Pediatric Ileocolic Intussusception Caused by Introducing Solid Food Before 6 Months Old: A Case Report

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Abstract

A 7-months-old girl presented with bloody diarrhea and vomiting. She had been fed with red rice since she was 5 months old. She was restless, defecated red currant jelly stool and sausage-shaped mass was palpable on the inferior of umbilical region. The ultrasound showed a 3.16 × 2.58 cm mass with a target-like appearance which is consistent with intussusception. She underwent exploratory laparotomy, invagination release (milking) and appendectomy. Pathologic examination of the lymph node on the mesenteric side of caecum revealed lymphoid tissue hyperplasia.

The introduction to solid food before 6 months in this patient was suspected as the predisposing factor of the intussusception. More effective counseling about the timing of solid food introduction by pediatrician or primary health care provider may prevent other similar cases like this from happening.

Keywords: Intussusception; Pediatric; Solid food

Abbreviations

cm: Centimeter; cmm: Cubic millimeter; dl: Deciliter; ED: Emergency Department; g: Gram; mg: Milligram; US: Ultrasonography

Introduction

Intussusception is one of the most common pediatric abdominal emergencies, with 80% of cases occurring in patients younger than 2 years [1]. Unfortunately, the classically described triad in diagnosing intussusception which include pain, a palpable sausage-shaped mass and currant jelly stool is seen in less than 15% of patients at the time of presentation [2,3]. The majority of cases in children are idiopathic [4]. There are different types of intussusception: The ileocolic, ileo-ileo-colic, ileo-ileo, jejuno-jenunal and the colo-colic type [5]. The ileocolic type, where the distal ileum invaginates through the ileocaecal valve into the caecum, is the most frequent type of intussusception and accounts for 90% of the cases [6].

Case Presentation

A 7-months-old girl presented to the emergency department (ED) with chief complaint of bloody stool since 7 hours ago. It had been about 10 times already, the blood was combined with stool, with light red color. She vomited every time she was given food/drink; the vomits contain food remnants and water, yellow colored, with no blood noted. Her mother said that she had become restless since 7 hours ago and that she had neither fever nor any other complaint.

According to her mother, she had not been exclusively breastfed; she was breastfed but was also given cow’s milk intermittently since she was born because of her mother’s job (her mother works as a teacher). Since 5 months of age, she had been fed with red rice porridge, tomato, carrot, broccoli, avocado and organic flour. She had no history of allergy.

Figure 1: Transverse US image of the inferior umbilicus, showing the target sign characteristic of intussusception, which was formed by a hypoechoic ring (between the two blue arrows) from the edematous walls of the intussuscipiens around an echo-dense center of the intussusceptum.

The patient was a well-developed, young girl in moderate distress. With body weight of 7 kg and body height of 71 cm, she had good nutritional state. Her vital signs were in normal limit. There were no signs of dehydration except sunken eyes. Her stomach was soft and not distended, but a sausage-shaped mass was palpable on the inferior of umbilical region. Other physical examination findings were non remarkable. Digital rectal examination found a good sphincter tone, no mass palpable, with slight light colored blood on finger.
The only lab findings of note were leukocytosis (18,100/cmm) with segment neutrophil predominance (71%). Electrolyte levels were still in normal limit. Stool analyses revealed blood but no mucus, leucocyte 6-7/high power field and neither egg worm nor yeast were found. A complete abdominal ultrasonography (US) showed a 3.16 × 2.58 cm mass with a target-like appearance (Figure 1) on the inferior of umbilical region which in oblique cut showed pseudokidney sign (Figure 2).

While in the ED, this patient received an intravenous fluid of ringer lactate for rehydration and Ceftriaxone injection 600 mg once daily. Afterward this patient underwent an emergency exploratory laparotomy for suspect of intussusception. The surgery found a clear peritoneal fluid and an ileocolic intussusception, with terminal ileum, appendix, caecum, ascending and transverse colon as the intussuscipiens, a distal segment, telescoped into the intussuscipiens, a proximal segment of bowel, telescopes into the intussusciens, a distal segment, dragging the associated mesentery with it. It is the most common abdominal emergency in children <2 years old. The incidence varies from 1 to 4/1,000 live births. The male: female ratio is 3:1 [7,8].

Intussusception occurs most often near the ileocecal junction (ileocolic intussusception). Patients with intussusception typically develop the sudden onset of intermittent, severe, crampy, progressive abdominal pain, accompanied by inconsolable crying and drawing up the legs toward the abdomen. The episodes usually occur at 15-20 minute intervals [9]. Vomiting occurs in most cases and is usually more frequent in the early phase. Sixty percent of infants pass a stool containing red blood and mucus, giving it the appearance of currant jelly. A sausage-shaped abdominal mass may be felt which is most often in the right upper abdomen [5]. The patient in this case was a 7 months-old girl; it matched the predominance age of intussusception, which most often occurs between 4 and 10 months of age [10]. This patient arrived at the ED with red currant jelly stool, vomiting and inconsolable crying. A sausage-shaped mass was palpable on the inferior of umbilical region. The signs and symptoms of this patient matched the classic triad of intussusception, except the different site of the sausage-shaped mass.

The use of US has been gaining favor as the initial study choice in diagnosing intussusception due to being non-invasive, radiation-free, painless, fast, and relatively low in cost compared to other radiological procedures. Ultrasonography is highly accurate for the diagnosis of ileocolic intussusception, with reported sensitivity and specificity from multiple international studies range between 96.6% to 100% and 88% to 100%, respectively [11-13]. Intussusception has a characteristic appearance on US. The appearance of a pseudo kidney sign is formed if the intussusception is curved and when the mesentery is seen on only one side of the intussusceptum, which is most commonly seen on long-axis view. On axial view, there is a hypoechoic ring from the edematous walls of the intussusciens around an echo-dense center formed by the interfaces of the mucosal and serosal layers of the intussusceptum, called bulls eye sign, target sign, donut sign, or concentric ring sign [14]. This patient showed both pseudo kidney and target sign from US, characteristic of intussusception.

Ninety percent of pediatric intussusceptions are ileocolic and idiopathic, although in these cases the presence of lymphoid hyperplasia is frequently reported. Pathological lead points for the intussusception, such as a Meckel diverticulum, intestinal polyp, neurofibroma, intestinal duplication cysts, hemangioma or malignant conditions are only found in 2-8% of patients; usually in children younger than 3 months of age and older than 5 years, with the incidence increasing with advancing age [5,6,15]. The age of this patient was 7 months old, so idiopathic intussusception was most common in this patient's age group.

In this patient, pathologic examination of the lymph node on the mesenteric side of caecum revealed lymphoid tissue hyperplasia. This hyperplasia of Peyer patches in the lymphoid-rich terminal ileum could act as lead point for intussusception [16,17]. The postulated causes of lymphoid hyperplasia include gastrointestinal infection or introduction of new food proteins [7]. In the first 4-6 months of life, digestive tracts underwent very significant changes, with increased ability to produce digestive enzymes and antibodies. Feeding of solid food in that period is not recommended because of the immaturity of digestive tracts, especially caused by the lack of digestive enzymes [18]. This patient had been fed with solid food since she was 5 months old. The introduction to solid food before the first 6 months in this patient was suspected as the predisposing factor of the intussusception.

**Conclusion**

Intussusception is common in children <2 years old, so the ability to diagnose it is of clinical importance. It is not uncommon for pediatric intussusception to present with atypical presentation, so it is important to increase awareness of intussusception to any child present with...
bloody stool, especially the one with predisposing factor of intussusception. More effective counseling about the timing of solid food introduction by pediatrician or primary health care provider may prevent other similar cases like this from happening.

References
