

Intussusception in Adults

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Abstract

Intussusception in adults is a rare entity that it is generally caused by definable intraluminal pathology. We report four cases of adult intussusception caused by lymphoma of the terminal ileum (2), an inflamed appendix (1) and a mucosal polyp (1). All presented with a variety of nonspecific and chronic symptoms, including abdominal pain, nausea and vomiting, consistent with partial small bowel obstruction. Only one patient had palpable masses in the abdomen. The most useful diagnostic radiological method was computed tomography (CT), which showed "target" lesions. The presence of the characteristic "target" lesion may obviate the need for further studies, including a barium enema. As in the cases reported here, treatment involves more than simple reduction; surgical resection is usually indicated. **Key Words:** Intussusception, small bowel obstruction, barium enema.

Introduction

INTUSSUSCEPTION, although common in the pediatric population, is rare in adults. It occurs when a proximal segment of intestine (intussusceptum) telescopes into the intestinal segment distal to it (intussusciptens) (1). The most common sites of occurrence are the junctions between the freely moving segments of the bowel and segments that are relatively fixed, either due to their retroperitoneal location or to adhesions. Examples include ileocolic, colocolonic, and enteroenteral intussusception (2).

Adult intussusception is associated with a definable pathologic lesion or lead point in 70–90% of cases (1, 3–5). Intraluminal lesions

alter normal bowel peristalsis and form lead points for the intussusceptum (6, 7). Adult intussusception presents with a variety of acute, intermittent and chronic symptoms mimicking partial small bowel obstruction. Preoperative diagnosis is often difficult to establish. Computed tomography (CT) has proven useful in establishing the diagnosis; however, diagnosis is most often established at surgery. Treatment involves surgical resection of the involved segment of the bowel, as intraluminal pathology is present in most cases. Whether reduction should be performed prior to resection remains controversial (2).

Four cases of adult intussusception are reported. All patients were male, with ages ranging from 26 to 44 (Table 1).

Case 1

A 26-year-old, otherwise healthy male reported to the emergency room with the complaint of intermittent, "crampy" midepigastic and right lower quadrant abdominal pain of two weeks' duration. The abdominal pain, which had been increasing in intensity, was not associated

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TABLE 1
Summary of Patient Symptoms, Etiologies, and Treatment

Case	Age	Symptoms	Location	Cause	Treatment
1	26	Midepigastric/RLQ pain	Ileocolic	Malignant B cell lymphoma	Ileocolic resection
2	44	RLQ pain Bloody stools	Ileocolic	Large B cell lymphoma	Right hemicolectomy
3	41	RLQ pain Guaic positive	Ileocolic	Chronic appendicitis	Ileocolic resection
4	44	Diffuse abdominal pain	Ileojeunal	Mucosal polyp	Small bowel resection

with nausea, vomiting or diarrhea, but was aggravated by spicy foods.

Physical examination revealed normal bowel sounds, and tenderness in the right lower quadrant; a slight fullness was palpable in this region. The patient's rectal examination revealed no masses and a stool guaiac test was negative. Laboratory studies were normal. An abdominal ultrasound was performed which demonstrated a normal gallbladder without evidence of cholelithiasis. However, a dense mass was present in the right lower quadrant. Computed tomography (CT) identified a "target" lesion in this region that had the characteristic appearance of intussusception (Fig. 1). Barium enema subsequently revealed the presence of intussusception of the terminal ileum into the ascending colon (Fig. 2).

The diagnosis was confirmed intraoperatively, and a laparoscopic-assisted ileocolic resection was performed. Examination of the surgical specimen confirmed an intussusception of the terminal ileum into the ascending colon, with a significant amount of surrounding inflam-

mation (Fig. 3). Reduction of the intussusception was not possible. Final pathology demonstrated B cell lymphoma with transmural involvement.

Case 2

A 44-year-old male with AIDS presented to the emergency room with complaints of severe, crampy right lower quadrant abdominal pain for two weeks. The pain was continuous with frequent exacerbations, but was not associated with nausea, vomiting or diarrhea. The patient also reported an episode of bloody stools two days prior to his presentation.



Fig. 1. Case 1: Computed tomography scan. Arrow indicates target lesion in ileocolic region.



Fig. 2. Case 1: Barium enema revealing intussusception.

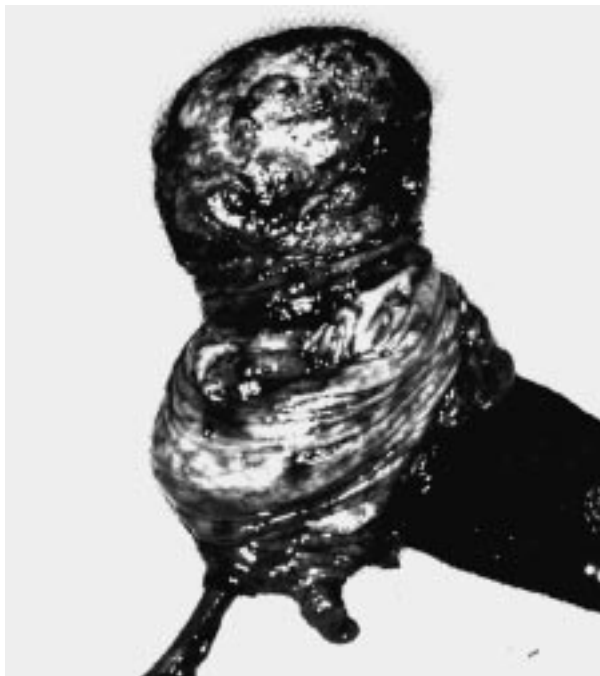


Fig. 3. Case 1: Surgical specimen revealing ileocolic intussusception.

On physical examination, he was afebrile with normal vital signs. His abdomen was soft and non-distended, with normal active bowel sounds. A slight fullness was noted in the right lower quadrant, which was tender on deep palpation. There was no rebound tenderness or guarding. Rectal examination was negative except for guaiac positive stools. Sonography revealed a mass in the right lower quadrant. A CT scan of the abdomen demonstrated the presence of a large cecal mass, which was subsequently confirmed by barium enema. Colonoscopy revealed a large submucosal mass in the cecum; a biopsy demonstrated acute and chronic inflammation.

Laparotomy confirmed the diagnosis of an ileocolic intussusception. A tumor in the terminal ileum was the cause of the intussusception. Multiple nodes were present in the mesentery and the appendix was found to be normal. No attempt was made to reduce the intussusception prior to performing a right hemicolectomy. Pathological examination revealed B cell lymphoma.

Case 3

A 41-year-old male with no significant past medical or surgical history presented to the emergency room with a 6-month history of intermittent, non-radiating, right lower quadrant abdominal pain. When the abdominal pain persisted for more than 24 hours, he came to the emergency

room. He did not complain of nausea, but had vomited once and was slightly febrile. He also complained of constipation for two days and anorexia for one day.

On physical examination, the patient was afebrile with normal vital signs. Abdominal examination revealed a mildly tender right lower quadrant. There was no rebound tenderness or guarding. There was a palpable mass in the right lower quadrant. Rectal examination revealed no tenderness or palpable masses; however, stool guaiac was positive. Laboratory examinations were normal. An obstructive series revealed a single dilated loop of small bowel with air fluid levels. A CT scan demonstrated intussusception of the ileocolic region, with a "target" lesion in the right lower quadrant. An ileocolic resection was performed. Reduction was not attempted prior to resection. Examination of the specimen revealed an ileocolic intussusception with the appendix as the lead point. Pathological examination demonstrated an acutely inflamed appendix with signs of chronic inflammation (Fig. 4).

Case 4

A 44-year-old male with no significant past medical or surgical history presented with a two-month history of intermittent, diffuse abdominal pain. Just prior to admission he had developed acute abdominal pain associated with some swelling of the right side of his abdomen. Associated symptoms included nausea, three episodes of vomiting, and constipation.

Physical examination revealed mild abdominal distention, normal bowel sounds, and tenderness in all four quadrants. Rebound tenderness without guarding was present in the right lower



Fig. 4. Case 3: Surgical specimen demonstrating inflamed appendix and ileocolic intussusception.

quadrant. Rectal examination revealed no palpable masses or tenderness and guaiac negative stools. His white cell count was 12,000/mm³. Blood chemistries and liver function tests were within normal limits. An obstructive series demonstrated evidence of small bowel obstruction, which was subsequently confirmed by abdominal CT scan. CT scan demonstrated a mass consistent with intussusception (Fig. 5).

At laparotomy, a jejunoleal intussusception was found and a small bowel resection was performed. Examination of the surgical specimen demonstrated a gangrenous, intussuscepted loop of distal jejunum into the proximal ileum. Pathology revealed a mucosal polyp with near total infarction. The lesion appeared benign. The exact nature could not be determined due to extensive necrosis.

Discussion

While relatively common in the pediatric population, intussusception is a rare entity in adults and accounts for one percent of bowel obstructions (4). Its clinical presentation is generally nonspecific and chronic, and includes abdominal pain with or without associated nausea and vomiting. The predominant symptoms are usually those of bowel obstruction; consequently, misdiagnosis is common at presentation (1, 8). Abdominal mass, gastrointestinal bleeding and acute cholecystitis follow in frequency as incorrect preoperative diagnoses (1).

The predominant symptoms in our series were consistent with those of partial small bowel obstruction; three of four patients presented with nausea, vomiting, and abdominal pain. Similarly, other series report pain as the most common presenting symptom (71–90%), with vomiting and

red blood per rectum following in order of frequency (5). The most consistent characteristic of the pain is its periodic and intermittent nature (2, 5, 7, 9, 10). In a recent review of 54 cases of intussusception, patients with benign lesions typically presented with nausea, vomiting and abdominal pain, while those with malignant etiologies more often presented with melena and guaiac positive stools (1). Other series have demonstrated a palpable mass in 24–42% of cases (7, 10).

A number of radiological studies may be useful in the preoperative diagnosis of intussusception, although the varied symptomatology renders it difficult to describe the perfect diagnostic algorithm (1). Various authors have advocated the use of CT scans, barium studies, abdominal ultrasound, plain film, and radionuclide studies (11–13). However, a correct preoperative diagnosis is established in only 32% of patients with intussusception (1).

In cases in which the clinical picture involves obstructive symptoms, plain abdominal films may help in identifying the site of intussusception. Ultrasonography has also proved accurate in diagnosing intussusception in children and adults (14). In one series, 145 cases of childhood intussusceptions were diagnosed by ultrasound (14). However, its diagnostic value is limited in evaluation of acute obstructive symptoms, as air in the bowel typically results in poor signal transmission (2). Contrast study, in particular barium enema, utilized as both diagnostic test and as therapeutic modality in children, adds little to the evaluation in the adult, once computed tomography is performed.

In our own series, CT scans proved to be most valuable in preoperative diagnosis. CT scans identified an obstructing lesion in all four patients, and in three, the characteristic “target” lesion was present. Our results are consistent with a recent report by Azar et al. in which abdominal CT scan provided correct diagnoses in 78% of cases (1). “Target” masses, although not pathognomonic, can be demonstrated on CT and ultrasound (11–13). The intussusceptum is the center of the target lesion and the edematous intussusciptens forms the external ring (1). In our series, a subsequent barium enema was performed in two cases to confirm the diagnosis. However, this study may be unnecessary in adult cases. The diagnostic algorithm for adult intussusception may require only abdominal plain films and CT scan before surgical intervention.

Three out of the four cases reported here involved the ileocolic region. In one study that reviewed 677 cases of adult intussusception, 53% arose in the duodenum, jejunum or ileum. Of these cases, 14% had a lead point at the ileocecal



Fig. 5. Case 4: Computed tomography scan. Arrow indicates target lesion.

valve, 16% were colonic lesions, and approximately 5% involved the appendix (15). More recent studies confirm the finding that the majority of lesions arise in the small bowel and that ileocolic, colonic, and appendiceal intussusception are rare (2, 5, 16).

In our series, all four patients presented with a demonstrable lead point. The two malignant lesions were lymphomas, both involving the ileum. The remaining two lesions were benign and included a small bowel mucosal polyp and an inflamed appendix. In Azar's study, 52% of small bowel intussusception were caused by benign conditions. The benign lead points included postoperative adhesions or suture lines of previous anastomoses. Other causes included Meckel's diverticulum, benign neoplasms and inflammatory lesions. Malignant lead points in the small bowel are usually metastatic lesions.

For colonic intussusception, the percentage of malignant lesions varies. Some series demonstrate that approximately 50% are malignant (5, 17). In one study, which reviewed 350 cases of colonic intussusceptions, 68% had malignant lead point with adenocarcinoma of the colon accounting for 62% of these lesions (18). More recent, smaller studies show similar frequencies, with two-thirds of intussusceptions due to malignancy (7, 16). The appendix as a lead point is rare, with only 200 cases reported in the literature (2, 19, 20).

The treatment of adult intussusception remains controversial. All authors agree that resection is necessary, as a pathologic lesion, possibly malignant in nature, is usually present (2, 6, 18). However, a question remains regarding the role of reduction prior to resection. Due to the high incidence of malignancy in adult intussusception, especially in those cases involving the colon, reduction may result in transperitoneal seeding. Resection without reduction allows uninjured bowel to be used in the anastomosis (2) and avoids spillage of bowel content if inadvertent perforation would otherwise occur.

While many early reports advocate reducing the intussusception prior to resection, more recent reports have advocated selective reduction before resection (5, 16). In cases of benign small bowel lesions, such as postoperative adhesions, intraoperative reduction is acceptable if the bowel is viable (5, 6). In patients without a history of previous laparotomy, resection without reduction is advocated, due to the high risk of malignancy (1). Also, in cases in which the bowel is inflamed or ischemic or in cases of colonic intussusceptions, resection without attempt at reduction is advised in order to avoid inadvertent perforation of the bowel and tumor seeding (1, 2).

Adult intussusception is a rare entity with no uniform presenting symptoms. Consequently, its diagnosis may be challenging. It typically presents with a variety of nonspecific and chronic symptoms that include abdominal pain, nausea, and vomiting. The most useful diagnostic radiological method is the CT scan. The presence of the characteristic "target" lesion may obviate the need for further studies, including a subsequent barium enema. Usually, there is a definable lead point in adult cases, and resection of the involved bowel, not simple reduction, is indicated.

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