



## The fatal cholera like diarrhoea in coronavirus disease 2019(COVID-19)- a rare case report in toddler

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### ABSTRACT

A 14-month female child came with complain of cholera like watery loose stool 10-12 times and vomiting 6-7 times, 24 hrs before admission. She was in severe dehydration, hypotension, unconscious with no recorded fever during her stay in hospital and no history of contact with COVID-19. Patient was COVID-19 positive Dehydration and hypotension was corrected, metabolic acidosis continued and eventually patient succumb due to multiple organ failure. This case report should arouse us to suspect COVID infection in every acute Gastroenteritis child who may not have any common symptoms as seen in COVID patient, also who have no history of significant contact with COVID positive patient in family. Some people with COVID-19 develop gastrointestinal symptoms either alone or with respiratory symptoms. Recently, researchers at Stanford University found that a third of patients they studied with a mild case of COVID-19 had symptoms affecting the digestive system. Another recent study Trusted Source published by researchers in Beijing found that anywhere from 3 to 79 percent of people with COVID-19 develop gastrointestinal symptoms.



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### INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an illness caused by coronavirus 2 (SARS-CoV-2). Globally, COVID-19 incidence in children is lower than in adult. In India, reports from Tamandu, a highly affected state, also revealed low incidence in paediatrics population (Bialek *et al.*, 2020). Other states

like Maharashtra, Gujarat, Kerala also showed low incidence in pediatric population as compared with adult (Lamture *et al.*, 2020b).

Cholera is caused by *Vibrio cholerae*, a Gram-negative bacterium caused by ingestion of food or water contaminated with *vibrio cholerae*. More incidence of mortality due to cholera is seen under five years of age (Colombara *et al.*, 2013). Cholera like illness includes *Vibrio Cholera* and several other enterotoxigenic bacteria such as the enterotoxigenic *Escherichia coli*, *Shigella*, *Salmonella* (Lu *et al.*, 2020).

Many studies on the adult population have even reported a positive stool polymerase chain reaction (PCR) for COVID, while at the same time the respiratory sample was negative in as many as more than 80% of patients. This phenomenon has also been observed in children (Lu *et al.*, 2020; Rajesh and Lamture, 2019; Xu *et al.*, 2020).

Diarrheal stool has higher bicarbonate concentra-

tion than plasma so metabolic acidosis can occur in severe dehydration due to volume depletion. This is not disease but biochemical abnormalities which can be studied with arterial blood gas analysis (ABG) (Cheung *et al.*, 2020).

We thus report a fatal case of 14-month female child having cholera like diarrhoea with severe dehydration who was positive for COVID 19 and who succumb to metabolic acidosis with multiple organ failure during treatment.

### Case presentation

14-month female child came with complain of cholera like watery loose stool 10-12 times and vomiting 6-7 times, 24 hrs before admission. Patient had no history of fever, cough, no history of blood in stool or convulsion. Patient was in severe dehydration with no urine output since 24 hrs of admission. Child's weight was 12 kg at admission.

On Examination patient was found unconscious with temperature of 37.2°C and showed signs of severe dehydration in which tenting skin turgor, dry lips, sunken eyes were seen, heart rate was 160 beats /min, thready pulse, Capillary refill time was prolonged, Blood pressure was 72/50mmHg, respiratory rate was 60/min, oxygen saturation by pulse oximetry was 97 percent. Systemic examination was normal except for tachycardia, no hepatosplenomegaly. Abdomen and thorax radiograph were normal. There was no sign of meningeal irritation. Immediately patient was transferred to paediatric intensive care unit (PICU) and oxygen of 2litre /min by nasal prongs was started, 20ml/kg 0.9percent of sodium chloride bolus was pushed and repeated two times at interval of 10-15 minutes. After bolus of 0.9 percent of sodium chloride further fluid administration was given as per world health organisation (World Health Organization, 2008) for severe dehydration where Ringer lactate 30ml/kg in less than 30min and 70ml/kg in 2 and half hr was given. Catheter was introduced to measure urine output and baseline investigation, electrolytes, stool for hanging method with culture and sensitivity was send. Child passed urine after 2 hrs of admission. Blood pressure was normal after 4hr. Maintenance fluid was started to compensate for ongoing losses. In spite of maintaining vitals, Patient still did not regain consciousness.

Laboratory test shows haemoglobin 12.8g/dl, white blood cells 18970/mm<sup>3</sup>, platelets 108800/mm<sup>3</sup>, CRP was positive. Stool for hanging method was negative, blood and urine culture was negative.

First report after 8hr of admission of Arterial blood gas analysis(ABG) showed metabolic acidosis with-

out hypoxaemia along with deranged renal functions (pH-6.879, Pco<sub>2</sub>-13.9mmHg, Po<sub>2</sub> 135mmHg. Serum urea 72mg/dl, S .potassium 3.5 mmol/l, S.sodium-149mmol/l, S. creatinine-2.9mg/dl).

Inspite of adequate fluids, electrolytes and sodium bicarbonate deficit replacement, repeated ABG did not show recovery.(pH-6.867, Pco<sub>2</sub> 11.8mmHg, Pco<sub>2</sub> 134 mmHg, HCO<sub>3</sub> 4.9mmol/l.) Urine output was 56ml within 24hr.

Patient neurological status remained same even after continued treatment of 48 hours. Despite the initial correction of his electrolyte abnormalities, bicarbonate level was on lower side. Urine output started to decrease.

We did not suspect about COVID-19 disease in this patient earlier but it was routine protocol to send samples of every admitted patient for RT-PCR. RT-PCR report was positive for COVID19. Patient was thus transferred to COVID-19 unit and treatment continued.

After 72 hr of admission, patients condition did not improve, was unconscious with low urine output. Her general condition further deteriorated and baby succumb to multiple organ failure.

### Discussion

The most common symptoms in COVID-19\_\_0 19 patient is fever, cough, nausea/vomiting Diarrhoea is also included in symptoms of COVID-19 but its frequency is rare. In present case report loose stool and vomiting without fever was the only presentation.

Study done by Yang *et al.* (2021) and Zhang *et al.* (2020) among critically ill patient reported that common symptoms were fever, cough and breathlessness. These symptoms were totally absent in present case.

Study done by Akobeng *et al.* (2020) showed that beside nausea, vomiting and diarrhoea, other symptoms include abdominal pain, anorexia/feeding difficulties. In present case child was in unconscious state and therefore beside vomiting and loose water stool we did not observe other above symptoms.

Source of infection is definite for spread of Covid19 and this source is through parents or relatives. In our case there was no significant history of contact with COVID positive relatives. Mother and grandfather who came with patient were asymptomatic and they both were investigated for RT-PCR which was negative. Father of child died one month back before patient was admitted and according to relatives, he had some cardiovascular consequences. Cause remains unknown. In one study done by Fang and Luo (2020) data were collected from nine infants

who got infected and were admitted to hospitals in China. It was revealed that infected family members living together could be a source for transmission, as these small babies cannot wear masks. In Korea, [Rothe et al. \(2020\)](#) studied in one case report of first pediatric case involved a 10-year-old female child with milder symptoms and a history of close contact with an infected family member.

The blood gas analysis of the present case demonstrates metabolic acidosis. Explanation for this could be that the toddler had been in severe dehydration with hypotension quite some time before admission. [Rood et al. \(2020\)](#) in their studies showed metabolic acidosis to be significantly more common in SARS-CoV-2-positive than SARS-CoV-2-negative patients which is similar to present case.

There was study where correlation was done of COVID-19 with less than 1 year of age. [Chen et al. \(2020\)](#) reported a case series of 2135 paediatric patients with confirmed and suspected coronavirus, infants (<1 year) were noted to be particularly vulnerable ([Rinait et al., 2020](#); [Lamtüre et al., 2020a, 2017](#)). This does coincide with present case ([Ahmad and Pise, 2020](#); [Monaco, 2020](#); [Garg et al., 2020](#); [Jha et al., 2020](#)).

## CONCLUSION

This case report should arouse us to suspect COVID infection in every acute Gastroenteritis child who may not have any common symptoms as seen in COVID patient, also who have no history of significant contact with COVID positive patient in family. To address the non-COVID and NCD (Non-Communicable Diseases) burden and the public's safety concern, adopting innovative ways are critical.

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## Conflict of Interest

The authors declare that there is no conflict of interest for this study.

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