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Global Reports of Intussusception in Infants With SARS-CoV-2 Infection

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Abstract: Idiopathic intussusception is a common cause of bowel obstruction in infants, presenting as refractory abdominal pain or mass, vomiting, lethargy, and currant jelly stool. Coronavirus disease 2019 is not well characterized in children, especially infants, but symptoms in children have included nausea, vomiting, diarrhea, and abdominal pain. From January to July 2020, intussusception was reported in 5 infants 4–10 months of age who had laboratory-confirmed SARS-CoV-2 infection. All 5 infants presented with currant jelly stool and at least 1 other abdominal symptom, and none presented with respiratory symptoms. Four infants recovered but the fifth infant progressed to a critical illness and death. While an association between SARS-CoV-2 infection and intussusception has not been established, infants with symptoms consistent with intussusception may warrant testing for viral pathogens, including SARS-CoV-2, especially if presenting to healthcare with a history of SARS-CoV-2 exposure or with signs and symptoms of COVID-19. More investigation is needed to determine whether intussusception is part of the clinical spectrum of COVID-19 in infants or a coincidental finding among infants with SARS-CoV-2 infection.

Key Words: intussusception, SARS-CoV-2, COVID-19, infant

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Coronavirus disease 2019 (COVID-19) has been disproportionately reported among adults; COVID-19 in children, especially infants, may be underreported due to asymptomatic or mild presentation.[1] Gastrointestinal complaints, including nausea, vomiting, diarrhea, and abdominal pain, are increasingly recognized as common symptoms of COVID-19 in children.[1] Characterization of the breadth of COVID-19 signs and symptoms in children and infants is limited.

Idiopathic intussusception is a common cause of bowel obstruction in infants <1 year of age.[2] Viral infection is cited as a common cause of intussusception. Local immune activation and mesenteric adenitis predispose peristaltic activity to "telescope" a proximal bowel segment into the distal bowel lumen.[3] Intussusception most commonly presents as refractory abdominal pain or mass, vomiting, and bloody stool (ie, "currant jelly stool"), lethargy, and altered consciousness.[4] Diagnosis is made by abdominal imaging using ultrasound or computerized tomography. An air or barium enema can be diagnostic and therapeutic, although surgery might be necessary.[4]

METHODS

From January to July 2020, intussusception was reported in 5 infants 4–10 months of age (median, 8 months of age) with laboratory-confirmed SARS-CoV-2 infection.[2,3,5,6] Reported cases were identified through a literature search for SARS-CoV-2 and intussusception or abdominal pain (Table 1).

RESULTS

Five infants with intussusception and laboratory-confirmed SARS-CoV-2 infection presented with currant jelly stool and at least 1 other abdominal symptom. Reduction was attempted upon admission of all infants, which was successful in 3 infants.[3,5,6] Two infants required surgical intervention.[2] Complications included anemia,[3,5] seizures, and multiple organ dysfunction syndrome.[2,3] Four infants recovered and were discharged home.[2,3,5,6] Two of the 5 infants had viral panel testing for coinfection with other viral pathogens but no other pathogens were detected.[2,3] Although 2 infants reportedly had respiratory symptoms within the 2 weeks before admission, none presented with respiratory symptoms,.[2,5] Two infants had exposure to a person with suspected or confirmed SARS-CoV-2 infection.[2,3] Five days after admission, 1 infant with no known SARS-CoV-2 exposure demonstrated ground glass opacities and evidence of pleural effusion on chest computerized tomography.[6] This infant experienced a critical illness consistent with severe COVID-19, including seizures, respiratory failure requiring mechanical ventilation, multiple organ dysfunction, and death.[6]

DISCUSSION

This review is limited to published case reports of SARS-CoV-2 infection in infants with intussusception. Additional case reports were found, but the demographics and case details appeared to overlap with cases reported herein. These observational data cannot establish an association between SARS-CoV-2 infection and intussusception; however, testing for viral pathogens, including SARS-CoV-2, may be warranted for infants with symptoms consistent with intussusception, especially infants with a history of SARS-CoV-2 exposure or with signs and symptoms of COVID-19. Obtaining illness histories from household members and contacts could be important to identify infants at risk for SARS-CoV-2 infection. Pediatric healthcare providers may consider intussusception in the differential diagnosis of abdominal pain, vomiting, or diarrhea, lethargy, and alternated consciousness in an infant diagnosed with SARS-CoV-2 infection, with or without respiratory symptoms. Further investigation is needed to determine whether intussusception is part of the clinical spectrum of infant COVID-19 or a coincidental finding in infants with SARS-CoV-2 infection.

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TABLE 1. Demographics, Exposure History, and Clinical Findings Among 5 Cases of Intussusception and SARS-CoV-2 Infection, Worldwide, January–August 2020

Author	Sex, Age, Country	Contact History	Symptoms		Imaging	Diagnoses	Treatment	Disposition
			Respiratory	Gastrointestinal				
Martínez-Castaño et al[2]	M, 6 mo Spain	Sick relative	No	Abdominal cramps Currant jelly stool Vomiting	Abdominal US "Target sign"	Edematous bowel with telescoping mesenteric fat Ileocecal intussusception Microcytic anemia	Hydrostatic reduction Midtransverse colon to terminal ileum	Recovered
Makrinioti et al[3] Moazzam et al[6]*	F, 10 mo China	None	No	Currant jelly stool Vomiting	Abdominal CT, US, roentgenogram Chest CT Doppler US of peritoneum	ARF DIC MODS Seizures, intermittent Shock Intussusception	Air enema Continuous gastrointestinal decompression Exploratory laparotomy with resection of necrotic proximal ileus Placement of defunctioning ileostomy	Deceased
Makrinioti et al[3]	F, 10 mo England	Mother, siblings with URTI and fever 3 wks before presentation	Coryza, conjunctivitis 2 wks before presentation	Bilious vomiting Currant jelly stool	Abdominal US	Malrotation Intussusception	Air enema reduction (failed) Surgical reduction, Ladd's procedure	Recovered
Moazzam et al[6]	M, 4 mo Pakistan	None	URTI 1 wk before presentation	Abdominal pain Currant jelly stool Drawing legs to abdomen	Abdominal US Chest radiograph "Donut sign" in subhepatic region	Ileocolic intussusception Microcytic anemia	Pneumatic reduction (2 procedures)	Recovered
Rajalakshmi et al[5]	M, 8 mo India	None	No	Abdominal mass Currant jelly stool	Abdominal US	Ileocolic intussusception within subxiphoid region	Pneumatic reduction of ileocolic transverse colon	Recovered

*This case patient was presented by 2 authors.

ARF indicates acute respiratory failure; CT, computed tomography; DIC, disseminated intravascular coagulation; GGO, ground glass opacities; ICU, intensive care unit; MODS, multiorgan dysfunction syndrome; URTI, upper respiratory tract infection; US, ultrasound.

Severity of Respiratory Infections With Seasonal Coronavirus Is Associated With Viral and Bacterial Coinfections

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Abstract: The clinical presentation of human coronavirus (HCoV) infections in children varies strongly. We show that children with an HCoV-associated lower respiratory tract infection more frequently had respiratory syncytial virus codetected and higher abundance of *Haemophilus influenzae/haemolyticus* than asymptomatic HCoV carriers as well as children with a non-HCoV-associated lower respiratory tract infection. Viral and bacterial cooccurrence may drive symptomatology of HCoV-associated infections including coronavirus disease 2019.

Key Words: pediatrics, lower respiratory tract infection, coronaviruses, SARS-CoV-2, coinfection

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In the current coronavirus disease 2019 (COVID-19) pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), children are less severely affected than adults.[1–3] Children may even be infected with SARS-CoV-2 asymptomatically, and it remains unclear what drives (severity of) respiratory symptomatology in pediatric COVID-19. In seasonal infections with common human coronaviruses (HCoV) in childhood, increased severity is associated with younger age, chronic illness, and codetection of respiratory viruses known to cause severe respiratory tract infections.[4,5] Until now, associations between bacterial coinfections and presence or severity of HCoV-associated respiratory symptoms have not been investigated. Understanding the determinants of the symptomatology of common HCoV infections may incite ideas for research into the determinants of COVID-19