Case Report:

Compound and Multiple intussusceptions caused by inverted Meckel's diverticulum: A rare case report

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ABSTRACT:

A 10-year-old girl presented to the emergency department with vomiting and abdominal pain. On examination, she had only mild abdominal tenderness, but a mass was palpable in her right lower quadrant. Intussusception was diagnosed on ultrasound and posted for exploratory laparotomy and operative findings revealed a multiple and compound intussusception (ileoileal and ileocaeoco-colic) secondary to an inverted Meckel's diverticulum. Intussusceptions were reduced manually, Meckel's diverticulectomy, appendectomy and then caecopexy was done. Intussusception is a surgical abdominal emergency, which can present in all ages but is the most common reason for small bowel obstruction in childhood. In older children, intussusception is more likely to be related to underlying pathology, such as Meckel's diverticulum, malignancy, or polyp. Mulitple and compound intussusception with inverted Meckel's diverticulum is a rare but important clinical entity. Diverticulectomy or bowel resection is the standard treatment but early surgical intervention may ensure a favorable outcome.

Key words: Multiple and compound intussusceptions, inverted Meckel's diverticulum.

INTRODUCTION

Intussusception is a surgical abdominal emergency, which can present in all ages but is the most common reason for small bowel obstruction in childhood. Although there are many lesions that give rise to intussusception, Meckel's diverticulum (MD) is the most common [1]. Meckel's diverticulum is usually asymptomatic and becomes evident when complicated. Although MD appears equally in both sexes, it causes complications more frequently in males [2]. Lower gastrointestinal bleeding, obstruction and inflammation are the most common complications which usually occur in children under 10years old. Occasionally, inversion of MD into the lumen of the bowel can cause intussusception, ischemia and infarction [3].

The incidence of intussusception attributed to an inversion of MD accounts for 4% of all cases presenting with intestinal obstruction due to intussusception [4]. It occurs when the MD sags into the bowel lumen and then serves as a lead point to allow telescoping of the small intestine, first into the distal ileum and then in to the large intestine, causing ileo-ileal and ileocolic type ofintussusceptions. The aim of this report is to present a rare case of multiple and compound (ileo-ilealileocaeco-colic) intussusception in child patient. The case was caused by the inverted Meckel's diverticulum in the ileum.

CASE REPORT

A 10-year-old female presented to the emergency department with the chief complaint of sudden onset abdominal pain beginning 10 hours prior to arrival. Pain was located in mid-abdomen, spasmodic type and didn't relieve with acetaminophen. The patient also reported nausea with multiple episodes of vomiting throughout the day. No history of fever, chills, diarrhea, constipation. No history of past medical illness.

On examination, she was vitally stable. She was pale. The patient's abdominal exam was remarkable for mild suprapubic and right iliac region tenderness with no guarding or rebound tenderness. A deep firm mass was palpable above the pelvic brim to the right of midline. A rectal examination revealed no blood or faeces. She was retching on occasion throughout exam. Laboratory data was remarkable for a white blood cell count of 15,000 with 96% neutrophils. Other blood investigations and urinalysis were both normal. Plain abdominal X-ray demonstrated air fluid levels of the small bowel, there was no pneumoperitoneum. Ultrasonography of the abdomen revealed bowel within bowel loop giving pseudokidney appearance in right hemiabdomen with edematous bowel loops of intussusception with mild free fluid in abdomen and pelvis. Patient was posted for emergency exploratory laparatomy. During the operation, a large intussuscepted mass was found located in the region of ascending colon and hepatic flexure, into which a large segment of her ileum, appendix and caecum were invaginated. There was evidence of mild clear reactionary fluid in peritoneal cavity and also enlarged mesenteric lymph nodes. First ileocaeco-colic intussusception was reduced by milking of contents from heaptic flexure of colon towards IC junction then later, ileoileal intussusception was reduced which had an inverted Meckel's diverticulum as a leading point. Intussuscepted bowel coils were edematous. There were no signs of vascularity compromise in any of the intussuscepted bowel coils. A total of 30cm of ileum loop was intussuscepted. Diverticulectomy,then Appendectomy with caecopexy was done. Mesenteric lymph node biopsy was taken and peritoneal fluid taken for analysis. Post-operative period was uneventful and patient discharged on 10thPOD after removal of abdominal sutures. HPR of specimen showed Meckel's diverticulitis with mesenteric reactive lymphadenitis.

DISCUSSION

Intussusception occurs when a portion of the proximal bowel (usually referred to as the intussusceptum) telescopes into a segment of the adjoining distal bowel (known as the intussuscepiens). The intussusceptum is propelled further into the intussuscepiens by peristalsis and eventually becomes thickened, oedematous, and swollen, leading to blockage of its lumen (occlusion) and subsequent pinching off of its mesentery (strangulation).

There are different classification systems of intussusceptions. In general, intussusception is classified as enteric orcolonic according to the location of the pathologic lead point [5]. The enteric group includes jejunojejunal, ileoileal, and ileocolic intussusceptions, whereas the colonic group includes ileocecal-colic, colocolonic, sigmoidorectal, and appendicicocecal intussusceptions. Ileocolic and ileocecal-colic intussusceptions are distinguished by the site of the pathologic lead point. In ileocolic intussusception the lead point is in the ileum, but in ileocecal-colic intussusception the lead point is in the ileocecal valve. However, in clinical practice, it is difficult to differentiate some of the complicated advanced forms of ileocecal-colic intussusceptions [6].

About 90–95% of intussusceptions occur in children between the ages of 3 months and 3 years[7,8] and usually do not have a pathological lead point (i.e., they are idiopathic in nature) [7]. The most

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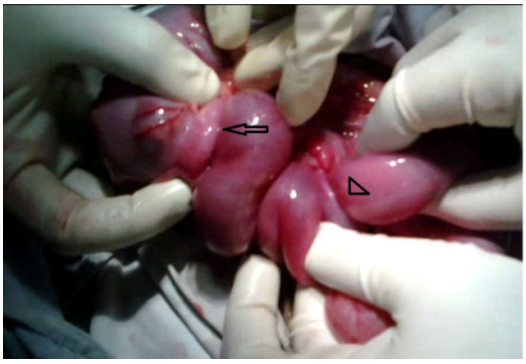
common pathological lead point (PLP), in the causation of non-idiopathic intussusception, especially in older children, is Meckel's diverticulum[9, 13–15] followed by polyps of the small intestine and colon [11, 12, 14, 15].

cystic fibrosis with inspissated meconium, benign intestinal neoplasms, Peutz-Jeghers familial polyposis, ectopic gastric mucosa, ectopic pancreatic mucosa, and worm infestations (especially Ascarislumbricoides). Occasionally, inversion of MD into the lumen of the bowel can cause intussusception, ischemia and infarction [3]. The incidence of intussusception attributed to an inversion of MD accounts for 4% of all cases presenting with intestinal obstruction due to intussusception [4]. It occurs when the MD sags into the bowel lumen and then serves as a lead point to allow telescoping of the small intestine, first into the distal ileum and then in to the large intestine, causing ileo-ileal and ileocolic type of intussusceptions.

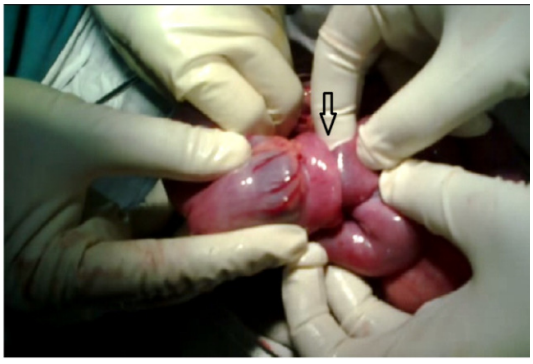
In the present case, although the intussusception was ileocaecocolic, the initial pathologic lead point was located in the ileum in the form of inverted Meckel's diverticulum and caused the ileoileal intussusception. Then the ileoileal intussusception continued to act as a lead point through the cecum toward the ascending colon, thus causing ileocecal-colic intussusceptions. A thorough search on medical literature didn't show any case of having all the three entities, namely, a multiple intussusception, a compound intussusception and an inverted Meckel's diverticulum,in a same case, thougheach entity have been separately reported.

CT is the most sensitive imaging modality for diagnosis of bowel obstruction with reported accuracy of 58%-100% [10] Multiple and compound intussusception secondary to inverted Meckel's diverticulum is a rare but important clinical entity. Diverticulectomy or bowel resection is the standard treatment but early surgical interventionmay ensure a favorable outcome.

PHOGRAPHS



1: showing Ileocaeco-colic (arrow) & ileo-ileal (triangle) intussusception



2: Reduction of Ileocaeco-colic intussusception

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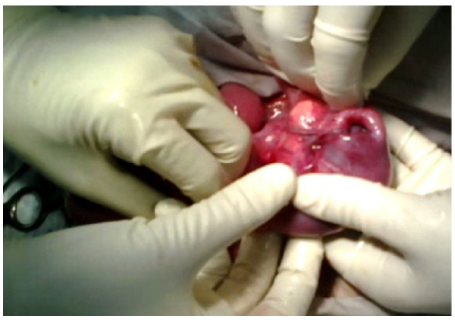
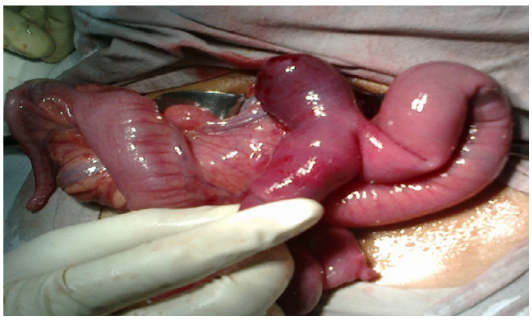


3: showing inverted lumen of Meckel's diverticulum



4: Showing reduced Meckel's diverticulum

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