

Clinic and laboratory characteristics of acute kidney failure in children during the COVID-19 pandemic

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Abstract

While the covid-19 pandemic has affected the world, pediatric cases of covid-19 infections have been reported. this article analyzes about clinical and Laboratory characteristics including Imaging characteristics also. All the data is based on published data from the m Center for infectious disease. Clinical data from 150 children's read covid-19 end almost 15 articles include for the quantitative analysis.

Among these children, the children have fever was 41% to 95%, and cough 37% to 87% which are the most common symptoms of these children. other issues showed infection and severe cases respectively were for 23%. The Jetta from the Laboratory Illustrated that tthat5% of the patients had lymphopenia. The dirty traffic data including the chest computed tomography demonstrated unilateral and bilateral lesions and ground glass opacity in almost 32% to 34% end 28% respectively end normal approximately in 30% of children.

this data shows us the children who were infected with covid-19 infection acquired a lot of other symptomatic infections but the overall rate of severe illness was low this data was collected from the original singer of the infection disease Hospital and other regions needed to determine.

Even though six individuals had concomitant AKI that was not detected in this investigation, there were no complaints of vomiting or diarrhea, which is one of the signs of AKI. It's interesting to note that certain postmortem histopathological studies showed interaction with or damage to patients with COVID-19 whose renal tissue was not previously identified by regular testing (higher urea or creatinine values), suggesting the potential for subclinical AKI.

Setting: Participants and their data were drawn from an existing consent to contact database of the Infectious disease center of the Khorezm region. The candidates were 2 to 12 years of age, 20 women, and the ratio of male to female children was 67 % to 87 %. These individuals were receiving care (treatment and medication support) at different centers especially designated for Covid-19 infection in the Khorezm region and at different clinics in the Khorezm region. We retrieved the data from the infectious control center where all the data were collected from all centers of the Khorezm region. They can speak English or Russian, and agreed to be contacted for further research.

Methods: A prospective study with Cohort study/guidelines from WHO for Covid-19 care and self-protection. A combined Cohort study of the COVID-19 survey was performed telephonically and personally for 15-20 minutes maximum, which included a discussion with doctors who attended and had any information about this syndrome.

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1. Introduction

A novel coronavirus that emerged in late 2019 spread quickly around the world, causing a global pandemic. The illness it produced was referred to as coronavirus disease 2019 and the virus as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (COVID-19). From asymptomatic infection to minor respiratory tract symptoms to severe pneumonia with acute respiratory distress syndrome and multiorgan dysfunction, the clinical spectrum of COVID-19 includes all of these conditions. [1,2,3,4].

At the start, there were a few cases of children who were infected with the current 19 which organ the previous speculation about the children because before that Big Bus tour that children are less likely to get infected by the covid-19 infection but later 7 children reported having an infection of this virus moreover many clinical symptoms all Pediatric infections was not fully understood as many previous list studies have shown us the incident of severe covid-19 infection in Jordan is lesser than in adults. whoever it is still unreliable information about this infection.

1.1. Transmission in children

Although SARS-CoV-2 virus shedding varies from person to person [22], sick children appear to shed SARS-CoV-2 virus with nasopharyngeal viral levels comparable to or higher than those in adults [23-26], and children of all ages can transmit SARS-CoV-2 to others in the family, child care, educational, and community contexts [27-32]. Whether the child exhibits symptoms or not, transmission can still happen [33-35]. Adult asymptomatic transmission has a long history of research. (See the section on "Viral shedding and time of infectiousness" in "COVID-19: Epidemiology, virology, and prevention.

Given the different contributions of biologic, host, and environmental factors (e.g., community transmission, ventilation, class size), the relative transmissibility of SARS-CoV-2 by kids in different age groups is unknown [27,28].

Variable rates of transmission from pediatric index cases have been discovered by household contact investigations [13,30,33,39,43]. The varying rates may be attributed to various community prevalence and mitigation strategies, techniques for diagnosing secondary cases, time of sample collection, predominate variations, and levels of adherence to infection control measures in the home, which is particularly difficult when the index patient is a small kid [44,46].

Although transmission can happen in child care and educational settings [28,29,30], studies conducted before COVID-19 vaccinations were permitted for children under the age of 16 and before the advent of more transmissible variations revealed that transmission by kids and teens in the classroom was unusual when there was rigorous adherence to numerous public health measures and low community transmission.

1.2. Incidence and prevalence

Children make up about 19 percent of all COVID-19 cases in the United States in terms of prevalence and incidence [66]. The American Academy of Pediatrics offers data on the proportion of pediatric cases in each state [67].

Given the number of cases that are asymptomatic or not reported (for example, following a home test), the number of laboratory-confirmed cases of SARS-CoV-2 infection in children reported to the Centers for Disease Control and Prevention (CDC) is probably an underestimate [67,68]. In the United States, 75% of children and teens (aged 0 to 17) have tested positive for SARS-CoV-2 by February 2022 [68]. Between December 2021 and February 2022, around one-third of these seroconversions took place (concurrent with the predominance of the Omicron [B.1.1.529] variant). [22,24]

In prospective surveillance studies, the incidence of SARS-CoV-2 infection in children is comparable to that in adults [69], even though children often have a lower risk of exposure and are tested less frequently than adults [48]. Children under the age of 18 have a higher seroprevalence than adults, according to nationwide research in the United States (75 versus 33 to 64 percent).

Children of all ages can get COVID-19. Among children <18 years of age in the United States as of June 1, 2022, there have been >13 million cases in children <18 years for which an age group was available, distributed as follows. [25,22,23]

- 0 to 4 years old: 18.7 percent
- Those aged 5 to 11: 38.3 percent
- 27.0 percent of people are between the ages of 12 and 15
- Age 16 to 17 years: 15.8%

2. Methods

A prospective study with Cohort study/guidelines from WHO for Covid-19 care and self-protection. A combined Cohort study of the COVID-19 survey was performed telephonically and personally for 15-20 minutes maximum, which included a discussion with doctors who attended and had any information about this syndrome.

3. Results

3.1. Clinical results

Children of all ages can contract SARS-CoV-2, regardless of their age. Both men and women are equally impacted [82].

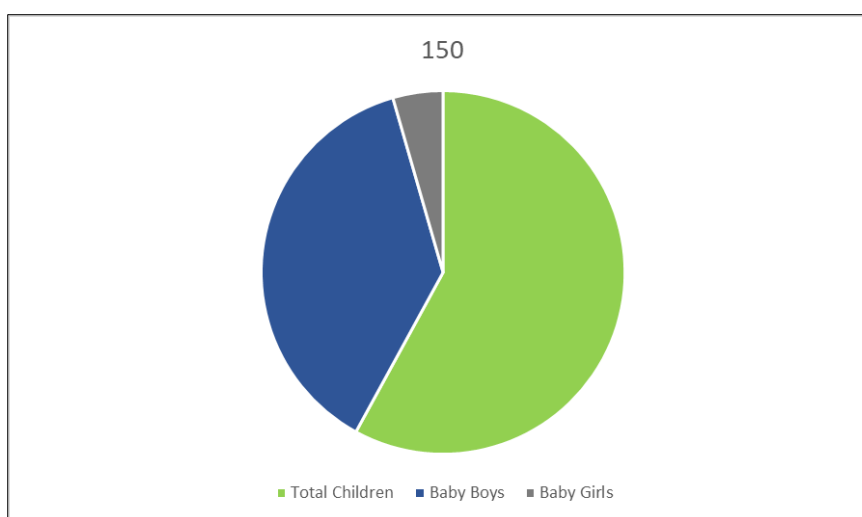
Children with symptomatic SARS-CoV-2 infection present clinically in a variety of ways and sometimes share symptoms with different clinical disorders (eg, pneumonia, bronchiolitis, croup [particularly with the Omicron variant] [148-151], e-cigarette or vaping product use-associated lung injury [152], gastroenteritis).

In case surveillance in the US, children, and teenagers frequently reported the following symptoms [76,82]:

- Headache
- Nausea/vomiting
- Pain in the abdomen
- Diarrhea
- Fever
- Cough
- Inability to breathe
- Myalgia
- Rhinorrhea

Loss of taste or smell (in nonverbal children, this may present as an aversion to or refusal of solid foods) [153]

3.2. Renal issues



This Pi chart shows the total number of patients and their demographic figure

Figure 1 This pi chat shows the demographic distribution of the sample taken, the total number of patients and number of female children and male children

Coronavirus has been related to both cylindrical and glomerular renal harm. Proximal tubule brokenness has been accounted for in a subset of patients with COVID-19 giving low-sub-atomic weight proteinuria, unbiased aminoaciduria, and flawed handling of uric acid [98]. As for glomerular disease, a few examinations have revealed patients with biopsy-demonstrated glomerulonephritis giving intense renal disappointment (at times joined by haematuria and/or nephrotic disorder). The following most often revealed kind of glomerulonephritis after podocytopathies in patients with COVID-19 is pauci-resistant crescentic glomerulonephritis related with autoantibodies, which in all cases yet one impacted lady. Different sorts of glomerulonephritis have been additionally revealed, that includes membranous and IgA glomerulonephritis. In certain patients, the intense renal disease showed up over about fourteen days after the beginning of COVID-19 symptoms, showing negative PCR results and positive serological tests. Patients with COVID-19 giving glomerulonephritis have an unfortunate visualization, and the greater part of the detailed cases required dialysis (most even in the wake of being released from the medical clinic) [17].

Table 1 Laboratory and radiologic findings in children with COVID-19 according to disease severity

Variable Overall		Disease severity		
Laboratory findings	Overall	Non-severe	Severe	p
Leucocyte (x103/ mm3)	10.64 (6.83-27.55)	10.06 (6.83-27.55)	10.34(10.40-22.87)	0.563
Lymphocyte (x103 /mm3)	2.50 (0.42-11.57)	2.62 (0.84-11.57)	1.60 (0.42-2.74)	0.163
Thrombocyte (x103 /mm3)	324 (87-589)	368 (87-589)	169 (124-173)	0.045
Hemoglobin (g/dL)	11.4 (9.8-24.5)	12.6 (9.8-24.5)	9.9 (9.8-11.8)	0.160
CRP (mg/L)	0.46 (0.06-29.0)	0.42 (0.06-0.97)	18.74 (10.89-29.0)	0.032
eGFR (mg/dL)	106.57 (27.93-315.74)	109 (27.93-315.74)	51.59 (35.60-243.97)	0.523

4. Discussion

As I assessed the multi-system inflammatory syndrome in children (RENAL ISSUES) in the Khorezm region having a population of 1.777 million (According to national statistics) in Uzbekistan where rates of Covid-19 were high enough as there were a lot of cases (6837 cases per one million from 1st September to 17th December 2021 according to the recent forecast of WHO). An assessment is performed on the relationship between Covid-19 virus transmission and multi-system inflammatory syndrome in children (RENAL ISSUES), especially among children from 2 to 12 years of age. Multi-system inflammatory syndrome in children renal Issues is a condition where different body parts become inflamed that include the vital organs like the heart, lungs, kidneys, brain, skin, eyes, or gastrointestinal organs. The reasons behind renal Issues are yet unknown. But children with renal Issues had the Covid-19 virus or COVID-19 VIRUS, or children that had Covid-19. renal Issues is a serious condition, that even can be deadly, but most children who were diagnosed with this condition became healthy after getting proper medical treatment. [1,2,3,4]

Even though six individuals had concomitant AKI that was not detected in this investigation, there were no complaints of vomiting or diarrhea, which is one of the signs of AKI. It's interesting to note that certain postmortem histopathological studies showed interaction with or damage to patients with COVID-19 whose renal tissue was not previously identified by regular testing (higher urea or creatinine values), suggesting the potential for subclinical AKI. [5,6,7,8]

The severe group had a much-reduced thrombocyte count and significantly higher C-reactive protein (CRP), according to this study (Table 3). This syndrome is most likely linked to the advanced cytokine storm process, which involves raising levels of proinflammatory mediators like interleukin-6 (IL-6), transforming growth factor-beta (TGF-beta), tumor necrosis factor-beta (TNF-beta), vascular endothelial growth factor (VEGF), platelet-derived growth factor (PDGF), and soluble urokinase plasminogen activator receptor (suPAR) (5). When pro- and anti-inflammatory mediators were produced, the clotting cascades were disrupted, thrombus developed later, and the fibrinolytic system experienced plasminogen stimulation with antithrombin-III activation (22). Therefore, fibrinolytic and fibrinogen substances were depleted, and at the same time, disseminated intravascular coagulation (DIC)-related bleeding and clot formation also took place. [9,10,11]

5. Conclusion

It has been seen that the problems related to the immune system are increasing in patients especially children with COVID-19 infection, clinical symptoms showed a wide range of organ systems in both children and adults but here I will describe only children. Almost reported cases are 3,000 worldwide as of August 2020 and 5500 plus till the end of 2021, which includes almost 65-70 different body systemic including organ disorders, therefore, decisions related to diagnosis and therapeutics are mostly resulted or based on highly clinical and expert opinions and experiences. Not being able to provide solid results and authentic antipathogenic reasons and explanations, the main purpose of this study is to put the focus of the doctors and clinical scientists on this emerging condition of specific illness and thus facilitate the development of studies related to the investigation of the pathogenesis mechanisms of this condition that could help enable the early diagnosis and proper management of immune-related clinical conditions of COVID-19 in children. So, we will be prepared if there is a next wave arising of Covid-19 infection.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that there is no conflict of interest.

Statement of informed consent

Informed Consent was taken from all participants participated in this research article.

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