A 7-Year-Old Hispanic Boy with Acute Onset of Abdominal Pain

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A previously healthy 7-year-old Hispanic boy presented with acute onset of abdominal pain to our emergency department (ED). Intermittent pain was referred to the mid-epigastric region lasting between 5 and 10 minutes, followed by a 20- to 30-minute period of calm. The pain did not radiate and improved with knees-to-chest positioning. Several episodes of emesis were associated with painful cramps. The parent denied any recent fever, diarrhea, headache, or rashes on the body. His medical history did not include constipation, recent abdominal injury, chronic gastrointestinal disease, abdominal surgery, or urinary tract infections. Upon arrival to the ED, the child’s physical examination revealed a healthy-looking, well-nourished child. His abdomen was soft and nondistended. Bowel sounds were present. No mass or hernia was palpable. Cardiopulmonary and neurologic exams were unremarkable. ED diagnostic work-up included an abdominal ultrasound that revealed a distinct concentric intestinal image in the left lower quadrant (Figure 1). This “doughnut-like” structure measured 2.5 cm in width (external ring approximately 0.7 cm) with normal blood perfusion on color Doppler (Figure 2).

Figure 1. Abdominal ultrasound of the patient.

Editor’s note: Each month, this department features a discussion of an unusual diagnosis in genetics, radiology, or dermatology. A description and images are presented, followed by the diagnosis and an explanation of how the diagnosis was determined. As always, your comments are welcome via email at Pediatrics@Healio.com.

For diagnosis, see page 492
Diagnosis:
Small Bowel “Ileal-Ileal” Intussusception

The patient was admitted for clinical observation and serial abdominal examinations. Symptoms significantly improved without any intervention. Upon discharge he had normal abdominal exam (observation period approximately 6 hours), good oral intake, and normal elimination. His mother reported no recurrence of pain on a 24-hour telephone follow-up.

DISCUSSION
Intussusception is the most common cause of intestinal obstruction in children younger than age 2 years. More than 90% of cases of intussusception that occur in pediatric patients are of an ileo-colic, ileo-cecal, or ileo-ileo-colic type. Distinctly, more than 50% of adult intussusceptions are small bowel intussusceptions (SBI), and they are secondary to an underlying disease (eg, neoplastic tumors). Transient SBI in children is accepted to be infrequent in the medical literature. Intussusception of clinical relevance occurs most often near the ileocecal junction (“ileo-colic”); however, small bowel “ileo-ileo-colic,” “jejunal-jejunal,” and “jejunum-ileo-colic” types have also been described. Overall, SBI usually occurs in young children without gender predominance.

Characteristically, an intestinal lead point serves as the head of the intussusception, which is drawn into the distal gut by hyperperistaltic activity. If invagination progresses, the patient develops bilious vomiting, abdominal distension, and lethargy. In less than one-third of cases, abdominal physical examination reveals a curved sausage-shape mass on palpation.

Ultrasonography (US) is the preferred diagnostic imaging modality because there is no irradiation, the diagnostic sensitivity of US is 98.5%, and the specificity is 100%. The typical US pattern of a “doughnut” sign or “target” sign in the transverse section and the “pseudo-kidney” sign in the longitudinal section both represent a layer of the intestine within the intestine. Small bowel intussusception “doughnuts” appear more often in the paraumbilical and left quadrants, differentiating them from the typical right quadrant location of ileocolic intussusceptions. There are conflicting reports in the literature as to the surgical predictive value of the transverse diameter and the outer thick-
ness of the external ring in SBI images. In a small study by Zhang et al., outer ring thickness greater than 0.4 cm was predictive of need for surgical reduction; however no such relationship was found in similar studies. Absence of color flow in Doppler suggests compromise of the mesenteric vasculature, indicating a potentially difficult reduction and a lower reduction success rate.

Characteristic US findings of the transient small bowel “ileal-ileal” intussusception include small size of the doughnut ring (2-3 cm), no recognizable lead point, short segment length of less than 3.5 cm, normal vascularity on color Doppler US, and preserved wall motion.

Due to the availability of US imaging in most emergency departments, small bowel intussusceptions may be readily identified and characterized by these recommended criteria.

Physicians should also be aware of the small but significant number of patients who have recurrence within days to years following spontaneous or operative reduction and should review warning signs with parents or caregivers.

Clinical observation with judicious US monitoring rather than a surgical intervention is recommended for those patients with typical transient small bowel intussusceptions. Atypical US findings or clinical deterioration of the child with persistent intussusception warrant surgical exploration.

REFERENCES