

## A Preliminary Report of COVID-19 in Children in India

We describe the profile of COVID-19 in children from India in this multicentre observational study from tertiary care hospitals in West Bengal. Data of children up to 12 years presenting with positive results on SARS-CoV-2 RT-PCR test were included. The median (IQR) age of the 41 patients included was 1 (0.42-5.0) year. Eleven (26.8%) patients, including 6 neonates, never showed any symptoms. Fever was seen in only 9 patients (21%), and co-morbidities were found in 61% of patients. There was one death.

**Keywords:** Co-morbidities, Course, Management, Outcome.

**T**he clinical profile of Corona Virus Disease 2019 (COVID-19) infection in children is variable, and information from developing countries is not readily available, except for China [1]. We report a series of pediatric cases of COVID-19 from eastern India.

We collected data of children younger than 12 years admitted in tertiary care institutes, including COVID designated hospitals, of West Bengal. The children were included after obtaining parental consent, if they had a positive RT-PCR test report for SARS-CoV-2. The study was conducted from March, 2020 to June, 2020. Ethical permission was sought from the institutional ethics committee.

RT-PCR for SARS-CoV-2 in an Indian Council of Medical Research (ICMR) approved medical laboratory, data regarding clinical details, exposure history, hospital course and outcome were collected in pre-designed proforma. The records were entered and updated by pediatric residents and subsequently reviewed by a senior pediatric faculty of the institute. Data were compiled in Microsoft Excel spreadsheet and summarized.

We studied 41 patients (24 boys) with the median (IQR) age of 1 (0.42-5.0) year. Majority of the cases, 40 (97.6%) were successfully discharged, with one death. We had 6 neonates with COVID-19, all of whom were born to SARS-COV-2 positive mothers and were asymptomatic. Of the rest, five patients never showed any symptoms throughout the period of isolation, while 14 (34%) were mildly symptomatic in the form of common cold and rhinorrhea. Fever, which is perceived to be a major presenting feature of COVID-19, was seen only in 9 patients (21%).

Two cases had multi-system involvement in the form of an atypical Kawasaki disease-like presentation. Almost 61% of the cases had associated co-morbidities (**Table I**). Eleven (26.8%) patients needed no active management, 34% mildly symptomatic children needed nasal drops and anti-histaminics, 24.4% required oxygen inhalation, 4.9% were put on high flow nasal canula (HFNC) and 4.9% needed mechanical ventilation.

Six (15%) patients required intensive care. Of the study population, only 63.4% had a positive contact history. One child died in this series due to type II respiratory failure with septic shock in a case of post adenoviral bronchiolitis obliterans and hypoxic brain injury.

Our study found that the clinical course of COVID-19 in children appeared to be less severe than that reported in adults, which is consistent with other reports published on COVID-19 in children. We also found that co-morbidities were more prevalent (61%) in the 41 children hospitalized with COVID-19 [2]. Comorbidities among children with COVID-19 were reported in all patients from China [3] but in 83% of those in US and Canadian intensive care units [4].

Some studies [5] have raised concerns about the appearance of a novel severe Kawasaki-like disease in children in association with SARS-CoV-2 infection [6]. Our study also

**Table I Characteristics of Children With COVID-19 (N=41)**

Characteristics	No. (%)
<i>Age group</i>	
<28 d	6 (14.6)
28 d -<1 y	12 (29.3)
1-5 y	15 (36.6)
6-10 y	6 (14.6)
>10 y	2 (4.9)
<i>Symptoms*</i>	
Asymptomatic	11 (26.8)
Mildly symptomatic	14 (34.1)
Respiratory distress	13 (31.7)
Fever	9 (21.0)
Cough	5 (12.1)
Diarrhea	3 (7.3)
Rashes	2 (4.9)
<i>Co-morbidity</i>	25 (60.9)
Malignancy	8 (19.5)
Hematological disorders	5 (2.2)
Congenital heart disease	4 (9.7)
Neurological abnormalities	4 (9.7)
Chronic lung disease	2 (4.9)
Multiple congenital anomalies	2 (4.9)
<i>Respiratory support</i>	
Oxygen	10 (24.4)
High flow nasal cannula	2 (4.9)
Ventilation	2 (4.9)

\*Shock, convulsions and sepsis like illness were present in one child each.

had two such cases with multi-system involvement in the form of an atypical Kawasaki - like presentation, similar to previous Indian reports [7].

In a recent meta-analysis, Meena, *et al.* [8] analyzed data from 27 different studies (4857 patients). They showed that even among the symptomatic COVID-19 cases, severe manifestations are fewer in children. They found that fever and respiratory symptoms are most common, although many children had gastrointestinal manifestations [8].

The study has its share of limitations of small sample size and lack of long term follow up of co-morbidities after discharge. In spite of these shortcomings, this study provides preliminary data on characteristics and outcomes of COVID-19 in children from India.

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## REFERENCES

1. Cai J, Xu J, Lin D, Yang Z, Xu L, Qu Z, *et al.* A case series of

children with 2019 novel coronavirus infection: Clinical and epidemiological features. *Clin Infect Dis.* 2020:ciaa198. [Epub Ahead of print 2020 Feb 28]

2. Garg S, Kim L, Whitaker M, Halloran A, Cummings C, Holstein R, *et al.*; US Centers for disease control and prevention. Hospitalization rates and characteristics of patients hospitalized with laboratory-confirmed coronavirus disease 2019—COVID-NET, 14 states, March 1-30, 2020. Available from: <https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e3.htm>. Accessed June 30, 2020.
3. Shekerdemian LS, Mahmood NR, Wolfe KK, Riggs BJ, Ross CE, McKiernan CA, *et al.* Characteristics and outcomes of children with coronavirus disease 2019 (COVID-19) infection admitted to US and Canadian pediatric intensive care units. *JAMA Pediatr.* 2020;10 [published online ahead of print, 2020 May 11]
4. Lu X, Zhang L, Du H. SARS-CoV-2 infection in children. *N Engl J Med.* 2020;23;382;17.
5. Verdoni L, Mazza A, Gervasoni A, Martelli L, Ruggeri M, Ciuffreda M, *et al.* An outbreak of severe Kawasaki-like disease at the Italian epicentre of the SARS-CoV-2 epidemic: an observational cohort study. *Lancet.* 2020. Available from [https://doi.org/10.1016/S0140-6736\(20\)31103-X](https://doi.org/10.1016/S0140-6736(20)31103-X). Accessed June 30, 2020.
6. Viner RM, Whittaker E. Kawasaki-like disease: Emerging complication during the COVID-19 pandemic. *Lancet.* 2020;395:1741-3.
7. Acharyya BC, Acharyya S, Das D. Novel coronavirus, mimicking Kawasaki disease in an infant. *Indian Pediatr.* 2020;S097475591600184 [E-pub ahead of print].
8. Meena J, Yadav J, Saini L, Yadav A, Kumar J. Clinical features and outcome of SARS-CoV-2 infection in children: A systematic review and meta-analysis. *Indian Pediatr.* 2020;S097475591600203 [E-pub ahead of print].

## Effect of Robot-Assisted Gait Training on Selective Voluntary Motor Control in Ambulatory Children with Cerebral Palsy

This pilot study investigated the efficacy of a four week robot-assisted gait training in twelve children with spastic diparesis. Short-term results and a 3-month follow-up showed statistically significantly increased selective motor control, walking farther distances, gross motor score, and decreased joint contractures.

**Keywords:** Cerebral palsy, Gait, Joint range of motion, Lokomat, Motor control,

disturbances occurring in the fetal or infant brain [1]. Since robot-assisted gait training (RAGT) induces changes in the brain plasticity, it appears promising in improving gross motor control of CP children with cerebral palsy [2-4]. It could be hypothesized that RAGT can affect impaired selective voluntary motor control (SVMC), which is the inability to activate muscles to achieve a voluntary posture or movement [5]. Therefore, this pilot study investigated the efficacy of RAGT as monotherapy on lower limb SVMC, joint range of motion (ROM), walking ability, and gross motor measures.

The study received ethics committee approval from participating institutions. All parents and children provided written informed consent for participation. Twelve children [mean (SD) age, 10.9 (3.3) year; 2 girls] were tested at the baseline, after four weeks of intervention, and at 3-month follow-up. Children with spastic diparesis with toe-walking and/or scissoring patterns aged between 5-17 years were recruited. Only children who could attend the 4-week RAGT program regularly were enrolled. Children were excluded if

Cerebral palsy affects movement and posture, resulting in a limited activity that is attributed to non-progressive