

Intussusception

Case report of 2 sisters presenting simultaneously with intussusception

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Intussusception is a surgical emergency that commonly presents in children. It occurs when a section of the intestine invaginates into another section, dragging mesentery and blood vessels with it. This causes lymphatic congestion and ischemia, and often results in gastrointestinal obstruction. Intussusception is the most common cause of intestinal obstruction in patients aged 5 months to 3 years and can account for up to 25% of abdominal emergencies in children younger than 5 years of age.¹ Two-thirds of pediatric patients present while younger than 1 year of age, and the peak incidence is between 5 and 9 months of age. The “classic”

triad of vomiting, abdominal pain, and bloody stools² is seen in less than 10% of children at first presentation.³ Thus, if there is clinical suspicion of this diagnosis, confirmatory diagnostic imaging is required. Ultrasound is preferred owing to its high sensitivity and lack of radiation.⁴ We report a case of familial intussusception in which 2 sisters presented simultaneously to the emergency department (ED) with intussusception.

Case

Two siblings, aged 6 months and 2 years, presented simultaneously to the ED one day after they returned from a trip to a lakeside cottage. The mother was concerned, as 2 other children at the cottage had viral symptoms and her 2 children were now also unwell.

The 6-month-old female presented with 5 episodes of nonbilious, nonbloody vomiting over the previous 24 hours. The infant seemed otherwise well except for occasional intermittent whimpering that lasted seconds throughout the previous day. She had no diarrhea but one stool was mixed with a streak of blood on the morning of presentation. Physical examination revealed an alert, well-appearing baby. Her vital signs included a heart rate of 133 beats/min, a respiratory rate of 32 breaths/min, a systolic blood pressure of 96 mm Hg, and a temperature of 37.2°C. The findings of the remainder of the physical examination, including a comprehensive abdominal examination, were benign.

Her 2-year-old sister presented to the ED complaining of intermittent abdominal pain. The previous day, her episodes of abdominal pain lasted about 5 minutes, and occurred every 15 to 20 minutes. On the day of presentation, the child seemed to be improving, with the episodes occurring every 2 hours. The older sibling's symptoms began the evening before the ED visit, about 6 hours after her sister started vomiting. Between episodes, the child appeared well and there was no associated fever, vomiting, or change in stools. Physical examination revealed an alert, well-appearing 2-year-old child. Her vital signs included a heart rate of 120 beats/min, a respiratory rate of 20 breaths/min, a blood pressure of 104/60 mm Hg, and a temperature of 36.6°C. Like her sibling, her physical examination findings were entirely unremarkable.

Although viral gastroenteritis was considered as a possible diagnosis for both children, the episodic pain and the single episode of blood in the stool in the 6-month-old child

EDITOR'S KEY POINTS

- Intussusception is a common emergency diagnosis that most often presents in children younger than 1 year of age.
- The “classic” triad of vomiting, abdominal pain, and bloody bowel movements is often not seen. Clinicians must maintain a high degree of suspicion to diagnose this condition.
- There is a familial correlation with intussusception.
- A comprehensive ultrasound by diagnostic imaging is the preferred test to confirm intussusception. For the competent user, point-of-care ultrasound is a useful bedside test that can help expedite and “rule in” the diagnosis of intussusception.

POINTS DE REPÈRE DU RÉDACTEUR

- L'invagination intestinale est un diagnostic courant à l'urgence, qui se présente le plus souvent chez les enfants de moins de 1 an.
- La triade « classique » des vomissements, des douleurs abdominales et du sang dans les selles n'est pas toujours observée. Le diagnostic de ce problème exige des cliniciens un fort degré de suspicion.
- Il y a une corrélation familiale dans les cas d'invagination intestinale.
- Une échographie complète par imagerie diagnostique est le test à privilégier pour confirmer l'invagination. Pour les utilisateurs compétents, une échographie au point de service est un test utile au chevet du patient, qui peut contribuer à accélérer et « certifier » le diagnostic d'invagination intestinale.

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Case Report

seemed out of character for typical gastroenteritis, and thus warranted investigation with ultrasound to rule out intussusception. A comprehensive radiology department ultrasound scan showed the characteristic “target” sign of intussusception,⁵ and a single attempt at air enema reduction was successful. The patient’s symptoms resolved.

As the younger child’s clinical picture no longer could be explained by viral gastroenteritis, the 2-year-old sibling’s clinical picture was now more concerning for intussusception. As the likelihood of simultaneous intussusception in siblings was still considered low, a team member trained in point-of-care ultrasound (POCUS) performed a screening bedside ultrasound scan. This also demonstrated intussusception (**Figure 1**) and the diagnosis was confirmed by a comprehensive radiology department ultrasound scan. An air enema reduction was successful and the patient’s symptoms resolved.

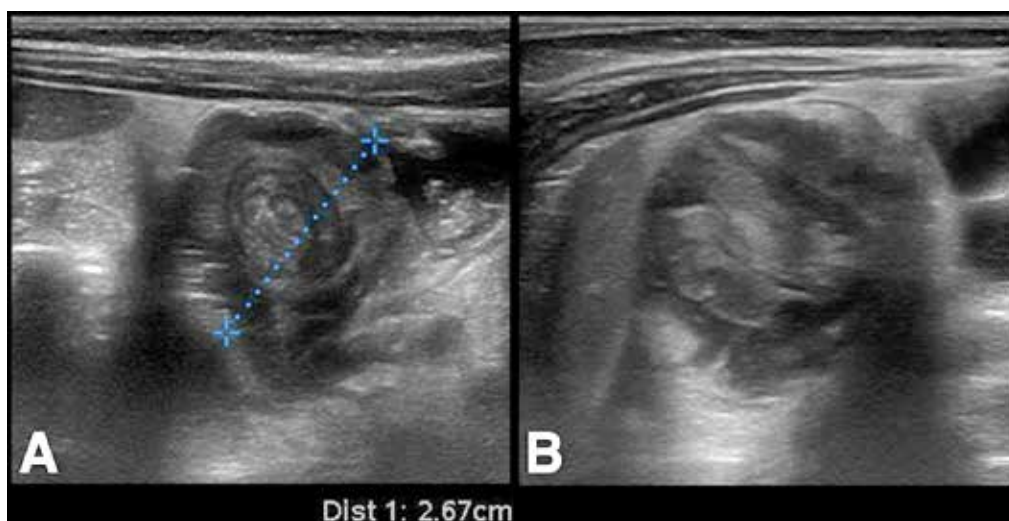
Discussion

This case of 2 sisters simultaneously presenting with intussusception highlights 2 important points about this surgical diagnosis. First, it demonstrates the need for high clinical suspicion when diagnosing intussusception,² even when siblings present with symptoms that would most likely be gastroenteritis. Second, for those properly trained, POCUS might improve the bedside assessment of intussusception. Accurately “ruling in” this pathology with POCUS might expedite appropriate additional testing and management, especially in those cases with a lower clinical suspicion.⁶

While the triad of vomiting, abdominal pain, and bloody stools is highly predictive of intussusception,⁴ Gierup et al³ note that only 7% of patients present with all of these symptoms. Signs with excellent positive predictive value are gross or occult blood on rectal examination or in stool and a right upper quadrant mass,⁴ but abdominal pain is often the only consistent symptom, present in at least 90% of patients.⁵ This coupled with the high prevalence of gastroenteritis in children, which can also present with colicky abdominal pain, can be misleading and might cause missed or delayed diagnoses of intussusception. In this case, given the prevalence of gastroenteritis and the presentation of symptoms in siblings spaced by only a few hours, gastroenteritis was initially thought to be the most likely diagnosis by the ED team. Although there does seem to be a familial component to intussusception, with the concordance in siblings ranging from 1 in 40^{7,8} to 1 in 99,⁹ simultaneous intussusception has never been reported in the literature. The closest analogues are 3 case reports of twins who presented with intussusception within 36 hours of each other.¹⁰⁻¹² Nevertheless, there was still sufficient clinical suspicion, as mentioned above, on history and physical examination to pursue ultrasound testing to rule out the more serious diagnosis of intussusception.

This case also reinforces the high usefulness of POCUS as a screening and diagnostic tool for this condition. Point-of-care ultrasound is a bedside emergency medicine test that can increase a clinician’s confidence in ruling in intussusception, and is a well established


Figure 1. Point-of-care abdominal ultrasound images demonstrating ileocolic intussusception: A) Transverse view of the intussusception demonstrating the “target” sign of multiple concentric rings of bowel wall surrounding a central echogenic core. B) Longitudinal view of the intussusception demonstrating the “sandwich” sign of outer bowel wall layers (intussusceptum) surrounding invaginated inner bowel core (intussusciens).



diagnostic adjunct that is associated with expedited patient care for intussusception.¹³⁻¹⁷ Studies of POCUS by pediatric emergency physicians demonstrate high accuracy for the detection of intussusception, with sensitivities of 85% to 100% and specificities of 94% to 98%.^{18,19} Point-of-care ultrasound for intussusception also appears to be easily learned, with physicians in these studies receiving 1 hour of didactic training.^{18,19} Nevertheless, the strength of the application of POCUS is in ruling in disease and potentially expediting definitive management.⁶ Therefore, the absence of intussusception using this technology is an indication for a comprehensive ultrasound scan if clinical suspicion remains for this diagnosis.

Resources for general practitioners include blogs such as SonoSpot (<https://sonospot.wordpress.com>) and paid online courses such as EMSono (www.emsono.com). The Canadian Association of Emergency Physicians offers POCUS courses (<http://caep.ca/cpd-cme/roadshows-current-cme/edu>). More resources for courses, certification, and discussion about POCUS can be found at the Canadian Point of Care Ultrasound Society website (www.cpocus.ca).

Conclusion

Intussusception is a relatively common but serious condition that commonly presents with episodic abdominal pain and vomiting in younger children. A high level of suspicion is paramount to accurately make the diagnosis. While alternate diagnoses, such as gastroenteritis, might be more likely, siblings presenting with signs and symptoms suggestive of intussusception make this diagnosis more likely owing to reported familial tendencies. Point-of-care ultrasound might expedite definitive management. 

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Competing interests

None declared

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