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Intussusception Secondary to a Meckel Diverticulum in an Adolescent

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Abstract: Adult intussusception caused by an inverted Meckel diverticulum is rare. We report a 39-year-old Turkish man with intussusception due to Meckel diverticulitis. Ileoileal intussusception was suggested by computed tomography. Exploration revealed ileoileal intussusception with Meckel diverticulum. A diverticulectomy with small bowel resection was performed.

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Introduction

Meckel diverticulum is the most common congenital anomaly of the gastrointestinal tract, occurring in 2–3% of the population (Sharma and Jain, 2008). Common complications include haemorrhage, small bowel obstruction, and diverticulitis (Stringer et al., 1992). It may invaginate or invert into the lumen of the small intestine. Once inverted, the diverticulum may serve as lead point for an ileoileal or ileocolic intussusception. Intussusception is invagination of a proximal segment of bowel (intussusceptum) into the lumen of the adjacent distal segment (intussuscipiens). While intussusception is relatively common in the childhood, it is infrequently seen in adults (Yalamarthi and Smith, 2005). Adult intussusception represents 5% of all cases of intussusception and accounts for only 1–5% of intestinal obstructions in adults. In adults, almost 90% of the cases of intussusception are secondary to carcinoma, polyp, Meckel diverticulum, colonic diverticulum, stricture or benign neoplasm. In the small intestine, an intussusception can be secondary to a benign lesion.

Among these causes, intussuscepted Meckel diverticulum is rare (Azar and Berger, 1997). It is a remnant of the omphalomesenteric duct, which is normally obliterated by the 5th week of gestation. It is the most common congenital abnormality of the small intestine, occurring in approximately 2% of the population, but only 4% of these become symptomatic. Between 4 and 14% of the complications of Meckel diverticulum can be attributed to intussusceptions. Infrequently, Meckel diverticulum can invert and invaginate into the ileal lumen and can be the leading point of the intussusception. Inversion of Meckel diverticulum is not yet clearly understood. We report a case of adult intussusception caused by an inverted Meckel diverticulum.

Case report

In January 2012, a 39-year-old man was admitted to our emergency department with vomiting and abdominal pain. The abdomen was hard with tenderness and muscle guarding. Bowel sounds were weak. Laboratory examination showed an increased leukocyte count (13,300/μl). Direct upright plain abdominal X-ray showed that mechanical small bowel type intestinal obstruction. Computed tomography (CT) scanning demonstrated a typical inhomogeneous target-shaped mass in the right abdomen. This revealed a likely ileoileal intussusception with moderate dilation of the proximal small bowel (Figure 1). Based to the clinical signs of small bowel obstruction and the result of CT, an emergent laparotomy was decided. The patient underwent exploratory laparotomy and was found to have an ileoileal intussusception with a Meckel diverticulum as the lead point (Figures 2 and 3). The diverticulum was resected, and the patient had an uncomplicated postoperative course. The patient was discharged on 5th day without any complication. Follow-up course was uneventful.

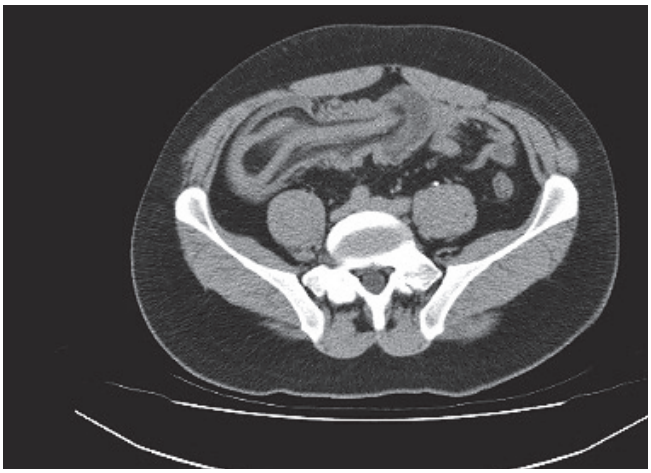

Figure 1 – Computed tomography scanning ileoileal intussusception.

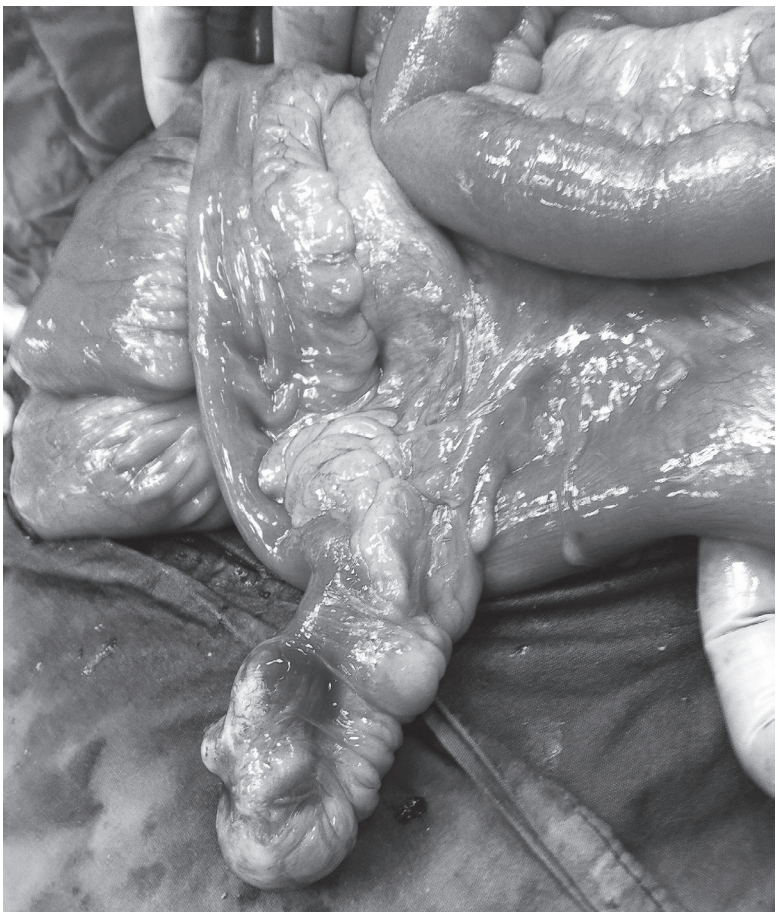

Figure 2 – Ileoileal intussusception.

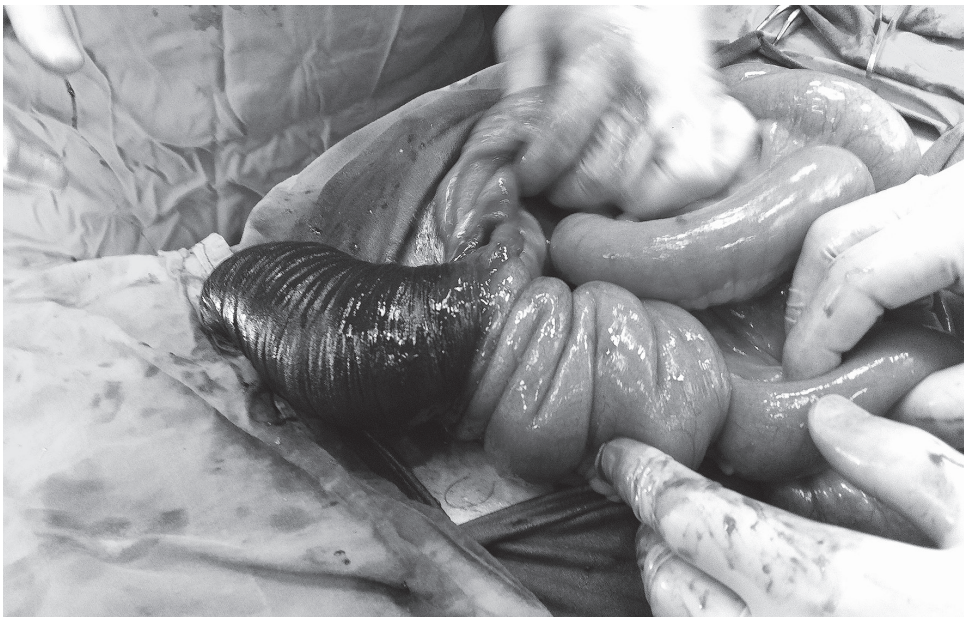

Figure 3 – Ileoileal intussusception.

Discussion

Adult intussusception is rare. It is expected to be found in 1/30,000 of all hospital admissions, 1/1,300 of all abdominal operations, 1/30–1/100 of all cases operated for intestinal obstruction and one case of adult intussusception for every 20 childhood ones. The mean age at presentation tends to be in the 6th decade of life. It may be acute or chronic (persistent or intermittent) in addition to being "silent". The chronic intussusception may have lasted in some instances for a year before the diagnosis (Lee et al., 2009).

Intussusception is a condition in which one portion of the bowel, usually proximal to the ileocecal valve, invaginates into an adjacent segment. This process leads to bowel wall oedema which progressively causes obstruction of venous out-flow. The bowel becomes secondarily ischemic, which can eventually lead to necrosis and perforation. Ileocolic intussusceptions are the most common with cecocolic, colocolic, and, as in our patient, ileoileal, occurring less often (Sioka et al., 2011). In the small intestine, an intussusception can be secondary to a benign lesion. Intussuscepted Meckel diverticulum is rare. Symptoms caused by Meckel diverticulum are abdominal pain, bleeding and intestinal obstruction. Obstruction is usually due to the congenital mesodivertilular band but occasionally results from intussusception. Infrequently, Meckel diverticulum can invert and invaginate into the ileal lumen. Inversion of Meckel diverticulum is not yet clearly understood. One theory is that abnormal peristaltic movement due to ulceration or ectopic

tissue at the base of Meckel diverticulum may cause it to invert (Ito et al., 2011). Ultrasonography is the first choice in diagnosing intussusceptions because of its classical appearance such as "target" or "doughnut sign". Abdominal CT seems to be the most reliable modality to facilitate a preoperative diagnosis and can help to confirm the presence of intussusception (Blakeborough et al., 1997). The characteristic features on CT scan include an inhomogeneous "target"- or "sausage"-shaped soft tissue mass with a layering effect. Marinis et al. (2009) concluded that barium fluoroscopy in combination with CT can yield specific information for the correct diagnosis of inverted Meckel diverticulum. When the diagnosis of a symptomatic Meckel diverticulum has been established, surgical removal of the lesion should be performed. Simple removal with closure of the intestine is satisfactory treatment for most patients. Moreover, it is quite possible for colonoscopy to be selected as the initial diagnostic method when intussusception presents primarily as hematochezia. Although mortality and surgery rates have dropped over the past 50 years partly due to increased use of nonoperative reduction techniques and improved ability to diagnose intussusception with CT scans and ultrasound, all of these presuppose consideration of the diagnosis (Karatepe et al., 2008). If intussusception is missed, it can be disastrous, progressing to bowel necrosis, perforation, sepsis, and death. Therefore, this is an important diagnosis to consider in all children with gastrointestinal complaints, particularly with symptoms that do not fit a classic gastroenteritis pattern. Recently, the prevalence of laparoscopic surgery has been increasing. However, the procedure should be chosen carefully because of an increased risk of perforation, dissemination and metastasis in cases involving malignancies.

In our case, the abdomen was hard with tenderness and muscle guarding, and the leukocyte count was increased. These findings suggested an intussusception caused by benign lesion, but we did not choose a laparoscopic procedure because we considered that a lengthy segment of intestine was necrotic.

Conclusion

Although there is no way to determine if intussusception is idiopathic versus secondary to a pathological lead point based on signs or symptoms, this delineation is irrelevant to the emergency department practitioner. However, it is important for a clinician to contemplate this diagnosis not only in the neonate and infant but also in the less typical adolescent and adult patient. The patient described in this case, with only mild abdominal pain and isolated vomiting, illustrates that a broad differential should be thought about when treating patients with gastrointestinal complaints and abdominal pain.

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