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FEATURES OF MILD AND MODERATE COURSE OF COVID-19 IN CHILDREN OF DIFFERENT AGES

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ABSTRACT. ***Introduction.*** Despite the fact that the pandemic of the new coronavirus infection has ended, this problem has not lost its relevance. In Russia, 24,645,303 people have been infected with the new coronavirus infection during the entire course. As of November 2024, this virus has been identified in 35,689 people in the Russian Federation. COVID-19 is currently subject to general infectious laws such as epidemiology and seasonality, and the ability of this virus to transmit and quickly mutate also contributes to the prevalence of this infection. ***Objective.*** To describe the clinical features of mild and moderate course of COVID-19 in children of different ages. ***Materials and methods.*** Complaints and clinical picture of the disease were studied in 270 children of different age groups with a new coronavirus infection confirmed by PCR. ***Results.*** Analysis of patient complaints at the onset of the disease showed that children with Covid-19 most often complained of an increase in body temperature (75.2%). Respiratory complaints were noted with high frequency: runny nose (62.2%), cough (48.1%), less common were sore throat (17.4%) and loss of smell (anosmia) (11.5%), chest pain (5.2%), loss of taste (ageusia) (3.7%). The incidence of shortness of breath was 1.9%. ***Conclusions.*** The leading complaints in children with confirmed new coronavirus infection at the onset of the disease were respiratory complaints, which do not allow distinguishing this disease from a banal acute respiratory viral infection of mild to moderate severity, with symptoms relieving by the 14th day of the disease. The incidence of pneumonia among patients is 28.14%, the most significant number of pneumonias was detected in adolescents (p=0.013); they also have the most frequent cough.

KEYWORDS: *COVID-19, clinical course, mild and moderate course, pneumonia, age characteristics*

ОСОБЕННОСТИ ЛЕГКОГО И СРЕДНЕТЯЖЕЛОГО ТЕЧЕНИЯ COVID-19 У ДЕТЕЙ РАЗНОГО ВОЗРАСТА

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РЕЗЮМЕ. ***Введение***. Несмотря на то что пандемия новой коронавирусной инфекции окончилась, эта проблема не утратила своей актуальности. В России за все время новой коронавирусной инфекцией заразились 24 645 303 человека. По состоянию на ноябрь 2024 года в Российской Федерации данный вирус идентифицировали у 35 689 человек. COVID-19 в настоящее время подвергается общим инфекционным законам, таким как эпидемиология и сезонность. Вклад в распространенность этой инфекции вносит способность вируса SARS-CoV-2 к трансмиссии и быстрой мутации. ***Цель*** — описать клинические особенности легкого и среднетяжелого течения COVID-19 у детей разного возраста. ***Материалы и методы***. Жалобы и клиническая картина заболевания изучены у 270 детей разных возрастных групп с подтвержденной методом полимеразной цепной реакции (ПЦР) новой коронавирусной инфекцией. ***Результаты.*** Анализ жалоб пациентов в дебюте заболевания показал, что наиболее часто дети, больные COVID-19, жаловались на повышение температуры тела (75,2%). С высокой частотой отмечались респираторные жалобы: насморк (62,2%), кашель (48,1%), реже встречались боль в горле (17,4%,) и потеря обоняния (аносмия) (11,5%), боль в грудной клетке (5,2%), потеря вкуса (агевзия) (3,7%). Частота одышки составила 1,9%. ***Выводы.*** Ведущими у детей с подтвержденной новой коронавирусной инфекцией в дебюте заболевания были респираторные жалобы, не позволяющие отличить это заболевание от банальной острой респираторной вирусной инфекции легкой и среднетяжелой степени тяжести, с купированием симптомов к 14-му дню заболевания. Частота пневмонии среди пациентов составляла 28,14%, наиболее значимое количество пневмоний выявлено у подростков (p=0,013), у них же кашель отмечается наиболее часто.

КЛЮЧЕВЫЕ СЛОВА: COVID-19*, клиническое течение, легкая и среднетяжелое течение, пневмония, возрастные особенности*

INTRODUCTION

Analysis of the COVID-19 pandemic statistics showed that children and adolescents showed significantly lower susceptibility to SARS-CoV-2, accounting for less than 10% of the total number of diagnosed cases. This significant difference from the incidence pattern in adults is attributed to a complex set of factors that are still under active investigation. The milder course of the disease in children is primarily due to the immunologic abilities of the pediatric organism.

Children rarely have chronic diseases that have a pathogenetic effect on the body and contribute to the activation of immunologic processes and are not exposed to long-term harmful factors such as tobacco smoking, polluted air and chronic respiratory diseases. This ensures more efficient lung function and reduces the risk of severe complications such as pneumonia and acute respiratory distress syndrome (ARDS), which are often seen in adult patients. The more developed regenerative capacity of lung tissue in children also plays an important role in rapid recovery from infection [1, 2]. Coronavirus infection, especially in winter, is observed quite frequently, and this phenomenon is associated with several factors concerning both children and the elderly. Studies show that children have higher levels of antibodies to coronaviruses than adults. This may be due to the fact that children's immune system responds more actively to viral infections, which allows for a wider range of protective antibodies to form. Interestingly, antibodies produced in response to seasonal coronaviruses may also offer some protection against COVID-19. This cross-effect of antibodies may explain why children tend to tolerate COVID-19 more easily than the elderly individuals [2, 3]. Among other things, older people have a weakened immune response, which can lead to a higher risk of developing severe forms of the disease. They have lower levels of partially cross-reactive antibodies, which may contribute to antibody-dependent immune enhancement. This condition occurs when antibodies, binding to the virus, do not neutralize it but, on the contrary, promote its penetration into cells and intensify the infection [4]. Children are most often infected with coronaviruses from adult family members, that is, the second or third generation of the virus. It is important to note that such viruses, as a rule, have a lower pathogenicity, which also reduces the risk of a severe course of the disease in children. However, it should be remembered that children and adolescents have their own peculiarities concerning the expression of the angiotensin-converting enzyme 2 (ACE2) gene, which is the main receptor for SARS-CoV-2 [5, 6]. Studies show that ACE2 expression in nasal epithelium increases with age. Children in the younger age group (under 10 years old) have the lowest ACE2 levels, whereas adolescents (10 to 17 years old) have higher but still much lower levels than adults. This may explain why children are less susceptible to severe forms of COVID-19. However, in the lower respiratory tract, decreased ACE2 expression may be associated with an increased risk of severe acute respiratory distress syndrome and lung injury [6]. In addition, there are age-related features of innate immunity in children. For example, they have a higher constitutional activity of lymphocytes, especially natural killer cells (NK cells), compared to adults. This may explain why children's bodies are more effective in fighting viral infections. Nevertheless, lymphopenia is sometimes recorded in newborn children, which may indicate certain peculiarities of immune response formation at this age. How children respond to vaccination is also an important aspect. COVID-19 vaccines tend to elicit a strong immune response in them, which may be related to their active immune system. This, in turn, may serve as an additional defense against different strains of coronavirus. Studies show that even after an illness, children can retain protective antibodies for a long time, which also reduces the risk of re-infection [7, 8].

Thus, the interaction between coronaviruses and the immune systems of children and the elderly is a complex and multifaceted process. On the one hand, children have several advantages in the form of a more active immune response and lower ACE2 expression, which reduces the risk of severe disease. On the other hand, older adults face a weakened immune system and a higher risk of complications. These differences emphasize the importance of an

individualized approach to COVID-19 prevention and treatment according to age group [9]. Furthermore, understanding these mechanisms may help in developing more effective vaccination and treatment strategies, as well as raising awareness on ways to better protect vulnerable populations, including the elderly and children. It is important to continue investigating the impact of coronaviruses on different age groups to improve our knowledge of immune response mechanisms and to develop more effective virus control methods in the future.

In 2021, the world faced new challenges in the fight against COVID-19, especially after the emergence of new strains of the virus, such as Delta and Omicron. The Delta strain was highly contagious and contributed to faster onset of symptoms. This led to an increase in the number of cases of moderate to severe forms of the disease. The statistics for children were particularly alarming, with the proportion of cases among them rising to 11%. However, by the end of 2021, when the Omicron strain came to the fore, this figure had increased to almost 25%, indicating the significant impact of the new variants of the virus on the pediatric population. The Omicron strain showed a slightly different behavior compared to previous versions of the virus. It preferentially multiplies in the upper respiratory tract, resulting in a milder course of disease. This means that patients, including children, are less likely to have severe lower respiratory tract lesions, which in turn reduces hospitalizations and serious complications. This is especially true for unvaccinated children and those without pre-existing adaptive immunity [10–13]. The clinical course of COVID-19 in children is largely similar to that of common respiratory infections [1]. The most common clinical manifestations include fever, generalized weakness, fatigue, headache, sore throat, runny and stuffy nose, myalgia, and cough, which may be dry or with a small amount of sputum. In some cases, children may also show signs of conjunctivitis. Interestingly, among the first symptoms of COVID-19 may include rarer manifestations such as confusion, headaches, hemoptysis, palpitations, diarrhea, loss of appetite, vomiting, and abdominal pain. According to studies, 69% of patients with COVID-19 had gastrointestinal symptoms combined with an elevated body temperature above 38.5 °C. Skin manifestations may also be observed in 13% of patients, emphasizing the diversity of the clinical picture [13–17]. One of the pathognomonic symptoms of COVID-19 in adults is hyposmia or anosmia (decreased or absent sense of smell) and dysgeusia or agueusia (altered or absent taste). These symptoms can also occur in children, although they may not always realize and report their sensations due to their age. However, among children with COVID-19, changes in smell or taste, nausea, vomiting, and headache were more common than other symptoms. In most cases of mild to moderate forms of the disease, recovery occurs within 1–2 weeks. However, it is worth noting that some patients may experience long-term symptoms known as post-covid syndrome, which can manifest as fatigue, shortness of breath, concentration problems, and other symptoms that may persist for months after initial recovery.

Thus, observations of the course of COVID-19 in children indicate that it is important to continue to monitor their spread and impact on different populations, especially on children, although new strains such as Omicron may cause less severe forms of disease. Vaccination and precautionary measures remain key to controlling the pandemic and reducing the incidence of disease.

Involvement of the GI tract in the pathologic process in COVID-19 has been attributed by most researchers to the detection of the virus in the intestine [18–20]. In 22–54.5% of cases, SARS-CoV-2 virus can be detected in the stool of patients with COVID-19, and sometimes the virus is detected in the stool even after the results of respiratory swabs become negative [19]. In patients with gastrointestinal symptoms, the overall time between symptom onset and virus clearance is significantly longer than in patients with respiratory manifestations alone [21, 23]. The relationship between gastrointestinal symptoms during SARS-CoV-2 virus infection and the production of proinflammatory cytokines [24, 25], the development of intestinal epithelial inflammation [26], and impaired intestinal wall permeability [22, 27, 28] has been actively discussed in the literature. Most of these studies were performed in adult patients with severe disease, and there are a few studies in the pediatric population.

AIM

To describe the clinical features of mild and moderate course of COVID-19 in children of different ages.

MATERIALS AND METHODS

Complaints and clinical picture of the disease were studied in 270 children of different age groups with new coronavirus infection confirmed by polymerase chain reaction (PCR). Children were randomized into 4 groups: group 1 (1–4 years old children), group 2 (5–9 years old children), group 3 (10–14 years old children), and group 4 (15–17 years old children). Identification of SARS-CoV-2 virus from the pharynx and nose by PCR occurred in all children in the first 1–3 days from the onset of clinical symptoms.

The study was approved by the local ethical committee of Federal State Budgetary Educational Institution of Higher Education St. Petersburg State Pediatric Medical University of the Ministry of Healthcare of the Russian Federation. Children were examined in dynamics: from the onset of the disease to recovery from COVID-19 infection. Patient data were collected: complaints, anamnesis, clinical status, laboratory diagnostics.

Statistical processing of data was carried out using IBM SPSS Statictics 26 application program package. Student's t-criterion was used to compare the average indices of quantitative signs in the studied groups with the assessment of the reliability of differences ($p < 0.05$).

RESULTS

Analysis of patient complaints at disease onset showed that children with COVID-19 most often complained of an increase in body temperature (75.2%). Respiratory complaints were noted with high frequency: runny nose (62.2%), cough (48.1%), sore throat (17.4%,) and loss of sense of smell (anosmia) (11.5%), chest pain (5.2%), loss of taste (agenesis) (3.7%) were less frequent. The frequency of dyspnea was 1.9%. Analysis of temperature response in children of different age groups showed no significant age differences. Temperature over 40 °C was noted with a frequency of 0–5.6%; 39.0–39.9 °C was noted with a frequency of 9.7–27.9%; 38.0–38.9 °C was noted in 36.1–37.7% of cases; and 37.0–37.9 °C was noted in 9.8-25% of cases. Normal body temperature was noted in 21.3–29.5% of patients. At the same time, the nature of respiratory complaints in different age groups of children differed significantly (Table 1).

As follows from the table, cough was significantly more frequent in the group of children aged over 15 years (60.7%, $p=0.043$), and less frequent in children aged 10–14 years. The results are consistent with literature data on the milder course of COVID-19 in young children than in adolescents and adults. The frequency of runny nose was similar in all studied groups and ranged from 54.2 to 75.4%. Chest pain ($p=0.007$) and sore throat ($p < 0.001$) were significantly more frequent in group 4 adolescents. Younger children were worse at

Table 1. Characteristics of respiratory complaints in children with new coronavirus infection in different age groups

Таблица 1. Характеристика респираторных жалоб у детей с новой коронавирусной инфекцией в разных возрастных группах

Возрастная группа / Age group	Кашель / Cough (n/%)	Насморк / Runny nose (n/%)	Аносмия / Anosmia (n/%)	Агевзия / Ageusia (n/%)	Боль в грудной клетке/ Chest pain (n/%)	Одышка / Ortness of breath (n/%)	Боль в горле / Sore throat (n/%)
Группа 1 (1–4 года) / Group 1 (1-4 years)	28/45,9%	35/57,4%	0/0%	0/0%	0/0%	0/0%	3/4,9%
Группа 2 (5–9 лет) / Group 2 (5–9 years)	37/51,4%	39/54,2%	6/8,3%	3/4,2%	4/5,6%	0/0%	8/11,1%
Группа 3 (10–14 лет) / Group 3 (10–14 years)	28/36,8%	48/63,2%	15/19,7%	3/3,9%	2/2,6%	2/2,6%	18/11,1%
Группа 4 (15–17 лет) / Group 4 (15–17 years)	37/60,7%	46/75,4%	10/16,4%	4/6,6%	8/13,1%	3/4,9%	18/29,5%
p	p=0,043	p=0,068	p=0,002	p=0,284	p=0,007	p=0,116	p <0,001

identifying and localizing pain syndrome. Group 3 and 4 children were significantly more likely to have anosmia than group 1 and 2 children (p=0.002). No differences in the frequency of other respiratory complaints were found.

Gastroenterological complaints at disease onset in the examined children occurred with a frequency of 3.7–13.3%, with abdominal pain predominating (13.3%), liquid stools with a frequency of 11.1% and vomiting with a frequency of 10.7%. Adolescents carrying a new coronavirus infection were significantly more likely to have nausea – 13.1% of cases (p=0.043), young children (group 1) identified nausea worse: the frequency of nausea was significantly lower – 1.6%. Children in group 3 (17.1%) and group 4 (14.8%) had significantly more frequent complaints of headaches (p=0.001) than children in groups 1 and 2 (1.4–3.3%). Rare complaints included myalgia/joint pain (2.6%), dizziness (1.9%). There were no significant differences in the frequency of these complaints between age groups.

Of the 270 children examined, 218 (81%) developed clinical manifestations of the infectious process on the 3rd-5th day from the moment of contact with patients with a new coronavirus infection. 38 children (14%) had respiratory and intoxication complaints on the 1st–2nd day. Only 14 children (5%) developed complaints on the 6th–7th day after contact with the source of infection. Family members were the source of infection in 125 children (46%), while 145 children (53%) had contacts in children's institutions and non-family sources of infection.

The life history (anamnesis vitae) of children carrying a new coronavirus infection revealed a large number of unfavorable factors: pathological course of pregnancy was noted in 38.5%; previous artificial feeding was noted in 27.0%; worm and parasitic infestations were noted in 17.6%; anemia in the first year of life was noted in 14.8% of children; frequent acute respiratory viral infections at an early age were noted in 11.9% of children.

Unfavorable factors of anamnesis were equally frequent in all age groups.

As a result of objective examination, we found that at the debut of the disease, most children (56%) in different age groups were in satisfactory condition and tolerated the new coronavirus infection in a mild form. In 115 children (44%) the severity of the disease was considered as average. The severity of the disease had no significant differences in all age groups (Table 2).

During physical development assessment, 261 (96.6%) of 270 children had an average level of physical development. In 9 (3.33%) children, the level of physical development was above average, and 7 (2.59%) children were obese (BMI more than +2.1SDS). There were no children with a level of physical development below average in the study.

Table 2. Severity of the disease in children of different age groups

Таблица 2. Степень тяжести заболевания у детей разных возрастных групп

Возрастная группа / Age group	Степень тяжести / Severity (n)	Среднее значение возрастной группы / Average age group	95% доверительный интервал / 95% confidence interval	p
Группа 1 (1–4 года) / Group 1 (1–4 years)	Легкая / light (26)	2,23	1,83–2,63	p=0,209
	Средней тяжести / Moderate (35)	1,92	1,58–2,25	
Группа 2 (5–9 лет) / Group 2 (5–9 years)	Легкая / Light (48)	7,15	6,72–7,57	p=0,816
	средней тяжести / Moderate (24)	7,25	6,66–7,84	
Группа 3 (10–14 лет) / Group 3 (10–14 years)	Легкая / Light (50)	11,84	11,43–12,25	p=0,090
	Средней тяжести / Moderate (26)	12,46	11,85–13,07	
Группа 4 (15–17 лет)/ Group 4 (15–17 years)	Легкая / Light (31)	16,03	15,77–16,29	p=0,096
	Средней тяжести / Moderate (30)	16,33	16,07–16,60	

Note: The confidence interval of the mean assumes that the sample means follow a t-distribution with N–1 degrees of freedom.
Примечание: доверительный интервал среднего предполагает, что выборочные средние следуют t-распределению с N–1 степенями свободы.

The skin of all examined children was of normal color, without rash. Changes on the nasopharyngeal mucosa were equally frequent in the age groups: pharyngeal hyperemia was found from 52 to 71%, tonsil hypertrophy was found from 67.1 to 82%, and tonsil plaques were found in 4.2–6.6% (p >0.05). Respiratory rate and the ratio of heart rate (HR) to respiratory rate (RR) corresponded to normal in all patients, tachycardia and tachypnea in the examined corresponded to the degree of fever. Saturation was normal in all children (SaO_2 97–98%).

The results of objective examination of the respiratory system (RS) and cardiovascular system (CVS) at disease debut are presented in Figure 1 (p <0.005).

Vesicular breathing was noted significantly (p <0.005) in patients in groups 2 and 3. Harsh breathing was noted in children in group 4, which is consistent with the radiologic diagnosis of pneumonia.

Loss of resonanse in groups 1 and 4 was significantly noted (p=0.046).

The results of objective examination of gastrointestinal (GI) organs in patients at COVID-19 debut are

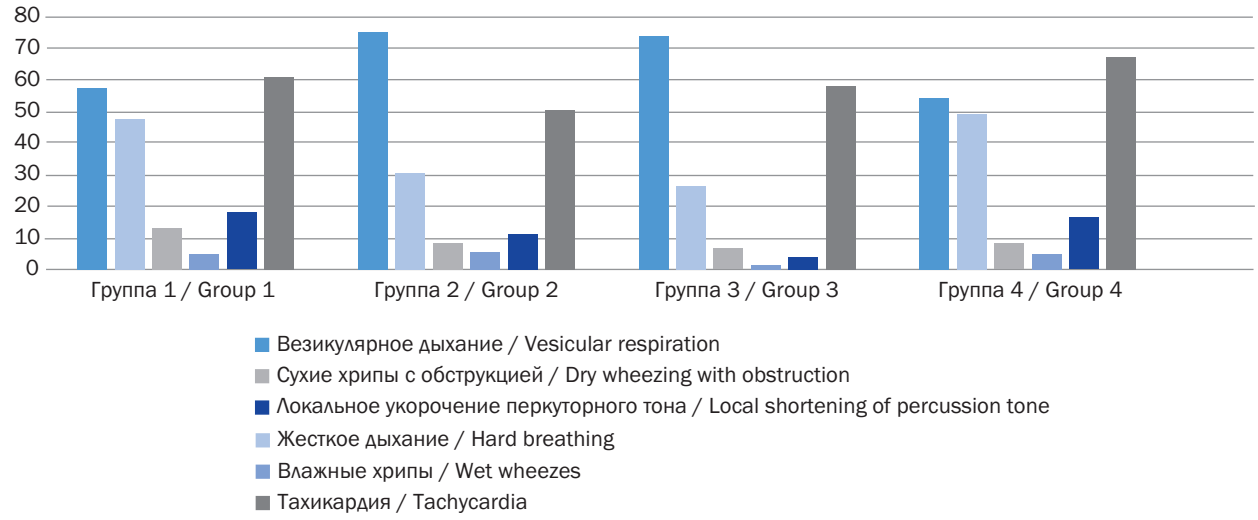

Fig. 1. Results of an objective study of respiratory system and cardiovascular system at the onset of COVID-19 disease

Рис. 1. Результаты объективного исследования дыхательной системы и сердечно-сосудистой системы в дебюте заболевания COVID-19

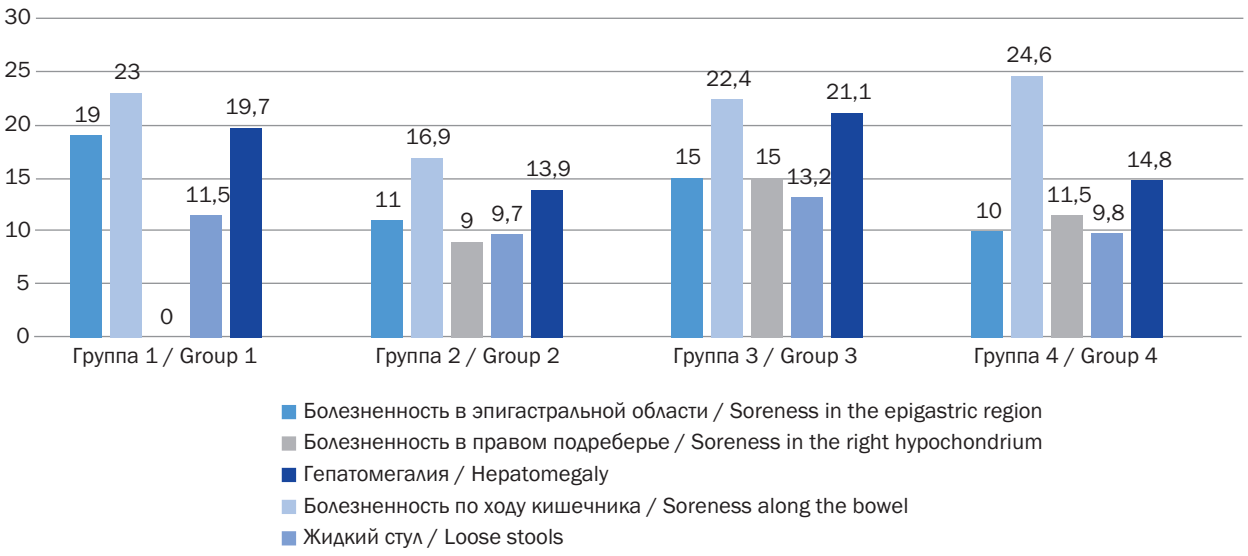

Fig. 2. Objective assessment of the gastrointestinal tract in patients at the onset of COVID-19

Рис. 2. Объективная оценка органов желудочно-кишечного тракта у больных в дебюте COVID-19

presented in Figure 2. We analyzed such symptoms as abdominal bloating, palpatory pain in the epigastric region, along the course of the intestine, in the right subcostal area and stool character (p >0.005).

The stool characteristic according to the Bristol scale had no significant differences in the age groups of patients. Nevertheless, it should be noted that liquid stools (6–7 on the Bristol scale) were observed with a frequency from 0.7 to 21.1% in different groups.

Clinical blood counts in the debut of the disease in patients carrying a new coronavirus infection revealed leukocytosis in 7% of cases, leukopenia in 17% of cases, lymphopenia in 3.2% of cases, lymphocytosis in 5.2% of cases, neutropenia in 4.3% of cases, neutrophilosis in 9% of cases, increased erythrocyte sedimentation rate (ESR) in 25% of cases, and anemic syndrome in 11% of cases.

Thus, on the basis of complaints, anamnesis, objective and routine laboratory examination we were able to identify typical syndromes characteristic of acute respiratory diseases: intoxication syndrome, upper respiratory tract lesion syndrome (catarrhal syndrome), GI lesion syndrome, focal lung tissue thickening syndrome (28.14%) and inflammatory changes in the blood. The presence of intoxication, focal pulmonary tissue lesion

Table 3. Characteristics of stool according to the Bristol stool scale in children at the onset of COVID-19

Таблица 3. Характеристика стула по Бристольской шкале у детей в дебюте COVID-19

Показатели / Indicators	**Возрастная группа / Age group**	**Значение стула по Бристольской шкале / Bristol Stool Scale Value**							**Всего (n) / Total (p)**
		1	**2**	**3**	**4**	**5**	**6**	**7**	
Число наблюдаемых / Number observed (n/%)	Группа 1 (1–4 года) / Group 1 (1–4 years)	0/0	2/3,3	14/23,0	30/49,2	3/4,9	1,1,6	11/18	61
	Группа 2 (5–9 лет) / Group 2 (5–9 years)	1/1,4	9/12,7	21/29,6	23/32,4	2,8	0/0	15/21,1	71
	Группа 3 (10–14 лет) / Group 3 (10–14 years)	2/2,6	7/9,2	16/21,1	28/36,8	7/9,2	1/1,3	15/19,7	76
	Группа 4 (15–17 лет) / Group 4 (15–17 years)	3/1,1	20/7,4	69/25,7	109/40,5	16/5,9	2/0,7	50/18,6	269

Примечание / Note: p=0,407.

Table 4. Results of X-ray diagnostics of pneumonia in children with COVID-19

Таблица 4. Результаты рентгенологической диагностики пневмоний у детей с COVID-19

Возрастная группа / Age group	**Всего / Total (n/%)**	**Правосторонняя / Right-sided (n/%)**	**Левосторонняя / Left-hand (n/%)**	**Двусторонняя / Two-sided (n/%)**
Группа 1 (1–4 года) / Group 1 (1–4 years)	21/34,4%	4/6,6%	5/8,2%	12/19,7%
Группа 2 (5–9 лет) / Group 2 (5–9 years)	15/20,8%	2/2,8%	2/2,8%	11/15,3%
Группа 3 (10–14 лет) / Group 3 (10–14 years)	15/19,7%	3/3,9%	4/5,3%	8/10,5%
Группа 4 (15–17 лет) / Group 4 (15–17 years)	25/41%	5/8,2%	3/ 4,9%	15/24,6%
	p=0,013	p=0,485	p=0,576	p=0,158

syndrome, and inflammatory reaction in blood analysis were indications for radiographic examination of the chest organs. Out of 270 patients, 76 (28.1%) children were diagnosed with acute out-of-hospital pneumonia.

Pneumonia was most often radiologically detected in age group 4, which is consistent with the presence of more cough complaints in adolescents in the same group. Bilateral pneumonia was detected most frequently in each age group (p <0.05). The results of radiologic diagnosis of pneumonia are presented in Table 4.

The frequency of S1–S7, S9, S10 lesions was similar in all age groups, but the S8 segment was significantly more frequently affected in children of group 4 (8.2%; p=0.050). Morphological characteristics of pneumonias in children with COVID-19 in different age groups had no differences, but complications in the form of pleurisy were noted only in group 4 (1.6%) (Table 5).

The dynamics of the disease is presented in Figure 3.

Table 5. Morphological characteristics of pneumonia in children with COVID-19 in different age groups

Таблица 5. Морфологическая характеристика пневмоний у детей с COVID-19 в разных возрастных группах

Возрастная группа/ Age group	**Полисегментарная / Polysegmental**	**Нижнедолевая / Lower lobe**	**Среднедолевая / Mid-shaft**	**Плеврит / Pleurisy**
Группа 1 (1–4 года) / Group 1 (1–4 years)	12/19,7%	4/6,6%	1/1,6%	0/0,0%
Группа 2 (5–9 лет) / Group 2 (5–9 years)	9/12,5%	2/2,8%	0/0,0%	0/0,0%
Группа 3 (10–14 лет) / Group 3 (10–14 years)	6/7,9%	4/5,3%	1/1,3%	0/0,0%
Группа 4 (15–17 лет) / Group 4 (15–17 years)	14/23,0%	6/5,3%	0/0,0%	1/1,6%
	p=0,062	p=0,383	p=0,572	p=0,329

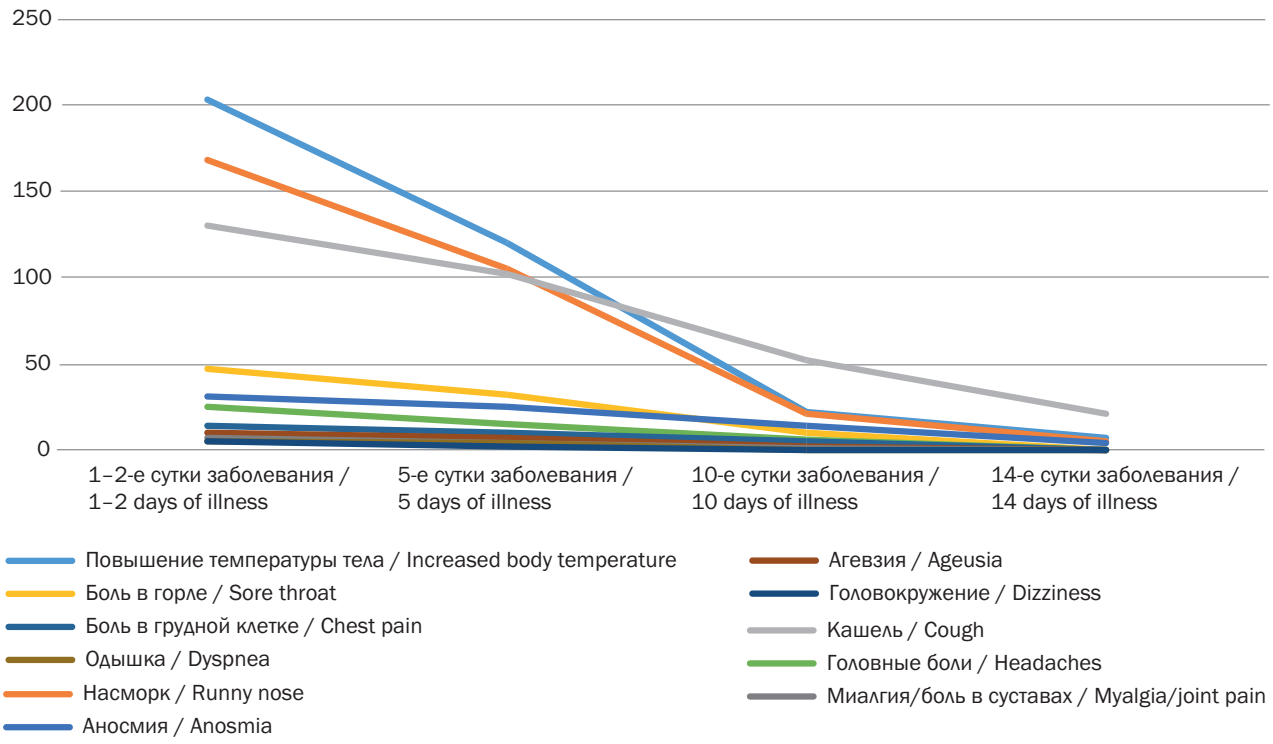

Fig. 3. Dynamics of acute new coronavirus infection in children

Рис. 3. Динамика заболевания острой новой коронавирусной инфекции у детей

Table 6. Dynamics of gastrointestinal complaints in examined patients

Таблица 6. Динамика гастроэнтерологических жалоб у обследованных пациентов

Симптомы / Symptoms	**Этапы наблюдения / Stages of observation**		**p**
	острая новая коронавирусная инфекция / acute novel coronavirus infection (n/%)	**14-е сутки заболевания (выздоровление) / 14th day of illness (recovery) (n/%)**	
Боли в животе / Abdominal pain	36 (13,3%)	18 (6,7%)	p_{1-2}=0,041
Тошнота / Nausea	16 (5,9%)	4 (1,5%)	p_{1-2}=0,016
Рвота / Vomition	29 (10,7%)	7 (2,6%)	<0,001
Жидкий стул / Loose stools	30 (11,1%)	7 (2,6%)	p_{1-2}=0,002

There was a significant reduction of most symptoms by the 10th day of observation and their disappearance on the 14th day. Cough persisted for the longest time.

New coronavirus infection proceeds in children in most cases in the form of typical acute respiratory viral infection of mild to moderate severity, with resolution of symptoms by the 14th day of the disease. The frequency of pneumonia among 270 examined patients amounted to 28,14% (76 children), the most significant number of pneumonias was found in children of group 4 (p=0,013), in them cough was noted most often.

Gastroenterological complaints were evaluated at the beginning of the disease and at the time of recovery (day 14). The dynamics of gastroenterological complaints in all 270 patients included in the study is presented in Table 6.

Analysis of these complaints shows that the frequency of vomiting, which can also be regarded as a manifestation of intoxication, significantly decreases by the time of recovery. The frequency of other gastroenterological complaints also decreases significantly by the time of recovery.

CONCLUSION

Thus, the leading complaints in children with confirmed new coronavirus infection were initially respiratory complaints, which did not allow distinguishing this disease from trivial acute respiratory viral infection. The frequency of gastroenterologic complaints (abdominal pain, nausea, vomiting, liquid stools) had a maximum occurrence of 16.4%. Age differences in the frequency of such subjective complaints as chest pain, sore throat, and nausea can be associated with the age-specific features of perception and evaluation of these symptoms in young children.

ADDITIONAL INFORMATION

The author read and approved the final version before publication.

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Автор прочитал и одобрил финальную версию перед публикацией.

Конфликт интересов. Автор декларирует отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

Источник финансирования. Автор заявляет об отсутствии внешнего финансирования при проведении исследования.

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