

—Case Report—

Adenocarcinoma of the Colon Presenting as Intussusception in *Adult*: Report of Two Cases

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We present two adult cases of intussusception caused by adenocarcinoma of the colon. These cases represent typical cases of adult intussusception, a rare disease characterized by insidious onset, vague abdominal symptoms, and elusive diagnosis. On physical examination, the masses were palpable in the right hypochondrium. Colonic intussusception were diagnosed by characteristic finding on ultrasonography (US) and computer tomography (CT). Endoscopic examination showed pedunculated tumors with central ulceration, in the cecum, which caused colonic intussusception, and endoscopic biopsies showed adenocarcinoma of the colon. US and CT are useful non-invasive diagnostic tools that allow early detection of intussusception. Colonoscopy is recommended for differential diagnosis and possibly a direct reduction of intussusception.

Key words: intussusception, adenocarcinoma, colon

Introduction

Intussusception is a condition characterized by invagination of one part of the intestine into the adjacent proximal segment. The blood supply of the inner layers of the intussusception could be potentially impaired, resulting in severe ischemia and gangrene. Several forms of intussusception may be encountered but the most common are the ileo-cecal and ileo-colic.

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In adults, the presenting symptoms of intussusception are those of partial intestinal obstruction. Among the causes of mechanical bowel obstruction, adhesions are the most common, followed by strangulated hernia and volvulus (1-3). Intussusception is very rare in adults and is rather a disease of infants and children; representing the presenting symptoms in 3-16% of all the above diseases (4-6). Both benign and malignant neoplasms of the intestine might also present as intussusception (7-9).

The diagnosis of intussusception in adults is difficult due to the variability of clinical presentation and preoperative diagnosis of intussusception is infrequent in adult population. The preoperative diagnosis in the majority of patients is bowel obstruction (10, 11). In patients with a vague clinical picture, ultrasonography (US) and computed tomography (CT) have more recently been used to facilitate diagnosis of intussusception (2, 12-17). Several reports have also described the use of endoscopy in the diagnosis and management of colonic intussusception (18, 19).

We describe the diagnosis of intussusception of the cecum and ascending colon with malignant growths. The diagnosis was established in both cases using US, CT and colonoscopy.

CASE REPORT

Case 1

A 87-year-old male presented in May 1996 with one month history of a progressive worsening of lower abdominal dull pain and abdominal fullness. The patient was admitted to our hospital for further evaluation. On physical examination, the abdomen was slightly distended with no tenderness or hyperactive bowel

sound. A funicular mass was palpable in the right hypochondrium. Laboratory data demonstrated mild anemia (hemoglobin 11.5 g/dl).

Ultrasonography demonstrated mixed hypoechoic-echogenic structure with a hyperechoic center, so

called target-like appearance, compatible with the diagnosis of intussusception (Fig. 1). On abdominal CT, intestinal intussusception was suspected as it produced a layer pattern secondary to mesenteric fat, intestinal fluid, and bowel wall (Fig. 2). Colonoscopy identified an

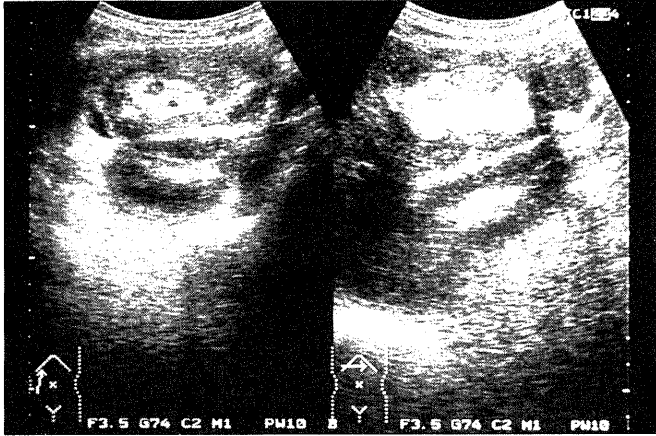


Fig 1. Case 1. Ultrasonography demonstrating the layering of intestinal intussusception.



Fig 2. Case 1. Abdominal CT demonstrating a complex colonic mass composed of a fat layer, intestinal fluid, and bowel wall.

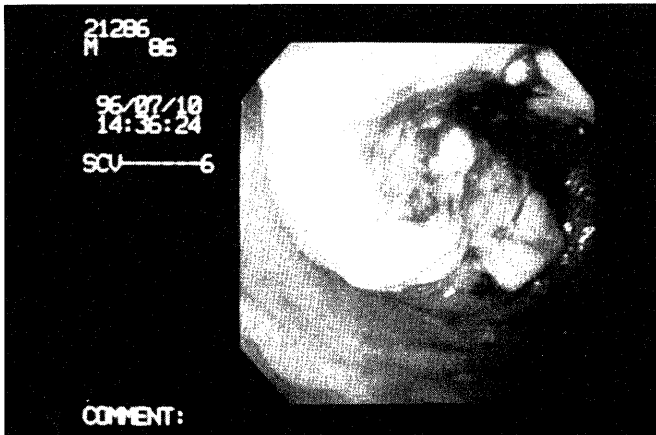


Fig 3. Case 1. Colonoscopy showing the ulcerated tumor with regular surface in the cecum.

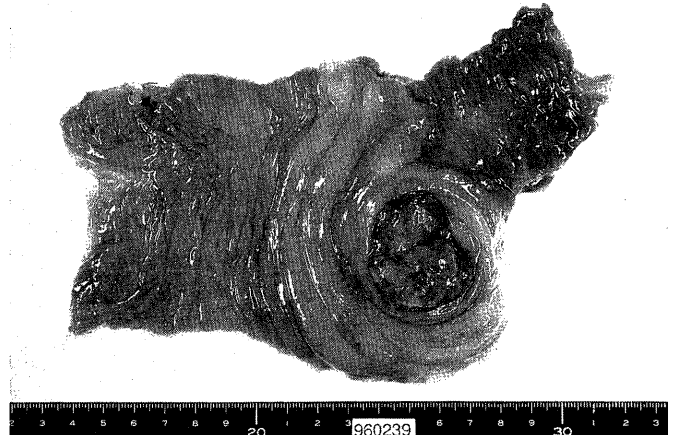


Fig 4. Case 1. Resected specimens showing ulcerated mass, 40×35 mm in the cecum.

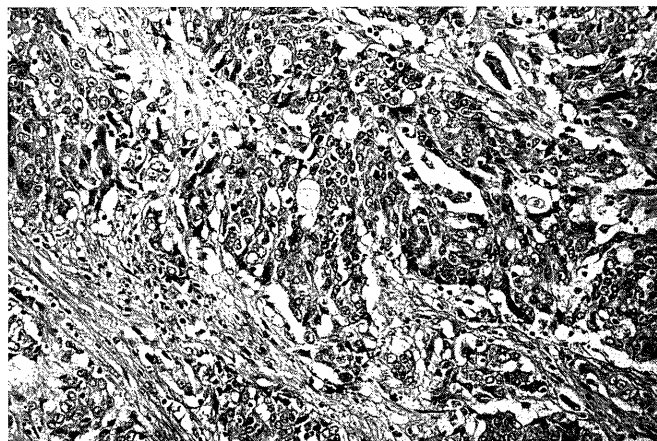


Fig 5. Case 1. Histopathologic examination of the biopsy specimen showing a poorly differentiated adenocarcinoma (magnification ×100).

ulcerated tumor with regular surface in cecum (Fig. 3), and biopsy established the diagnosis of adenocarcinoma. The patient underwent right hemicolectomy. Gross examination of the specimens showed 40×35 mm ulcerated tumor in the cecum (Fig 4). Histopathological examination of the biopsy material showed a poorly differentiated adenocarcinoma with serosal invasion (Fig. 5). The postoperative course was satisfactory, and the patient is in good health two years after the operation without any evidence of tumor recurrence.

Case 2

A 61-year-old female presented with abdominal fullness and a history of liver cirrhosis. On physical examination, the abdomen was distended by ascites. A chicken-egg size mass was palpable in the right hypochondrium. Laboratory data demonstrated hypoproteinemia (total protein 6.0 g/dl). Abdominal CT showed features indicative of intestinal intussusception. Barium enema showed so called "beak-like" filling defect in the ascending colon (Fig.6). Reposition was achieved with the

aid of a barium enema. This revealed a pedunculated mass in the cecum. Colonoscopic examination showed a pedunculated tumor with white border, and biopsy proved adenocarcinoma. The patient was treated with right hemi-colectomy. Gross examination of the specimens showed a 55×82 mm pedunculated mass in the cecum. Histopathological examination showed a poorly differentiated adenocarcinoma with massive mucin production. The postoperative course was uneventful.

Discussion

Adult intussusception is an unusual cause of bowel obstruction (1-3). The presenting symptoms are non-specific, often chronic, and the most important characteristic of pain secondary to intussusception is its periodic, intermittent nature (3, 11, 12). Although intussusception presents acutely in children, adults may present with acute, intermittent, or chronic reported problems (20). The predominant symptoms are usually those of bowel obstruction and consequently, intussusception often is misdiagnosed initially in adult patients. On physical examination, the presence of abdominal masses on palpation have been reported in 24% to 42% of patients (11, 12). In both of our patients, a mass was detected in the right hypochondrium. Identification of a mass, or one that is only palpable when symptoms are present, is particularly suspicious of intussusception in adult patients.

While intussusception is relatively common in children, hydrostatic reduction of intussusception is the definitive therapy in most infants with this abnormality, but it is rarely effective in adults. Adult intussusception is caused by tumor, post-operative adhesion, or Meckel diverticulum (3).

Felix et al. (20) reviewed 1,214 reported cases of intussusception in adults and estimated that 63% of all intussusception. Furthermore, Sanders and Hagan (7) reviewed more than 350 cases of colonic intussusception, and 68% were noted to be due to malignant tumors. Adenocarcinoma accounts for 62% of such lesions (5). Furthermore, Te Strake (6) reported that the most common cause of intussusception in adults was malignant lymphoma, followed by cecal adenocarcinoma. More recent reviews, although of smaller number of patients, showed a remarkably similar frequency, with 43% to 66% of cases being secondary to malignancy (8, 9).

A number of different radiological methods have been described as useful for the diagnosis of intussusception; CT, barium studies, US, plain x-ray film, angiography, and radionuclide studies. Modern

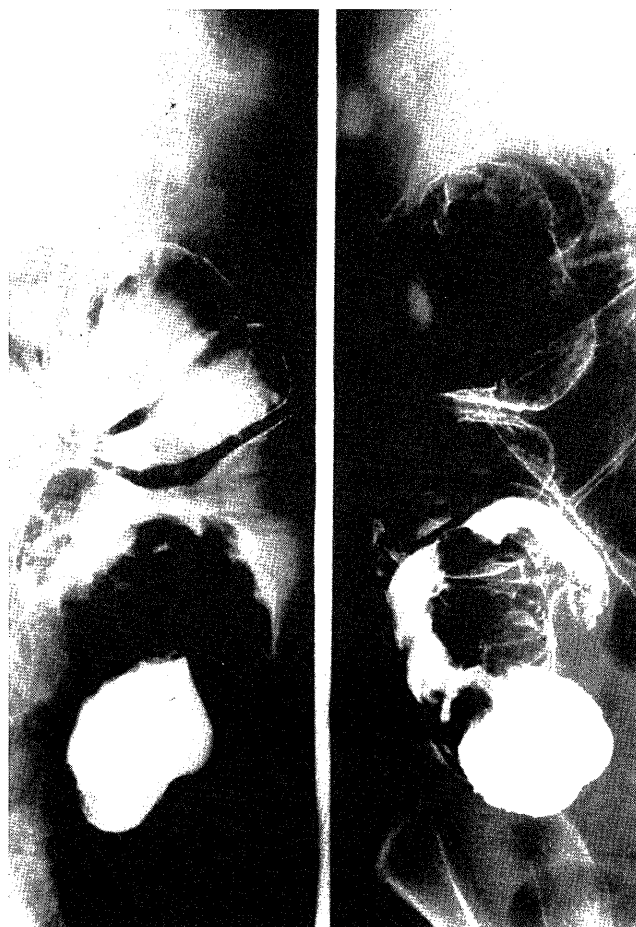


Fig 6. Case 2. Barium enema showing the beak-like filling defect in the ascending colon, suggestive of intussusception.

non-invasive imaging techniques, may offer significant help in the precise identification of these lesions. Intussusception was accurately identified in both of our cases by US and CT based on characteristic target appearance. Ultrasonography has proved to be particularly useful in the diagnosis of childhood intussusception (2, 7, 11). There is less documented experience about the use of US in the diagnosis of adult intussusception (15, 17). Lim et al. (2) reported that US is useful for examination of patients with colonic obstruction to determine the level and cause of the obstruction. The classic sonographic features have been previously described, and include the target and doughnuts sign on transverse view, layering in longitudinal view, and the pseudo-kidney sign in the oblique and longitudinal views (2, 7, 15, 17).

Computed tomographic changes indicative of intussusception include the early target mass with retention of the facial planes around the mass, and progressive bowel wall thickening produces the characteristic feature of a mass with the layering effect (5, 13, 16). Traction on the associated mesenteric vasculature may be noted. Scattered air-fluid levels indicate the associated presence of bowel obstruction. As edema of the bowel progresses, the layering effect is obscured, and the compromised bowel assumes an amorphous shape surrounded by intraperitoneal fluid. The presence of intramural air is indicative of vascular compromise of the intussuscepting bowel (13, 16, 21, 22). It was difficult to distinguish the tumors from the edematous intestinal walls at the proceeding portion in two cases (16).

Barium studies offer both diagnostic and therapeutic choice in children with suspected intussusception. The characteristic appearance of intussuscepting bowel on a barium enema study is a beak-like or cup-shaped filling defect that is often accompanied by an additional filling defect representing the leading tumor (2, 3, 11). Colonoscopy is also a useful tool for the evaluation of intussusception (18, 19). Azar and Berger (23) stressed that, when colonic intussusception is detected in the adult, attempts of nonoperative reduction should not be performed, because surgical intervention is necessary in all cases of intussusception. On the other hand, Kitamura et al. (24) reported a successful reduction of colic intussusception by air insufflation via the colonoscope. In this report, two patients of colonic adenocarcinoma presenting with intussusception were diagnosed by colonoscopic biopsies. If we find the cause of colonic intussusception by colonoscopy, we can choose most suitable operation for these cases. We believe that biopsy of such masses should be recommended for differential diagnosis and therapy.

In conclusion, we have described rare adult cases of intussusception caused by colonic adenocarcinomas. CT and US are the most useful non-invasive diagnostic methods, and should be used in the early stages of intussusception, together with colonoscopy.

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