International Journal of Contemporary Pediatrics
Inayath L et al. Int J Contemp Pediatr. 2022 Mar;9(3):303-307
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20220461

Case Report

Intussusception as gastrointestinal manifestation in COVID-19 patients in paediatric age group

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Received: 01 January 2022
Revised: 30 January 2022
Accepted: 02 February 2022

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ABSTRACT

As knowledge of the varied manifestations of coronavirus disease 2019 (COVID-19) infection expands, symptoms such as vomiting and diarrhoea are noted as the main gastrointestinal symptoms in these patients, especially paediatric age group. With the predictions of third wave of COVID approaching soon and likely to affect paediatric population, especially in a developing country like ours, it is important to know the various presentations and managements of COVID 19. Intussusception is a common cause of bowel obstruction in the paediatric age group. Preceding viral illness and fever have been established as its underlying cause. In this report, we are reporting 2 cases of COVID 19 infection presenting as intussusception. Till June 2021, only 10 such cases have been reported worldwide.

Keywords: COVID-19, SARS-COV-2, Intussusception, Paediatric population

INTRODUCTION

Coronavirus disease 2019 (COVID 19) infection in children, especially infants is underreported as patients are usually asymptomatic or mildly symptomatic and also, as testing is very less amongst them.[1] Gastrointestinal manifestations of COVID 19, such as vomiting, nausea, abdominal pain has increasingly been recognized as common manifestations in children.[2] Chinese and Italian studies have shown that approximately 10% children present with GI symptoms.

Intussusception is a common cause of small bowel obstruction in the paediatric age group.[3,4] Highest incidence is noted between 6-12 months during infancy. Preceding viral illness is an established etiology and diurnal variations in the frequency corroborates with the same. Local immune activation and mesenteric adenitis predispose peristaltic activity to "telescope" a proximal bowel segment into the distal bowel lumen.[5-8] Since the COVID-19 incidence has been rising globally, several considerations are getting validated regarding the disease course in paediatric age group. Some case reports of intussusception as the presenting symptom are noted recently in literature, however they are scarce to construct a factual ground for the association between the two. Adding to it we present 2 cases of infants who presented to us with intussusception and COVID-19 infection.

CASE REPORT

A 10 months male baby, 9.6 kg, weaned off breast feeds at 6 months of age, had complaints of fever and refusal to feed for 4 days, with passage of blood in stool with mucoid stool intermittently for 2 days and vomiting for 1 day. On examination, the abdomen was soft, non-tender, no palpable lump. Per rectal examination revealed blood-tinged mucoid stools (red currant jelly stools). Patient was admitted and Ryle's tube was inserted, aspirate was bilious. Ultrasonography was done which was suggestive of an ileocolic intussusception up to the hepatic flexure in right lumbar and hypochondriac region. X-ray erect

abdomen showed dilated small bowel loops, without fluid levels. An RTPCR oropharyngeal swab was sent on admission. Blood investigations revealed a low haemoglobin of 8.4 g/dl, total leukocyte count- 10,400 and a normal platelet count. Patient was kept nil by mouth and hydrated with IV fluids over 4 hours and started on IV antibiotics (cefotaxime and metronidazole).

Figure 1: Erect x-ray abdomen.

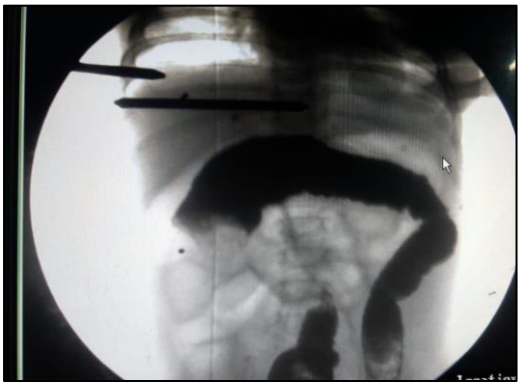

Figure 2: C arm guided image showing claw sign in hepatic flexure.

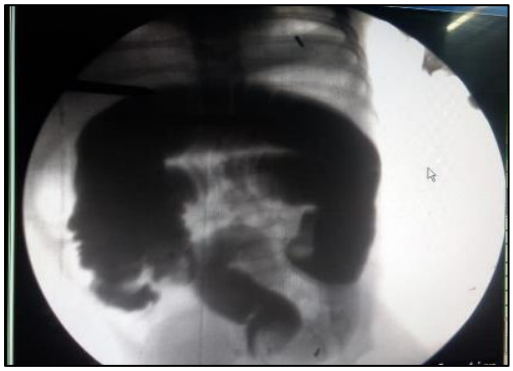

Figure 3: Barium in small bowel following reduction.

Patient was taken up for C arm guided hydrostatic reduction after adequate hydration. Barium was used as a contrast medium. Claw sign was identified at mid transverse colon, and gradual reduction of intussusception was done using sustained pressure till contrast passed into terminal ileum. Hydration was continued during the procedure. Sedation was achieved with intravenous midazolam and Ryle's tube was kept on continuous drainage. the contrast instilled was evacuated at the end of the procedure accompanied by the passage of stool. After 6 hours of assessment, child was comfortable, abdomen was soft and had passes stool twice (formed, yellow coloured) and RT aspirate was non bilious. Patient was started on liquid diet and tolerated it well after which full feeds were resumed. Fever persisted after reduction and the child tested positive for COVID-19 on RT PCR. Patient was started on chloroquine, azithromycin and oseltamivir according to weight. Medications were continued for 5 days. Child was afebrile on the 3rd day post intussusception reduction. A repeat oro-pharyngeal swab was sent on the 5th day post reduction which tested positive for COVID-19 on RT PCR. Child was continued for observation after 5 days of medication and was afebrile. As per change in ICMR guidelines for Covid patients, child was discharged after being afebrile for 10 days (no repeat swab) and home quarantine for 14 days. No medications were given at discharge and dietary counselling was done.

6 months old baby, weight 8 kg, on breastfeeding, presented with complaints of irritability and refusal of feeds for 1 day with passage of red currant jelly stools. On examination, abdomen was soft, lump was palpable in the right hypochondrium. Per rectal examination revealed blood-streaked mucoid stools. Erect x-ray abdomen (Figure 1) showed few airs fluid levels. USG abdomen showed features suggestive of colo-colic intussusception. Patient was admitted and kept NBM and hydrated with IV fluids for 5 hours and started on IV antibiotics (cefotaxime and metrogyl). After adequate hydration, patient was taken up for C arm guided hydrostatic reduction. Claw sign was noted in the hepatic flexure (Figure 2) and gradual reduction of intussusception was done under sustained pressure until contrast was seen in the ileum (Figure 3). Hydration was continued during the procedure and contrast was evacuated at the end of the procedure. Six hours post procedure, patient was comfortable, abdomen was soft and patient had passed stools once, which was yellow in colour and normal in consistency. Patient had undergone a nasopharyngeal swab at the time of admission according to hospital protocol which was found to be positive. Patient was transferred to COVID hospital as per hospital protocol for further management. Patient was kept at COVID hospital for a week and given medications and swab repeated tested negative and patient was discharged subsequently.

Both these patients are on follow up and are doing well, with negative COVID RTPCR reports.

DISCUSSION

COVID 19 is caused by the novel 2019 coronavirus strain SARS-CoV-2, that emerged in late 2019 and has been subsequently declared a global pandemic by the World Health Organization (WHO) on March 2, 2020.[1-3]

Table 1: Overview of reported cases of intussusception and SARS COV-2 infection worldwide (till June 2021).

Presentation	Cai et al, Wuhan, China	Rajalakshmi et al,Chennai, India	Moazzam et al, Karachi, Pakistan	Martinez-Castanoet al, Espana	Makrinioti et al, Londres, UK	Buzuaye-Ekwuyasi et al, Galveston, USA	Mercado et al, Saltillo, Mexico 1	Mercado et al, Saltillo, Mexico 2	Jackson et al, New York, USA	Athamnah et al	Our study 1 Mumbai, India	Our study 2 Mumbai, India
Age	10 months	8 months	4 months	6 months	10 months	9 months	8 months	7 months	25 years	2 and ½ months	10 months	6 months
Symptom evolution	Initially intussusception symptoms, then SARS CoV- 2 positive test	Initially intussusception symptoms, then SARS CoV- 2 positive test	Initially intussusception symptoms, then SARS CoV- 2 positive test	Initially intussusception symptoms, then SARS CoV- 2 positive test	Initially SARS CoV-2 positive test hen intussusception symptoms	Initially SARS CoV-2 positive test hen intussusception symptoms	Initially SARS CoV-2 positive test hen intussusception symptoms	Initially intussusception symptoms, then SARS CoV- 2 positive test	Initially SARS CoV-2 positive test hen intussusception symptoms	Initially intussusception symptoms, then SARS CoV- 2 positive test	Initially intussusception symptoms, then SARS CoV- 2 positive test	Initially intussusception symptoms, then SARS CoV- 2 positive test
Fever	Detected upon arrival to the hospital	2 days before	No	No	2 weeks before	1 day before	2 days before	Detected upon arrival to the hospital	1 week prior	10 days prior	4 days before	No
Respiratory symptoms	No	No	1 week before	No	2 weeks before	4 days before	No	1 week before	1 week before	10 days prior	No	No
Type of intussusception	Not specified	Ileocolic	Ileocolic	Ileocaecal	Not specified	Ileocolic	Ileocolic	Ileocolic	Ileocolic	Ileocolic	Ileocolic	Colo-colic
Treatment given	Air enema	Air enema	Air enema	Hydrostatic enema	Failed air enema, surgical reduction+ Ladds procedure	Hydrostatic enema	Surgical reduction	Surgical reduction	Right hemicolectomy	Air enema	Hydrostatic reduction	Hydrostatic reduction
Outcome	Death	Recovered	Recovered	Recovered	Recovered	Recovered	Recovered	Recovered	Recovered	Recovered	Recovered	Recovered

As of July 2021, the number of covid cases in India are around 3 crores with around 4 lakh deaths.[4]

Asper the data from the Indian council of medical research (ICMR) on the Dash board of National centre for Disease control, 11.89% of covid 19 cases in India are under the age group of children and adolescents, as compared to the USA where it has been reported that 13% of all cases of COVID 19 were among children.[5,6] Intussusception is one of the commonest abdominal emergencies in children between 3 months to 3 years.[7,8] Viral infections are the most common etiological factors in intussusception. Although the pathogenesis of intussusception related to the SARS-CoV-2 is not fully understood, it can be inferred that it involves alteration in peristaltic intestinal movement that allows intussusception.[2] SARS-CoV-2 RNA has been identified in anal/ rectal swabs and stool specimens even after the clearance of the virus in the upper respiratory tract. These corroborate the GI involvement in COVID-19.[9,10]

Once infected by SARS-CoV-2, the gastrointestinal epithelium has an increased permeability to pathogens in response to which Peyer's patches in the ileum undergo hypertrophy and cause mucosal prolapse favoring a lead point of intussusception.[3] Angiotensin-converting enzyme 2 (ACE2) receptor is the functional receptor for SARSCoV-2.[4,11]

The gold standard treatment for intussusception is non-surgical reduction of intussusception by hydrostatic or pneumatic reduction.[5,12,13,15] In our report, both cases were reduced by hydrostatic reduction and both patients recovered completely post procedure without any surgical intervention. Hence, it is favorable to treat COVID 19 elated intussusception by non-surgical reduction.

On review of English literature on COVID 19 with intussusception till date, we have found only 10 cases reported worldwide, 9 in children, ages ranging from 4-9 months, and 1 in adult, aged 25 years. Of the 9 paediatric patients, only 3 required surgical reduction and 6 recovered completely post hydrostatic or pneumatic image guided reduction. Only 1 death was reported, as in the first reported case from Wuhan, China.[10] With the prediction of third wave approaching soon and it being likely to affect the paediatric population more, it is important for health professional to be vigilant in diagnosing COVID 19 patients with surgical abdominal conditions without creating a situation of panic. As seen by the analysis in Table 1, it is evident that patients with COVID 19 related intussusception can be managed with image guided non-surgical reduction and surgical reduction if required Majority of these patients are doing well on follow up post COVID 19 recoveries.

CONCLUSION

With the rise of COVID in children with the second wave in India, it has become more important to diagnosis covid in paediatric patients early to prevent morbidity and mortality. With the contribution of more cases to both disease, future research may help to provide further information to understand if intussusception is a manifestation of COVID 19 or whether it is a complication of the disease. With this report, it may also be concluded that patients presenting with COVID 19 intussusception may be completely managed with non-surgical reduction alone.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Inayath L, Daginawala T, Vageriya N, Mane SB, Athawale H. Intussusception as gastrointestinal manifestation in COVID-19 patients in paediatric age group. Int J Contemp Pediatr 2022;9:303-7.