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Original Research Article

A study of clinical profile and outcome of COVID-19 in children

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ABSTRACT

Background: COVID-19 has become a major public health crisis around the world. This study aimed at identifying the different clinical presentations of children who were tested positive for SARS-COV-2.
Methods: Descriptive and prospective study of the children who were seen over the fever clinic and were admitted to the Sapthagiri institute of medical science and research centre over a period of 4 months from November 2021 to February 2022.
Results: Among the 251 children admitted to the hospital majority of them were males 52.5% and the age group of 1-5 years were highest affected 46.2%. The most common symptoms noted were fever 60.5%, followed by pain abdomen 45.8%, vomiting 43.8%, running nose 39%, cough 38%, diarrhoea 30.6%, decreased appetite 26.7% and the least common symptom was skin rash 0.3%. Children with comorbidites had higher risk of ICU admission. No deaths were noted during the study period.
Conclusions: The study concludes that males and children of age group 1-5 years were more affected. Children with co morbidities were more severely affected. children who were positive presented with other system involvement like gastrointestinal system. Household contact were the make cause of infection among children.

Keywords: COVID 19, Lymphopenia, SARS-COV-2

INTRODUCTION

The corona virus has spread throughout the world since December 2019 and on January 10th 2020 the new type of virus was isolated from patient's lower respiratory tract and genome sequencing was performed and the WHO termed this pathogen as 2019 novel corona virus (2019-nCoV).[1] The corona virus study group of the international commission on virus classification on 11 February 2020 name the new corona virus severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). The WHO named the new corona virus (COVID-19) on the same day. The WHO announced COVID-19 as a pandemic on 12 March 2020.[2] The huge impact of the COVID-19 is attributed to the unpreparedness and unexpected spread of the pathogen and its contagious asymptomatic spreaders and lack of immunity and effective vaccine and non-availability of effective proven antiviral drugs.[3] As per WHO China joint mission report, children <18 years of age accounted for only 2.4% of the laboratory confirmed cases of COVID-19 in China most of whom were household positive cases.[4] Similarly, centres for disease control (CDC) from USA reported 2572 patients aged <18 years of age accounted for only 1.7% of the total COVID 19 cases.[5] Indian data showed comparatively higher incidence; ICMR laboratory surveillance network reported 3.6% and 8.1% of total cases in age group 0-9 and 10-19 years, respectively between 22 January 2020 and 30 April 2020.[6] The hospitalization rates and the severity of the illness was less in paediatric age group as compared to adults.[7-11] In each country the presenting symptoms, severity and outcome of COVID-19 are variable hence local data on epidemiology, clinical investigations, treatment and

outcome will be useful to plan the services like screening, testing, isolation and intensive care for the paediatric age group. Hence this study was conducted to present information on clinical characteristics and outcome of the children with confirmed COVID-19 seen in our OPD and admitted to our tertiary care center.

METHODS

This was a hospital based descriptive and retrospective study carried out at general hospital, Sapthagiri institute of medical science and research centre, Bangalore, Karnataka, India. On all the laboratory confirmed cases of children with COVID (RAT or RTPCR) admitted and seen over the fever clinic for a period of November 2021 to February 2022. All the cases seen by fever clinic and admitted by COVID ward were enrolled on a structural protocol which included symptoms, signs, relevant investigation duration of stay and treatment. Information regarding demographic and clinical details including age, sex, history of contact, type of contact, comorbidities, clinical features and lab investigations were recorded. Relevant data were entered in proforma and analyzed. The diagnoses of COVID were based on WHO and ICMR criteria.

Inclusion criteria

Children with age group of 0-18 years, admitted with symptoms of COVID based on WHO and ICMR and all children who were tested positive for SARS-CoV 2 by real time transcription polymerase chain reaction (RT-PCR) from combined nasal and oropharyngeal swabs were included in the study.

Exclusion criteria

Children with dengue positive and seasonal flu symptoms were excluded.

Data entry and statistical analysis were performed using excel (Microsoft office 365, Remond WA) and SPSS software version 20 (SPSS, Inc, Chicago, IL). Descriptive statistics were used to summarize the data. Continuous variables were presented as median and interquartile range while categorical data were summarized as frequencies and percentages

RESULTS

A total of 251 cases were admitted to the general hospital, SIMS and RC, Bangalore, Karnataka, India from November 2021 to February 2022 were statistically analyzed. Of the 251 admitted children 149 children were screened positive by either RAT or RT-PCR at our hospital (SIMS and RC) and 102 were referred here after being tested positive. Based on the age majority were in the age group of 1-5 years 46.2% (116/251) followed by <1 year age group in 27.4% (69/251) with the least being in the age group 15-17 years 4.3% (11/251). Among genders males were more common. Based on symptoms the most common symptoms noticed were fever 60.5% (152/251), followed by pain abdomen 45.8% (115/251), vomiting 43.8% (110/251), running nose 39% (98/251) cough 38.2% (96/251), and the lest common symptoms noticed were conjunctival conjunction 2.7% (7/251) and skin rash 0.3% (1/251). Ten children were admitted to HDU, 7 children were admitted in the ICU and 1 child was on ventilator support. Three children are previously known cases of nephrotic syndrome. Most of the children had history of house old contact and few had history of travel. All the admitted children showed lymphopenia and increased CRP.

Table 1: Age and gender distribution.

Age (years)	Male	Female	Total
<1	47	22	69
1-5	40	76	116
6-10	22	15	37
11-14	17	1	18
15- 17	6	5	11

Table 2: Symptomatology distribution.

Symptoms	No. of patients
Fever	152
Cough	96
Running nose	98
Sore throat	44
Myalgia	40
Decreased appetite	67
Vomiting	110
Pain abdomen	115
Skin rash	1
Head ache	13
Conjunctival conjunction	7
Diarrhoea	77

DISCUSSION

SARS COVID was a major health issue during the period of study and was more prevalent in tropical and sub-tropical countries. In the study we are describing the clinic-epidemoigial status of the children admitted to our tertiary centre. The most common symptoms observed were fever and gastrointestinal symptoms followed by respiratory symptoms. In our study gastrointestinal symptoms were predominant when compared to Meena et al.[12-14]A wide range of disease severity has been seen during those times, depending on the admission criteria of the hospital, the overall severity was less when compared to other studies.[12,15-17] The 7% (18/251) of the children had severe to critical illness as compared to other studies.[3] Limited sample sizes, referral bias and other confounding factors may have projected this severity in our study. Out of the 7 children admitted to ICU 1 child required mechanical ventilation, this child was a known case of global developmental delay with

spastic quadriplegia. And 1 of the 7 admitted in the ICU and 2 of the 10 admitted to HDU were known cases of nephrotic syndrome. The children admitted to ICU developed ARD type of picture and were subjected to severe illness which is less as compared to Nallasamy et al and Raba et al.[3,18] In our study among children with comorbidities 1-5-year-old children were 57.1% (4/7) followed by 6-11 years 28% (2/7), 11-14 years 14% (1/7) as compared to a study in China involving a large paediatric population 10.6% and 7.3% for <1 and 1-5 year age groups as compared to 3-4% for older children.[19] Comorbidities in children increase the risk of severe disease and ICU admission which is common with that of adults.[20]

CONCLUSION

During the pandemic of COVID-19 children were also affected due to house hold contacts and children who were positive presented with other system involvement like gastrointestinal system. Children with comorbidites had higher risk of severe disease. Most of the children admitted to the hospital had good outcome and recovery.

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