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Clinical Features, Course Of Coronavirus Infection, Complications And Nature Of Post-Covid Syndrome In Children In The City Of Fergana

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Abstract

Generalization of factual data on the course of coronavirus infection in children, analysis of the most common clinical symptoms and complications in outpatient and inpatient settings, manifestations of post-Covid syndrome in children undergoing inpatient and outpatient treatment. Due to the wide range of secondary conditions following COVID-19, there has been a need to monitor, prevent and treat residual symptoms, study the development of new symptoms and assist in returning to an active lifestyle.

***Keywords:** COVID-19, SARS-Cov-2, contagiousness, tropism, course features, pneumonia, complications, post-Covid syndrome.*

1. Introduction

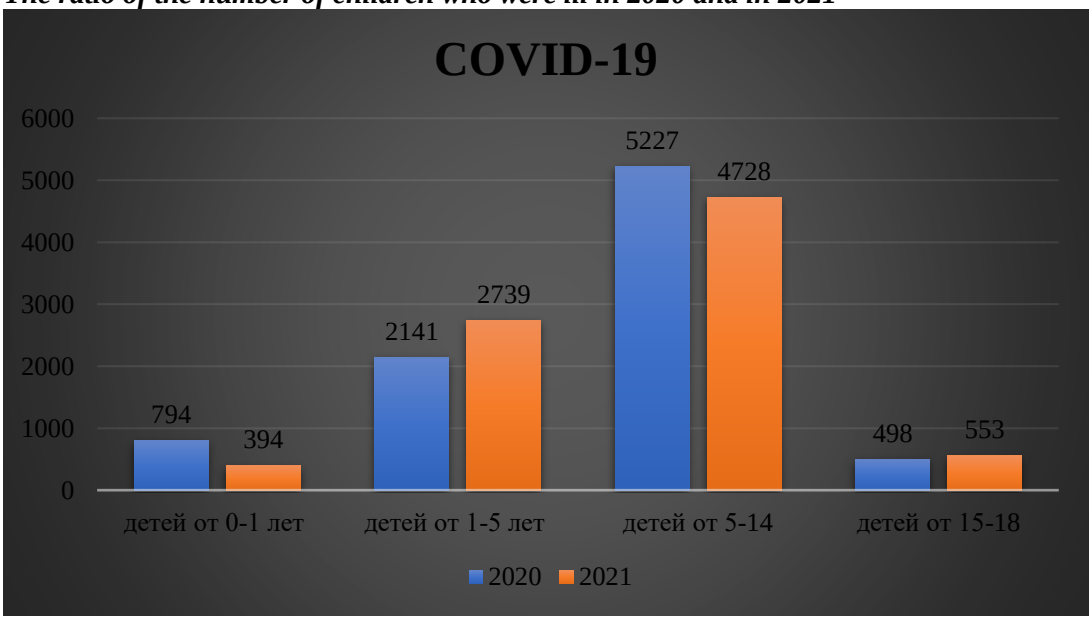
At the end of 2019, humanity was faced with an outbreak of a new coronavirus infection, COVID-19, which became a pandemic. Time has shown that children, as a rule, tolerate the disease more easily than adults. More often, the disease occurs in children, clinically manifested as an acute respiratory infection of varying severity, and in some cases in the form of pneumonia; it usually occurs in children with a burdened background of colds or pulmonary pathology. At the beginning of the coronavirus pandemic (in 2020), children were almost immune to the new virus. Their disease was mild or completely asymptomatic. However, by the end of 2020, several new strains of SARS-CoV-2 appeared, and the situation changed for the worse. Children began to suffer more severely from the infection and experienced frequent complications.

2. Materials and Methods

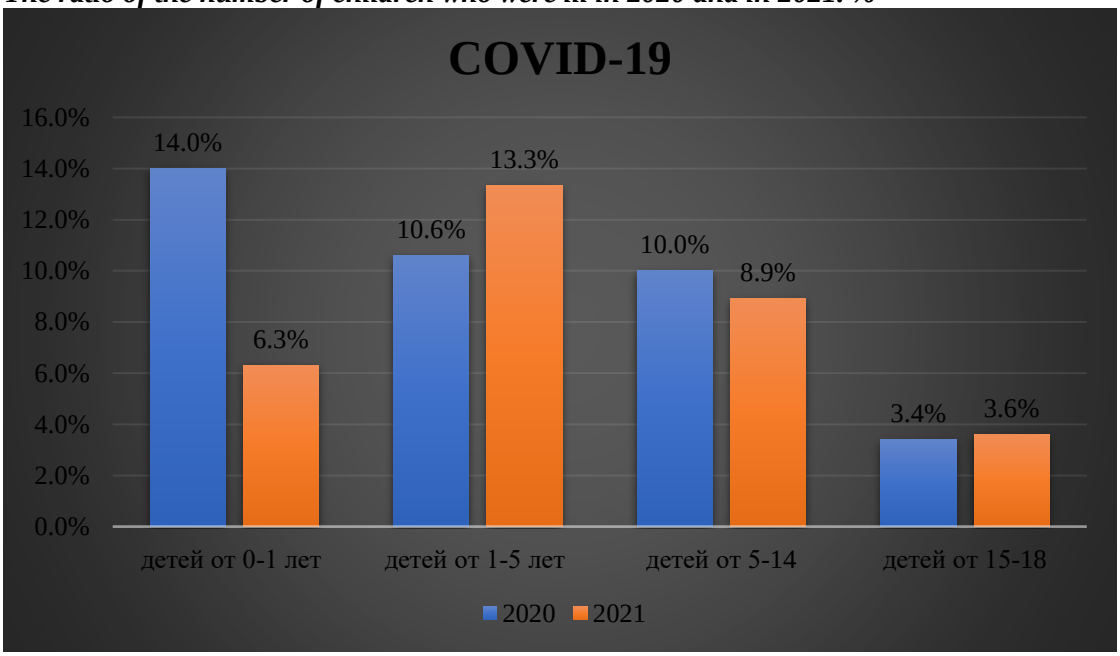
The city health department for the child population of the city of Fergana, Fergana region for 2019-2020 registered and resided 92,587 children from 0-18 years old, children from 0-1 years old 5,563 children, 2021 registered and resided 95,302 children from 0- 18 years old, children from 0-1 years old 6177 children who are registered in 7 family clinics. In 2020, taking into account accurate PCR diagnostics, coronavirus

infections of varying severity were observed in 8,660 children, 9.4% were in hospital treatment. In 2021, coronavirus infections of varying severity were detected in 8,414 children, 11.7% were hospitalized. A comparative analysis of the incidence of coronavirus infection by age was carried out in the city of Fergana, Fergana region, among children and adolescents treated on an outpatient basis and in hospitals. For 2020, in the city of Fergana with an approved diagnosis of COVID-19 was:
Of 5563 children aged 0-1 years, 794 children had 14.3%
Of 20,136 children aged 1-5 years, 2,141 children had 10.6%
Of 52,234 children aged 5-14 years, 5,227 children had 10.0%
Of 14,654 children aged 15-18 years, 498 children had 3.4%
Across all age groups, on average, 9.4% of children had a positive test.
For 2021, in the city of Fergana with an approved diagnosis of COVID-19 was:
Of 6177 children aged 0-1 years, 394 children 6.3%
Of 20,961 children aged 11-5 years, 2,739 children 13.32%
Of 53,137 children aged 5-14 years, 4,728 children 8.9%
Of 15,027 children aged 15-18 years, 553 children 3.6%
Across all age groups, on average, 8.0% of children tested positive in 2020 and 2021.

The ratio of the number of children who were ill in 2020 and in 2021



The ratio of the number of children who were ill in 2020 and in 2021. %



Features of the course of infection in children, the frequency of occurrence of the main clinical symptoms and the nature of complications, features of post-Covid syndrome in children and adolescents have their own specificity.

Doctors of the studied children in family clinics noted that in 2020, with confirmed PCR tests, they were clinically asymptomatic or mild. And in 2021, due to various factors, the disease became more aggressive, which manifested itself clinically. The 2021 coronavirus in children has become more insidious in that its symptoms are often less pronounced than in adults and more similar to ARVI. In 2020, the clinically confirmed diagnosis of PCR positive bronchopneumonia was 60%; community-acquired pneumonia 31%; gastrointestinal tract disorders 30%, symptoms of catarrhal tonsillitis, rhinitis, otitis 9%; atypical dermatitis 1%; In 2021, 35% of children had a positive diagnosis of bronchopneumonia confirmed by laboratory PCR; community-acquired pneumonia 27%; gastrointestinal disorders 42%; symptoms of catarrhal tonsillitis, rhinitis, otitis 10%; atypical dermatitis 13%. It is necessary to note a very large percentage of 24-25% in both cases, the diagnosis was not confirmed laboratory, but clinically and epidemiologically, local doctors believed that this was a coronavirus infection. Sometimes, many parents contacted us on days 5-7, believing that their children had a common cold. And on days 5-7, the child rapidly developed complications in 986 children - 9.8%: in this case, pneumonia without acute respiratory failure (ARF) 7.5% or with ARF 1.3%, in combination with respiratory distress syndrome. In 2020 0.4%. More often, on an outpatient basis, with moderate severity, shortness of breath, cyanosis of the lips, dry wheezing, participation of the auxiliary muscles of the chest in the act of breathing, tension of the wings of the nose, muffled heart sounds, tachycardia, vomiting, diarrhea, moderate toxicosis with exicosis, dry skin were noted. Chronic diseases such as bronchial asthma, chronic pyelonephritis, diabetes mellitus, and cancer in children can also worsen. If in adults there is usually a certain sequence of appearance of clinical signs by day, then in pediatric patients it is not possible to identify these patterns. The development of COVID-19 in children depends on:

- Type of SARS-CoV-2 strain;
- The state of the immune system of a small patient;
- Source, type, duration of infection and other factors.
- Symptoms of coronavirus in children at the onset of illness may resemble:
- A common respiratory illness with symptoms of catarrhal tonsillitis (runny nose, fever, dry cough, sore throat)
- Flu (weakness, lethargy, fever);
- Intestinal infection (nausea with vomiting, diarrhea, abdominal pain).
- However, Covid rarely begins with loss of smell and taste. Often this symptom is not observed in children at all.
- In general, Covid is more severe in patients:
- Aged from 1 month to 1 year;
- Over the age of 15 years;
- With chronic diseases and pathologies (immunodeficiencies, oncology, diabetes, encephalopathy, asthma and other pathologies).

Other children are more likely to have a mild course of COVID-19, or a disease without symptoms or complications.

3. Results and Discussion

Considering the amount of data examined in detail during observation of the course and features of the development of complications and post-Covid conditions in children of different ages, an attempt was made to develop a strategy for preventing post-Covid syndrome in outpatient and inpatient settings. In infants, if 2020 was registered in 2021 (up to 1 month), out of 460 children, 85 cases (18.4%) of COVID-19 were registered, it passed relatively easily, but in 18 (2.8%) children pneumonia was detected and the children were hospitalized. Severe forms of coronavirus infection can only be detected in newborns with congenital pathologies, tumors, underdeveloped lungs, and premature babies. Others may experience a slight increase in temperature, lethargy, diarrhea, regurgitation and other less severe symptoms. Mortality among newborns born to women diagnosed with SARS-CoV-2, with a complicated medical history: with prematurity 35%, with congenital anomalies 27%, which means the death rate was 49 newborns in 2021. By November 2022, this number had increased by 23 children. Children under the age of 1 year, 2020, 794 children, suffer from

coronavirus more often and more severely than other children's age groups. It is they who have registered cases of a serious complication - inflammatory multisystem syndrome (PIMS) in 3 children (0.1%), which leads to damage to several organs with a fatal outcome. Initial signs of SARS-CoV-2 in children aged 4 weeks to 1 year are often similar to an intestinal infection or rotavirus: vomiting, diarrhea, abdominal pain. In the future, the disease may be complicated by breathing problems, general intoxication, and blood clotting disorders.

• loose stools several times a day (more than 5);
• loose stools that are greenish in color or speckled with blood;
• increased body temperature (above 38 °);
• convulsions;
• strong heartbeat;
• Signs of abdominal pain (the child clenches his legs, cries, often wakes up).

Children aged four weeks to 1 year are at higher risk of severe illness from COVID-19 in 2020. The incidence of diseases of organs and systems, as well as the main clinical symptoms, varies depending on the age and conditions of the sick child in the form of:

Catarrhal tonsillitis – 35-60%
• Gastrointestinal disorders more than – 30-42%
• Acute pharyngitis more than – 40-50%
• Biliary dyskinesia – 30-35%
• Vegetative-vascular dystonia 30 – 35%
• Atopic dermatitis – 12-13%
• Conjunctivitis – 9-10%
• Cheilitis-1%
• Myocarditis – 2%
• Purulent otitis 9--10%
• Eustachitis – 4-5%
• Sinusitis – 10%
• Pyelonephritis – 20%
• Necrosis of the hip joint – 7-8%
• Oncology – 1%.

Doctors noted that 60% of children had fever of varying severity and the absence of fever does not exclude COVID-19.

From 1 year to 7 years, children in this age group often experienced mild or even asymptomatic COVID-19. The first signs in patients may be:

• A sore throat;
• cough;
• Runny nose;
• Slight increase in temperature;
• Weakness, lethargy, moodiness;
• Gastrointestinal disorder.
• Conjunctivitis.

If the disease develops, shortness of breath and irregular breathing rhythm may occur.

From 7 to 14 years old, in children of this age, COVID-19 usually occurs with a clinical picture close to ARVI: with a dry cough, sore throat, runny nose, temperature up to 38° for no more than 2-3 days, pain in muscles and joints. Additionally, sometimes a rash, sweating, inflammation of the mucous membrane of the eyes, and headache appear. Signs of a gastrointestinal disorder cannot be ruled out. Symptoms that are more common in teenagers include:

• 65% - cough (unproductive at the beginning, dry or with a small amount of sputum, with sputum difficult to separate), pain, soreness and dryness in the throat;
• 30% - shortness of breath, possible both during physical activity (walking) and at rest;
• 20% - feeling of lack of air, difficulty breathing, congestion in the chest.
• Less than 10% of children described muscle pain, confusion, sore throat and chest, headaches with early signs of diarrhea, nausea, vomiting, conjunctivitis, decreased taste and smell, general weakness, recovery occurred faster than in adults.

Although coronavirus in children and adolescents tends to be milder than in adults, COVID-19 can also cause a variety of secondary conditions called “post-Covid syndrome.” In such cases, the recovery period for children lasts a very long time, after which the children need long-term rehabilitation. Approximately 70% of children and adolescents who were diagnosed with coronavirus at least once underwent a follow-up medical examination by a doctor in a family clinic. Due to the wide range of secondary conditions after the COVID-19 coronavirus, the need to control residual symptoms, study the development of new symptoms and help in returning to activity (kindergarten, school, family, and friends) was raised. A severe course of the coronavirus infection COVID-19 does not necessarily mean a greater likelihood of post-Covid complications; in children treated on an outpatient basis, post-Covid syndrome was observed in approximately 8-10% of cases; in children after inpatient treatment, more severe forms of post-Covid syndrome were observed in 20-25%. Post-Covid syndrome in children most often manifested itself as asthenic and neurological symptoms - fatigue, sleep disturbances, mood changes, anxiety, fatigue, etc. Children after moderate to severe COVID-19 may also have shortness of breath, decreased exercise tolerance, and long-term changes in X-ray examinations. Respiratory symptoms that may occur with “long Covid” include chest pain, cough and exercise-induced shortness of breath. Recovery time depends on the initial state of health and the severity of the disease. Some of these symptoms in 8% of children with “long Covid” lasted for more than two months or more. Cardiovascular: One of the most important aspects of the SARS-CoV-2 coronavirus is the potential risk of heart damage; common symptoms of myocarditis may include chest pain and shortness of breath, as well as arrhythmia and fatigue 2%. Anosmia or ageusia: changes in smell and taste, especially in adolescents. Approximately every fourth child aged 10 to 18 years had anosmia (loss of smell) of 25-30%. In addition to the ability to detect hazardous odors, decreased or loss of smell (anosmia) or taste (ageusia) can affect the mood and quality of life of children and adolescents. In children, these symptoms usually go away within a few weeks. Effect on the nervous system: inattention, difficulty concentrating or memory, physical fatigue, headache.

4. Conclusion

During the recovery period, doctors and pediatricians at family clinics note what needs the child or adolescent will have upon returning to daily activities. Doctors state that there is no specific treatment for post-Covid conditions in children. For children, the most important thing is to organize the daily routine with sufficient sleep, adherence to a nutritious diet, correct in composition, and courses of vitamins. Drug therapy is connected individually, if there are indications for it and the need for a repeated follow-up medical examination in family clinics or specialized medical institutions (cardiology, nephrology, pulmonology, rheumatology, etc.). Due to the wide range of secondary conditions after the COVID-19 coronavirus, the need to control residual symptoms, study the development of new symptoms and help in returning to activity (kindergarten, school, family, and friends) was raised. Children with post-Covid syndrome may need additional support to return to learning. This may include a gradual return to school or daycare, adapting as needed. It is important that children and young people are supported to regain work lost during illness, and that schools avoid penalizing students if they exhibit persistent or residual coronavirus symptoms that affect learning and work performance.

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