

CASE REPORT

UNUSUAL PRESENTATION OF COVID-19 AS INTUSSUSCEPTION

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Abstract: *COVID-19, caused by novel coronavirus SARS-CoV-2, presents with varied clinical manifestations in pediatric age group. Gastrointestinal (GI) symptoms with/without respiratory manifestations are increasingly reported in children. This infant presented with features of intussusception and fever. Further evaluation showed RT-PCR positivity for COVID-19 in the nasopharyngeal swab. Child did not develop any other respiratory manifestations or features of hyperinflammatory syndrome. It is extremely difficult to distinguish if this a manifestation of COVID-19 or an associated illness.*

Keywords: *Intussusception, COVID-19, SARS-CoV-2, Children.*

Intussusception is one of the commonest surgical emergencies encountered in infants between 6-12 months of age, usually following gastrointestinal infections or introduction of complementary feeds. Here, we report an unusual presentation of COVID-19 as intussusception.

Case Report

An 8 months old male infant, presented with low-grade fever for 2 days, 6-7 episodes of non-bilious, non-projectile vomiting and 2 episodes of blood-stained stools for 1 day. He was a well thriving and developmentally normal child. He has been on breast feeds and complementary feeding was started at 6 months of age. There was a history of

introduction of new weaning food in the past week. There was no irritability or crying spells suggestive of abdominal pain. He had no respiratory symptoms, rashes or ear discharge. There was no history of contact with COVID-19 patients or any history of recent travel or new visitor in the home. It was decided to send a nasopharyngeal swab for RT-PCR for SARS-CoV-2, on third day of illness considering the fact that gastrointestinal manifestations are one of the presentations in children with COVID-19, as seen in studies published from Wuhan Province, China.

On examination, he was lethargic, febrile (99.4°F), with HR of 120/min, RR of 45/min, and SpO₂-98%. Signs of some dehydration such as sunken eyes and listlessness were present. Examination of the abdomen revealed an ill-defined mass palpable in the abdomen, with normal bowel sounds and no distension. The stools were of red currant jelly type. Cardiovascular, respiratory and nervous system examination showed no significant abnormality.

Intussusception was suspected and the child was started on intravenous fluid and other supportive management. Emergency ultrasound was done which confirmed the ileocolic intussusception in the subxiphoid region (Fig.1). Investigations revealed a Hb of 10.5 g/dL, and hematocrit of 32.7%, total count was 7590 cells/mm³ with polymorphic predominance of 72% and lymphocytes of 23%, platelet count was 3.04 lakhs/mm.³ Renal function, electrolytes and coagulation profile were within normal limits. Pediatric surgeon's opinion was obtained and emergency pneumatic reduction was planned.

Child underwent pneumatic reduction (Fig.2) of ileocolic intussusception at the level of transverse colon and the same was reduced in a single attempt. Child tolerated the procedure well. Dehydration was corrected, follow up screening ultrasound showed no recurrence, fever and vomiting settled, slowly feeds were initiated. However, surprisingly, the nasopharyngeal RT-PCR sample sent for SARS - CoV- 2 came as positive, suggesting that intussusception could be a manifestation of COVID -19 in young infants. There were no recurrence of symptoms, fever or respiratory manifestations, hence no other treatment was initiated. Parents were tested for COVID-19 by nasopharyngeal swab RT-PCR on day 5 of

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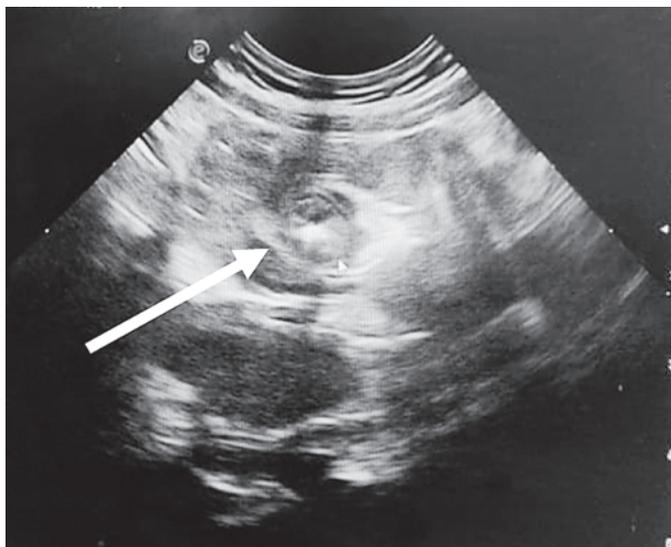


Fig.1. Ultrasound showing intussusception

exposure and were negative. Child was stable with no deterioration during 5 days of hospital stay and was discharged and advised home isolation. Further procedures of isolation, notification, quarantining and screening of contacts were initiated as per government protocol. Follow up telephonic consultation was done, child remained well and repeat RT-PCR was done and found to be negative.

Discussion

Evidence regarding pediatric COVID-19 is still evolving. During the ongoing pandemic, COVID-19 must be considered in patients with increased inflammatory variables and abdominal symptoms.¹ The most common GI manifestations include diarrhea, vomiting and acute abdominal pain. A positive contact history is elicitable in majority of the cases.²

Both respiratory (cough, rhinorrhea, sore throat, tachypnea) and GI (diarrhea, vomiting) manifestations along with fever have been described in children with COVID-19.^{3,4,5} However, Cai, et al., in their report on 10 pediatric patients, observed respiratory manifestations (cough, sore throat, stuffy nose, sneezing, rhinorrhea), while none had diarrhea or dyspnea.⁶ In a meta-analysis of 266 pediatric and 6064 adult COVID-19 patients, GI symptoms including diarrhea, nausea or vomiting were observed similarly in both groups. It was observed that 10% of pediatric patients (95% CI 4-19; range 3-23; $I^2=97%$) presented with gastrointestinal symptoms alone without respiratory features.⁷

Genome sequences showed that SARS-CoV-2 expresses the spike (S) glycoproteins that could bind with high affinity to the entry receptor angiotensin converting

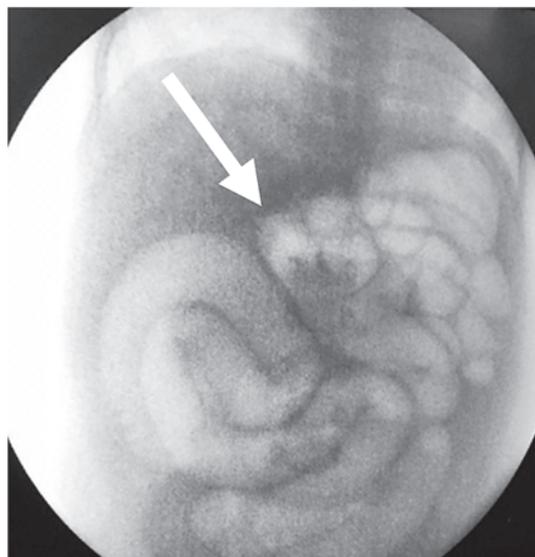


Fig.2. Pneumatic reduction under C-Arm

enzyme 2 (ACE2) to enter human cell. ACE2 is highly expressed in type II alveolar cells in the lungs and in gastrointestinal tract, especially in the small and large intestines. Staining of viral nucleocapsid protein has been visualized in cytoplasm of gastric, duodenal, and rectal epithelium. The presence of SARS-CoV-2 RNA in anal/rectal swabs and stool specimens even after the clearance of the virus in the upper respiratory tract and expression of the viral receptor ACE2 in gastrointestinal epithelial cells substantiates the GI involvement in COVID-19.⁸ In fact, the first ever severe case reported in pediatrics presented with GI manifestations progressing to acute respiratory distress syndrome.⁹

It has been observed that there is an increased GI wall permeability to foreign pathogens once infected by the SARS-CoV-2 virus. The radiologic manifestation of these findings are distended fluid filled small and large bowel loops with mural post-contrast enhancement with surrounding stranding on CT and ileus pattern on abdominal radiographs.¹⁰ It is well known that GI infection leading to swollen Peyer's patches in terminal ileum is the cause for mucosal prolapse of ileum into colon resulting in intussusception. Thus, the demonstrated GI inflammation and infection by SARS-CoV-2 makes us consider intussusception as a possible manifestation of COVID-19.

Literature on COVID-19 presenting as intussusception are scarce. Lu, et al have reported 10 months old infant with intussusception, who progressed to multiorgan dysfunction and succumbed in 4 weeks.¹¹ However, mortality in COVID-19 children is relatively lower than adults. Most routine blood examinations were normal, and C reactive protein levels were normal or transiently

increased, except in cytokine storm syndrome.^{9,12} These lab findings were consistent with the present case.

Our index child presented here did not progress to respiratory involvement or cytokine storm syndrome or multiorgan dysfunction and hence we did not proceed to do transaminases, ferritin, D-dimer assay and other inflammatory markers. Rectal swab was not done as well, as the child recovered clinically. None of the other family members/contacts developed any symptoms and their screening for SARS CoV-2 was negative, at the time of hospitalization of the child and up to two weeks after discharge. There are not many standardized studies regarding data on the sensitivity and specificity of RT-PCR for COVID-19. However, in a study providing invitro data with minimal clinical information have shown high specificity and moderate sensitivity (63-78%)¹³. As per American Society for Microbiology COVID-19 International Summit report, a negative test does not exclude the possibility of infection. A positive test is most likely correct, although stray viral RNA that cross contaminates from an infected laboratory worker (while the specimen is being collected or tested) could result in a falsely positive result.¹⁴

In conclusion, this case report shows the variability in the clinical presentation of COVID-19. Gastrointestinal manifestations should raise the suspicion of SARS-CoV-2 and authors would like to emphasize the need for increased testing to identify the causal association in children. In this index child, intussusception may be a GI manifestation of COVID -19, due mucosal inflammatory changes or may be an unrelated problem. Though clinical syndrome is still in an evolving stage, it is worthwhile to evaluate all children with acute abdomen for COVID-19 and it is equally important that surgery and radiology team should take proper preventive measures including hand hygiene and wearing PPE.

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