Global Pediatric Health
Volume 8: 1–3
© The Author(s) 2021
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/2333794X211012978
journals.sagepub.com/home/gph
SAGE

Novel Coronavirus Infection in an Infant with Intussusception

Juan Felipe Osorno, MD[1,2], Manuel Giraldo, MD[1,2], Andrés Felipe Marín, MD[1,2], and Luis Mauricio Figueroa, MD[1,2]

Abstract

Background. Intussusception is the leading cause of intestinal obstruction in children under 4 years of age. Viral infections are the associated etiology in most cases, SARS-CoV-2 thereby being a plausible cause, although only 5 cases have been reported worldwide with both entities. We report a case of an infant with Intussusception and covid-19, its clinical approach, and surgical outcomes, throughout a retrospective review of electronic medical chart history with the authorization of the Ethics Committee on research of the "Hospital Universitario del Valle" and endorsement for publication. *Case report*. It is an 8-month-old male patient with 72 hours of fever 100.4°F; bloody diarrheal stools; episodic abdominal pain; signs of peritoneal irritation and sensation of a mass in the right quadrants of the abdomen. Intussusception confirmed by ultrasound led to surgery, with SARS-CoV-2 infection as a possible differential diagnosis. Surgical findings reported intussusception of the transverse colon, peritonitis, and intestinal ischemia of distal ileum and right colon, for which intestinal resection with consequent ileostomy and a mucous fistula was performed. Positive SARS-CoV-2 RT-PCR test result was confirmed. Pediatric intensive care unit support took place at the initial postoperative phase, and eventual intestinal, with enteral feeding tolerance at the fourth day, and respiratory improvement came off within the first week of medical and surgical treatment. *Conclusion*. Gastrointestinal symptoms are often the leading manifestations of COVID-19 in children, which can be isolated or as a common sign of a concomitant pathology such as intussusception, and they could also have a causal relationship.

Keywords

intussusception, intestinal obstruction, ischemia, peritonitis, COVID-19

Received March 22, 2021. Received revised April 25, 2021. Accepted for publication April 3, 2021.

Introduction

Intussusception with an incidence rate of 2.5/1000 live births, as the leading cause of intestinal obstruction in children under 4 years of age, has its peak of incidence between 4- and 10-months old infants, and concerning mortality due to this pathology ranges between 0.2% and 9% according to the region.[1,2] Viral infections are the associated etiology in most cases.[3] Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread to many countries, resulting in a global public health threat. Recent reports on pediatric cases of COVID-19 suggest that children usually have mild illnesses,[4,5] with gastrointestinal symptoms such as abdominal pain, vomiting, and diarrhea in 18% of children.[6,7] Since the emergence of COVID-19 worldwide, from December 2,019 to August 2,020, only 5 cases have been reported in the world of intussusception and COVID-19.

Case Presentation

A case of an 8-month-old male patient, without preexisting conditions, presents to the pediatric urgency care bay with 72 hours lasting symptoms of acute onset of

[1]Hospital Universitario del Valle—Evaristo García, Cali, Colombia
[2]Universidad del Valle, Cali, Colombia

Corresponding Author:
Juan Felipe Osorno, Sección de cirugía pediátrica, Escuela de Medicina, Universidad del Valle; Department of Pediatric Surgery, "Hospital Universitario del Valle—Evaristo Garcia"—Universidad del Valle, Cl. 5 #36-08, Cali, Valle del Cauca 760042, Colombia.
Email: juan.osorno@correounivalle.edu.co

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (https://creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).

fever 100.4°F, bloody diarrheal stools, and episodic abdominal pain. Physical examination of admission with signs of peritoneal irritation and sensation of a mass in the right quadrants of the abdomen. It was considered a suspected case of intussusception. He was hospitalized in the emergency respiratory isolation area on the account of suspicion of SARS-CoV-2 infection. Abdominal ultrasound confirmed the diagnosis of intussusception and the patient was taken to exploratory laparotomy with all biosecurity measures according to the protocol for patients with a likelihood of COVID-19. Surgical findings of intussusception were given by the prolapse, an intestinal head invagination of the transverse colon, and peritoneal fluid in 4 quadrants. At the time of the intestinal reduction, ischemia of 20 cm of distal ileum and right colon was identified, unviable small and large bowel mentioned were resected, and an ileostomy was made for fecal diversion along with a mucous fistula. During the immediate postoperative period, a positive SARS-CoV-2 RT-PCR test result was obtained. He was hospitalized in the pediatric intensive care unit, with an initial irregular evolution with the persistence of metabolic acidosis. The ventilatory assistance successfully steps down after the first 48 hours, and the intestinal ileus resolved up to the fourth postsurgical day, leading to adequate tolerance to enteral nutrition and respiratory evolution.

All of the data of the clinical case presented, from the admission to the hospital discharge, was carried out through a retrospective review of the electronic medical chart history with the authorization of the Ethics Committee on research of the "Hospital Universitario del Valle" and endorsement for publication.

Discussion

It is well known that gastrointestinal symptoms and signs are the second in order of prevalent manifestations in children with COVID-19, which is of great importance to the pediatric surgeon.[4] Gastrointestinal symptoms such as diarrhea, and vomiting might even be the initial presentation of the infection, even before fever and respiratory symptoms, relying on the fact that a COVID-19's receptor such as angiotensin-converting enzyme 2 is present in the epithelial cells of the gastrointestinal as well as it is on the lungs,[8,9] accounting for that pathologic-clinical scenario, there is a report of a multicenter study, by Pan et al[10] in China, with over a 100 patients that presented to the hospital with gastrointestinal symptoms, corresponding to half of the patients included.[10]

Although a causal relationship of COVID-19 has yet to be established as an etiological intestinal invagination factor for children, this is an element to be considered at the time of the clinical assessment. In the current case, the clinical presentation was severe, and postoperative initial evolution was troublesome due to persistent metabolic acidosis despite adequate resuscitation. This is a common situation in patients with COVID-19 with a coexisting surgical entity, and despite the short time of the onset of this pandemic disease, there are current studies that support this.[11,12]

Given the fact that gastrointestinal symptoms can be a hallmark both of COVID-19 in children and surgical pathological entities, all symptoms and signs regarding the gastrointestinal system should be acknowledged at the time being. Further research needs to take place to measure and establish a definitive causal link between Intussusception and COVID-19.

Author Contributions

All authors participated in substantial contributions to the conception and design of the manuscript, acquisition, analysis and interpretation of the data; the drafting of the manuscript and critical review of important intellectual content; final approval of the version submitted to review; and the assumption of responsibility for all aspects of the manuscript, to ensure that matters relating to the accuracy or completeness of any part thereof are properly investigated and resolved.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Juan Felipe Osorno https://orcid.org/0000-0003-3033-0783

References

1. Jiang J, Jiang B, Parashar U, Nguyen T, Bines J, Patel MM. Childhood Intussusception: A Literature Review. *PLoS One* 2013;8(7):e68482.
2. Gluckman S, Karpelowsky J, Webster AC, McGee RG. Management for intussusception in children. *Cochrane Database Syst Rev* 2017;6(6):CD006476.
3. Martínez-Castaño I, Calabuig-Barbero E, Gonzálvez-Piñera J, López-Ayala JM. COVID-19 infection is a diagnostic challenge in infants with ileocecal intussusception. *Pediatr Emerg Care* 2020;36(6):e368.
4. Lu X, Zhang L, Du H, Zhang J, Li YY, Qu J, et al. SARS-CoV-2 infection in children. *N Engl J Med* 2020; 382(17): 1663-1665.

5. Bialek S, Boundy E, Bowen V, Chow N, Cohn A, et al. Severe outcomes among patients with coronavirus disease 2019 (COVID-19) — United States, February 12–March 16, 2020. *MMWR Morb Mortal Wkly Rep* 2020;69(12): 343-346.
6. Han MS, Choi EH, Chang SH, Jin B-L, Lee EJ, Kim BN, et al. Clinical characteristics and viral RNA detection in children with coronavirus disease 2019 in the Republic of Korea. *JAMA Pediatr* 2020;175(1):73-80.
7. Cai X, Ma Y, Li S, Chen Y, Rong Z, Li W. Clinical characteristics of 5 COVID-19 cases with non-respiratory symptoms as the first manifestation in children. *Front Pediatr* 2020;8:258.
8. Moazzam Z, Salim A, Ashraf A, Jehan F, Arshad M. Intussusception in an infant as a manifestation of COVID-19. *J Pediatr Surg Case Rep* 2020;59:101533.
9. Mandal A, Konala VM, Adapa S, Naramala S, Gayam V. Gastrointestinal manifestations in COVID-19 infection and its practical applications. *Cureus* 2020;12(6):e8750.
10. Pan L, Mu M, Yang P, Sun Y, Wang R, Yan J, et al. Clinical characteristics of COVID-19 patients with digestive symptoms in Hubei, China. *Am J Gastroenterol* 2020; 115(5):766-773.
11. Nepogodiev D, Bhangu A, Glasbey JC, Li E, Omar OM, Simoes JF, et al. Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study. *Lancet* 2020;396(10243):27-38.
12. Doglietto F, Vezzoli M, Gheza F, Lussardi GL, Domenicucci M, Vecchiarelli L, et al. Factors associated with surgical mortality and complications among patients with and without coronavirus disease 2019 (COVID-19) in Italy. *JAMA Surg* 2020;155(8):691.