Clinical Characteristics and Outcomes of Paediatric Patients with Coronavirus Disease (COVID-19): A Single Center Study in Bangladesh

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Abstract

Background: *Coronavirus disease 2019 (COVID-19) caused by SARS-CoV-2 has spread around the world and reports of children with COVID-19 are increasing. This study was conducted to assess clinical features and outcome of COVID-19 in children at Evercare hospital Dhaka.*

Materials & Method: *This observational study was conducted on RT-PCR positive COVID-19 admitted children up to 14 years of age from May 2020 to November 2020 at the Pediatric Department of Evercare hospital Dhaka. Data were analyzed after collection of demographic and clinical data of 14 enrolled children.*

Results: *The mean age of the study population was 2.8±3.8 years with male female ratio was 1:1. Two (14.3%) patients had H/O fever in family member & the mean duration between contact & appearance of symptom was 12.5±12.56 days. The major clinical symptom was fever (85.7%). Next most common presenting symptoms were loose stool, vomiting & abdominal pain (42.9%), and convulsion (28.6%). Cough and breathing difficulty were present in 21.4% & 14.3% of the patients respectively. Most of the cases diagnosed as AGE (42.8%) followed by febrile convulsion (28.5%) then pneumonia (21.4%).*

Conclusion: *The symptoms of COVID-19 in children are mild and most of the patients may present with gastrointestinal symptoms such as loose stool, abdominal pain and febrile convulsion. The findings from this study might help to make early appropriate diagnosis and thus control the epidemic.*

Keywords: *Coronavirus disease 2019 (COVID-19), SARS-CoV-2, Pediatric.*

Introduction:

Since the end of December 2019, a new type of coronavirus pneumonia appeared in Wuhan City. The World Health Organization named this new coronavirus pneumonia COVID-19. This virus spread to other parts of the country as well as to other countries and regions around the world. The World Health Organizations has declared COVID-19 a pandemic on March 11, 2020 (WHO, 2020) for spreading almost all over the world.[1] Infection rate was highest in USA (14,584,233) and death was also highest in USA 281,196. (John Hopkins, 2020).[2] In Bangladesh total 475,789 cases confirmed as COVID-19, total 6,807 cases died, and 395,960 people have been recovered up to Dec 06, 2020.

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What is currently known is that children have milder symptoms and are less likely to be hospitalized when compared to adults.[3] Although COVID-19, severe acute respiratory syndrome (SARS), and Middle East respiratory syndrome (MERS) are all caused by coronavirus and can be manifested with severe respiratory distress, COVID-19 has its own epidemiological and clinical features.[4] In adults, COVID-19 has the characteristics of a long incubation period, strong infectivity, atypical clinical symptoms, and high mortality in the elderly.[5-7] This study was done to assess clinical profiles and outcome of novel coronavirus, SARS-CoV-2 (COVID-19) among Bangladeshi children.

Materials and methods:

This observational study was done from May to November 2020. We enrolled 14 hospitalized children aged up to 14 years who were diagnosed with COVID-19 admitted in Department of Pediatrics, Ever care

hospital Dhaka. Children with positive RT-PCR test using nose swab specimens from the upper respiratory tract were diagnosed as COVID-19 infection. This test was done at PCR lab of Evercare hospital Dhaka and Novel Coronavirus (2019-nCoV) Nucleic Acid Diagnostic Kit (Sensure Biotech) was used for this purpose. Ethical clearance was obtained from the institutional ethics committee and informed written consent was taken from parents or caregivers of each enrolled child. Children with negative RT-PCR and neonates were excluded from this study. After enrollment of fourteen children demographical and detailed clinical information from history, clinical examination & follow up findings were recorded on a structured questionnaire. Collected data were analyzed using the SPSS (Statistical Package for Social Sciences) version 22.0 for Windows (SPSS Inc., Chicago, Illinois, USA). Qualitative variables were expressed as frequency, percentage and quantitative variables as mean ±standard deviation.

Results:

Among total fourteen COVID-19 positive cases 85.8% belonged to age 1-3 years, the mean age was 33.86±46.34 months with male female ratio was 1:1. More than half (57.1%) of the child had blood group O positive and mean duration of hospital stay was 6.79±7.06 days. (Table I).

Table I

Distribution of the study patients by demographic profile (n=14)

Demographic Profile	n (%)
Age (in months)	
1-12	6 (42.9%)
13-36	6 (42.9%)
37-60	0
61-177	2 (14.2%)
Mean ± SD	33.86±46.34
Range(min-max)	(4-166)
Blood group	
O positive	8(57.1%)
A positive	3(21.4%)
B positive	3(21.4%)
Gender	
Male	7 (50%)
Female	7 (50%)
Duration of hospitalization (in days)	
Mean ± SD	6.79±7.06
Range (min-max)	(1-30)
Need ICU stay	0

Most common symptom was fever seen in 12/14 (85.7%) of the patient with the mean duration of 5.09±2.02 days. Next most common symptoms were GIT symptoms e.g. loose stool, vomiting & abdominal pain which was more than one third (42.9%). Convulsion was found in 28.6% of the patient. More than one fourth (28.6%) of the patients had low SPO2 but cough and breathing difficulty was present in 21.4% & 14.3% of patient respectively. (Table II). History of contact with COVID-19 patient was present in only 2/14(14.3%) cases.

Table II

Distribution of the study patients by clinical findings (n=14)

Clinical features	n	%
Fever	12	85.7
Duration of fever (in days)		
Mean ± SD	5.09 ± 2.02	
Range(min-max)	(2 -10)	
Loose stool, vomiting, abdominal pain	6	42.9
Convulsion	4	28.6
Cough	3	21.4
Edema	3	21.4
Ascites	2	14.3
Breathing difficulty	2	14.3
Sore throat	1	7.1
Fatigue, myalgia	1	7.1
Redness or swelling of the lips & tongue	1	7.1
Redness or swelling of the hands or feet	1	7.1
Loss of taste or smell	1	7.1
Low SPO2 (< 92%)	4	28.6

It was observed that 6/14(42.8%) of the COVID-19 children presented as acute gastroenteritis and followed by febrile convulsion in 4/14(28.5%) (Table IV). Associated invasive diarrhea was found in 2/14(14.3%) of the cases. Recovery was found 100% without any mortality in this study.

Table III
Distribution of the study patients by H/O contact (n=14)

	Frequency
H/O contact with COVID patient	2 (14.3%)
H/O fever in family member	2 (14.3%)
Duration between contact & appearance of symptom	
Mean ± SD	12.5±12.56
Range(min-max)	(2-30)

Table IV
Distribution of the study patients by disease caused after COVID-19 infection (n=14)

Other diagnosis	n (%)
Acute Gastroenteritis	6(42.8%)
Febrile convulsion 1st attack	4(28.5%)
Pneumonia	3(21.4%)

Table V
Distribution of the study patients by disease associated with COVID-19 infection (n=14)

Other diagnosis	Frequency
Invasive diarrhea	2(14.3%)
Enteric fever	1(7.1%)
UTI	1(7.1%)
Nephrotic syndrome 1st attack	1(7.1%)
Nephrotic nephritic syndrome	1(7.1%)
Bartter syndrome	1(7.1%)
Dengue fever	1(7.1%)
Acute severe asthma	1(7.1%)

Table VI
Distribution of the study patients by outcome (n=14)

Outcome	Frequency
Recovery	14(100%)
Death	0

Discussion:

Severe respiratory disease is the most concerning clinical presentation in adult patients. Initial reports during the pandemic suggested children have milder illness during acute infection.[8] In this study the mean age was 2.8±3.8 years which was near similar with the study by Hoang A et al. Tung Ho CL et al. Mustafa NM et al. and Guo C-X et al.[9-12] Male female ratio in our study was 1:1 but in other study it was 1.2:1.[9-12] The mean duration of hospitalization was 6.79±7.06 days.

Fever was the most common symptom seen in 85.7% of the patient which was similar with the previous study done by Sayeeda Anwar et al. as well as Ghosh UK et al. where fever was found in 89.1 % and 80.28% of the patients respectively.[13,14] Second most common symptoms were loose stool, vomiting, abdominal pain which was more than one third (42.9%) of the patients. Whittaker E et al. and Feldstein LR et al. also found gastrointestinal symptom was the second most common symptom in their study.[15,16] Convulsion was found in 28.6% of the patient while it was 25.4% in study by Ghosh UK et al. and 20% in Tan YP et al.[14,17]

In our study cough and breathing difficulty was present in 21.4% & 14.3% of patient respectively and low SPO2 was found in 28.6% of patients. Ghosh UK et al. found cough in 45.1% of the patient and breathing difficulty in 15.5% of the patient.[14] It was observed that sore throat, fatigue, myalgia, redness of lips, redness of hands & feet, and loss of taste & smell were rare presentation found each in only 7.1% cases. Ghosh UK et al. reported sore throat as well as anosmia in 33.8% and 2.8% respectively.[14] Mustafa NM et al. reported sore throat in 36% of the patients.[11]

Only two (14.3%) patients had H/O fever in family member in comparison to other study like Hoang A et al. showed that 75.6% of patients were exposed to a family member who was diagnosed with COVID-19.[9] The mean duration between contact & appearance of symptom was 12.5±12.56 days. Guo C-X et al. reported that range of incubation period was 6 to 13 days.[12]

AGE and invasive diarrhea was diagnosed in 42.8% and 14.3% of the patients respectively. Similar result found in study done by Feldstein LR et al. where gastrointestinal symptom (90%) was most common.[16] Second most common diagnosis was febrile convulsion (28.5%). Pneumonia ware diagnosed in 21.4% of the patients, Mustafa NM et al. found pneumonia in 60% cases in his study.[11] It was observed that no patient need ICU care and all (100.0%) patients had recovery.

Conclusion:

SARS-COV-2 infection in children, is generally not serious and with a good prognosis. The symptoms of COVID-19 in children are mild and most of the patients may present with gastrointestinal symptoms such as abdominal pain, diarrhea and febrile seizure. Pediatricians need to recognize the diversity of clinical characteristics of COVID-19 in children to identify suspected cases.

Limitations of the study:

The main limitations of the study are relatively smaller number of patients and it was a single center study.

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