymerase chain reaction (PCR) assay at the time of screening [20]. Two cases of multisystemic inflammatory syndrome reported in India [21, 22] Two of the children in our study were diagnosed with multisystemic inflammatory syndrome. Hyperthyroidism syndrome was observed in these patients and was characteristic of other inflammatory diseases in these children [23, 24].

Conclusion

Therefore, it is important to study the clinical features of coronavirus disease in children and not to delay

hospitalization and dispensary measures. A significant increase in bilateral and unilateral pneumonias in children was observed at 1–3 years of age and at 12–17 years of age. Symptoms of general intoxication and respiratory failure predominated in most patients. In children, increased excitability in the central nervous system, inflammation in the heart muscle, and impaired conduction have led to severe disease progression. Delays in hospitalization measures have aggravated the condition of patients.

Therefore, it is important to study the clinical features of coronavirus disease in children and not to delay hospitalization and dispensary measures.

Given the fact that the characteristics of the recovery period of children with coronavirus infection are not fully understood today, the clinical features of the disease and the characteristics of the recovery period in such children, as well as changes in the hemostasis system and measures to mitigate them are appropriate.

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