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An observational study of clinical presentation of COVID 19 among children in India.

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Abstract

Objective: To assess the clinical presentation of COVID-19 among pediatric population in India.
Methods: Study included children of age group (1 month to 14 years) with positive nasopharyngeal swab for SARS-CoV-2 done by RT-PCR presenting between 1st March 2020-31st May 2021. Their clinical and laboratory results data were analyzed.
Results: 400 Children with median age of 7(1-14 years) were included. Of those 215 were asymptomatic, 127 had mild infection, 12 had moderate disease and 3 had severe disease. 43 children presented with signs of MIS-C. There was no mortality.
Conclusion: Most of the COVID-19 affected children are asymptomatic. Among children with symptoms, very few have manifestations of severe disease.

Keywords: COVID-19, Children, Clinical presentation, India, MIS-C.

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Introduction

Coronavirus Disease 2019 (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) which emerged as a global pandemic with children being affected more and changing its perspective on COVID infected children.

During the initial phases of pandemic, most of the children remained asymptomatic while others had mild symptoms.

But at present during the second wave, they present with pneumonia like symptoms or as a case of Multisystem Inflammatory Syndrome in Children (MIS-C) in children who recently recovered from Covid-19.

In India, <12% of all confirmed cases are <20 years of age [1]. Likewise of all deaths in COVID-19, only <2% of deaths are seen in <20 years age group. In our study we describe the varied clinical presentation of COVID-19 in pediatric population attended our institution.

Methods

This was an observational study conducted in a tertiary care hospital in Chennai. Ethical committee clearance was obtained prior to the study. Informed consent was taken from the caregivers and assent was taken from those children above 9 years. RT-PCR for COVID-19 was done in cases presented with symptoms pertaining to COVID.

Basic investigations like CBC, CRP, SARS-CoV-2 antibody assay (CLIA) was done in all cases while chest-x-ray was performed only in symptomatic cases where each lung is divided into three lobes and presence of opacity in each lobe is given a score of 1 with a total score of 6 [2].

Disease severity was determined as per Ministry of Health and Family Welfare (MOHFW) guidelines [3].

Statistical Analysis

Data analysis was done by Statistical Package for Social Sciences (SPSS) software version 25.0. A p value <0.05 was considered significant.

Results

Children between 1-14 years presenting to pediatric COVID unit of SBMCH with positive RT-PCR were enrolled for the study. The median age of children participated was 7 years (2-14 years) and 60% (24) were males.

Children above 10 years were affected more than lower age groups. Both sero-negative and sero-positive children (IgG) were identified.

Median antibody titer was found to be 50 AU/ml (10-90). 15(37.5%)were found to be positive for IgG antibodies to COVID-19. Contrary to initial beliefs, GIT symptoms were also more common among children. There were no any associated co morbidities in these children.

No any deaths in our study population. Two children were found to have MIS-C with positive IgG antibodies for COVID-19. The following data was obtained from our study (Tables 1 and 2).

Clinical characteristics	No. of children affected	Percentage affected
Fever	185	46
Cough	182	45
Git symptoms	90	22.5
Myalgia	110	27.5
Sore throat	89	22.2
Rash	26	6.5
Conjuctival congestion	30	7.5
Oral mucosal changes	28	7
Headache	113	28.2
Asymptomatic	215	53.7
Mild	127	31.7
Moderate	12	3
Severe	3	0.7
MIS-C features	43	10.7
Male	224	56
Female	176	44
Age <5 years	75	18.7
5-10 years	223	55.7
10-14 years	102	25.5

Table 1. Clinical manifestations of COVID among children in Chennai, 2021 (N=400).

Lab parameter	Mean values
Absolute neutophil count (× 109/L)	2660(1920-3400)
Absolute monocyte count (× 109/L)	585(420-750)
Absolute eosinophil count (× 109/L)	255(60-450)
High CRP (>5 mg/dl)	115
IgG antibodies for SARS-CoV-2 positive	67
IgG antibody titre (AU/ml)	109(10-90)

Table 2. Laboratory investigations in COVID-19 affected children.

Chest-x-ray was done in 58 of 185 symptomatic patients where 23(12.4%) of them showed bilateral lower zone opacities. Leucopenia was seen in 170 patients (91.8%).

Other parameters like Neutrophil Lymphocyte Ratio (NLR), Lymphocyte Monocyte Ratio (LMR), and Platelet Lymphocyte Ratio (PLR) were increased in severe infections [4]. CRP values correlated with the severity of the disease ($p<0.03$).

Children suspected to have MIS-C was confirmed with further investigations and treated according to the hospital guidelines. Sero-positivity rate continued to rise over the study period depicting the transmission dynamics in Chennai.

Discussion

According to our study, even though some of the children had severe infections in the form of MIS-C, most of the children were asymptomatic or only had mild symptoms. Majority of the Indian children had only milder course of infection during the initial phases of pandemic. As most of the studies were conducted on adult population, data on clinical pattern of COVID-19 among children is only minimal in India. MIS-C is a major dreaded complication of COVID-19 among children leading to increased morbidity and mortality.

Sarangi et al. studied the epidemiological and clinical characteristics of COVID-19 affected Indian children during initial phases of pandemic and found that most of them only had mild symptoms and <1% of the children only had severe infection [5]. Another meta-analysis done last year showed that

many children had GIT symptoms same like fever stressing the need for comprehensive screening strategy including respiratory as well as gastrointestinal features [6].

Studies conducted to analyze the pathogenesis of COVID-19 among children in India found that less severity is due to healthier respiratory tracts, less exposure to virus and the functioning of ACE2 viral receptors which were responsible for severe infections [7].

Another study conducted in Chennai tertiary care hospital correlated the COVID-19 serology with clinical phenotype among children admitted in hospital showing that children mounts a detectable serological response and its quantitative analysis have prognostic value. It also found that children with MISC had higher antibody levels when compared to other children [8].

There are several limitations to our study like small study sample. It does not involve neonates as well as adolescents. Only RT-PCR positive children with active COVID-19 infection were enrolled in the study and there is no analysis of post-COVID clinical presentation in children.

Conclusion

To conclude, although children are equally susceptible to COVID-19 infection like adults, most of them have only mild symptoms with good prognosis. At the same time it is also pivotal to timely recognize and treat certain complications of COVID-19 like MIS-C/PIM-TS with appropriate management preventing mortality in children.

References

1. https://ncdc.gov.in/dashboard.php
2. Toussie D, Voutsinas N, Finkelstein M, et al. Clinical and Chest Radiography Features Determine Patient Outcomes in Young and Middle-aged Adults with COVID-19. Radiology 2020; 297(1):E197-206.
3. Government of India ministry of health & family welfare directorate general of health Services (EMR Division). Guidelines for management of co-infection of COVID-19 with other seasonal epidemic prone diseases. 2021.
4. Lagunas-Rangel FA. Neutrophil-to-lymphocyte ratio and lymphocyte-to-C-reactive protein ratio in patients with severe coronavirus disease 2019 (COVID-19): A meta-analysis. J Med Virol 2020; 92(10):1733-4.
5. Sarangi B, Reddy VS, Oswal JS, et al. Epidemiological and clinical characteristics of COVID-19 in Indian children in the initial phase of the pandemic. Indian Pediatr 2020; 57(10):914-7.
6. Meena J, Yadav J, Saini L, et al. Clinical features and outcome of SARS-CoV-2 infection in children: A systematic review and meta-analysis. Indian Pediatr. 2020; 57(9):820-6.
7. Balasubramanian S, Rao NM, Goenka A, et al. Coronavirus disease 2019 (COVID-19) in children -what we know so far and what we do not. Indian Pediatr 2020; 57(5):435-42.
8. Venkataraman A, Balasubramanian S, Putilibai S, et al. Correlation of SARS-CoV-2 serology and clinical phenotype amongst hospitalised children in a tertiary children's hospital in India. J Trop Pediatr 2021; 67(1): 1-10.

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