Ultrasonographic diagnosis of adult intussusception caused by pedunculated colon carcinoma

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Adult intussusception is clinically rare. We report a case with colon intussusception caused by a pedunculated polyp of the sigmoid colon in a 54-year-old male. Abdominal ultrasonographic screening for hematochezia showed intussusception in the sigmoid colon, demonstrating a multiple concentric ring sign and a mobile leading colon polyp. Histological examination of a biopsy specimen of the polyp revealed adenoma. This report suggests that ultrasound imaging is a modality of choice for differential diagnosis of intestinal intussusception with hematochezia in adults.

Keywords: pedunculated colon polyp; invagination; ultrasonography

INTRODUCTION

Adult intussusception is clinically rare.[1-7] In contrast to intussusceptions in children, a definable structural lesion is found mainly in the colon.[8-12] Its diagnosis can be made reliably with noninvasive imaging techniques such as CT, MRI and ultrasound. With recent advancement in ultrasound technology and device, ultrasonography has been widely used in the diagnosis of such gastrointestinal lesions. Ultrasound is useful to characterize intestinal gross lesions as well as integrity of tract layers. Although intussusceptions present acutely in children, adults may present with acute, intermittent, or chronic symptoms. The predominant symptoms usually are those of bowel obstruction such as nausea, emesis and abdominal pain. However, symptoms are various, often vague and non-specific, and consequently it is often misdiagnosed initially, or detected unexpectedly. Hence, it would be important to selectively use a proper imaging modality in the right timing.

We experienced an adult patient with intussusception caused by a pedunculated polyp of the sigmoid colon, which was initially diagnosed by ultrasonographic screening for hematochezia. In this report we describe ultrasound diagnosis of an adult intussusception due to a pedunculated colon polyp, and discuss the value of ultrasound imaging in the differential diagnosis of colon intussusception.

CASE REPORT

A 54-year-old Japanese man who complained symptoms of intermittent abdominal discomfort and hematochezia for a period of 6 months. He was referred to Tokai University Hospital. At presentation, physical examination was normal. There was neither rebound nor defense in the abdomen. Anal digital examination reveled no hemorrhoids. Laboratory examination revealed no apparent abnormalities except for mild normocytic anemia and mild elevated serum level of hepatic transferases. Serum levels of carcinoembryonic antigen and carbohydrate antigen 19-9 were in the normal range.

Ultrasonographic examination of the abdomen revealed the presence of a round tumor with a size of 33 X 21X 30mm at the sigmoid colon. The contour of tumor was basically clear, and the internal echo was heterogeneous and rather hyperechoic (Fig. 1−a). The pedicle of the tumor led from the first and second layers of intestinal wall, which were mucosal and submucosal layers. There was a multiple concentric ring sign on the oral side of the tumor in the descending colon, suggesting intestinal intussusception (Fig. 1−b). The oral side entered into the anal side of the descending colon over 20mm. The intestinal wall between tumor and intussusception was remarkably swollen although the structure was kept clear and regular. Color doppler sonography showed pulsating signals in the tumor (Fig. 1−c). Intestinine Radiographic series of lower intestine showed an approximately 30 mm, Yamada IV type, round filling defect in the sigmoid colon (Fig. 2). Colonoscopy revealed a pedunculated colon tumor with irregular surface and bleeding on it (Fig. 3). CT of the abdomen revealed a round shaped mass inside of the lumen of sigmoid colon. The mass was isodensity and enhanced heterogenously (Fig. 4).

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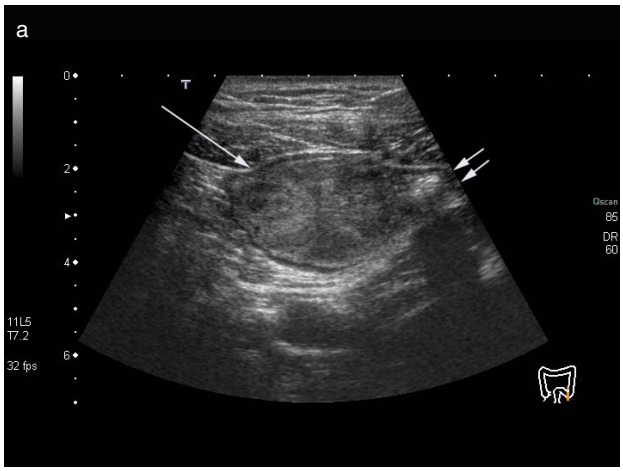

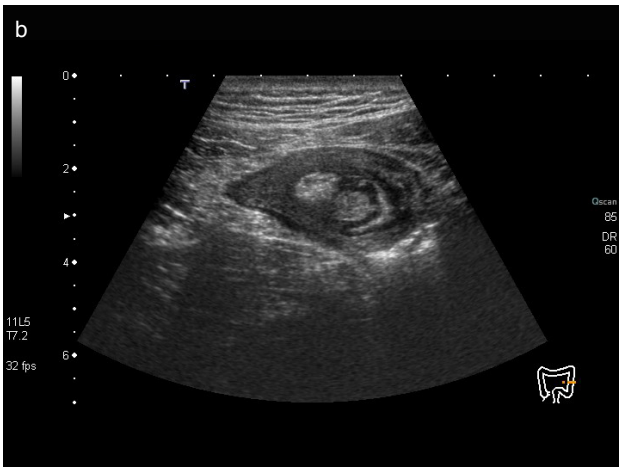

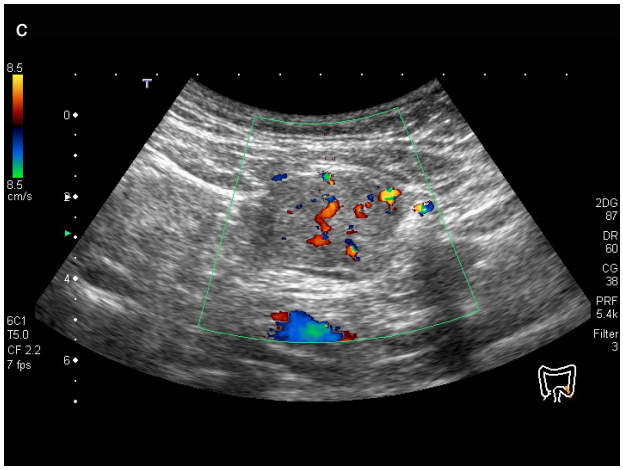

Fig. 1. Ultrasonogram of the left mid-lower abdomen.
a. The longitudinal view of the tumor showed that the tumor (fat, single arrows) had pedicle (double arrows). The couture of the head of the mass was irregular. The internal echo of the tumor was heterogeneous with iso- to hyper-echoic areas. m: mucosal layer, sm: submucosal layer, pm: proper muscle layer.
b. The transactional view showed multiple concentric ring sign in the oral side of the tumor in the descending colon. Hyperechoic mass was observed at the center of multiple concentric ring sign.
c. Color Doppler sonography showed pulsating flow signal inside of the tumor, which suggested the mass was malignant.

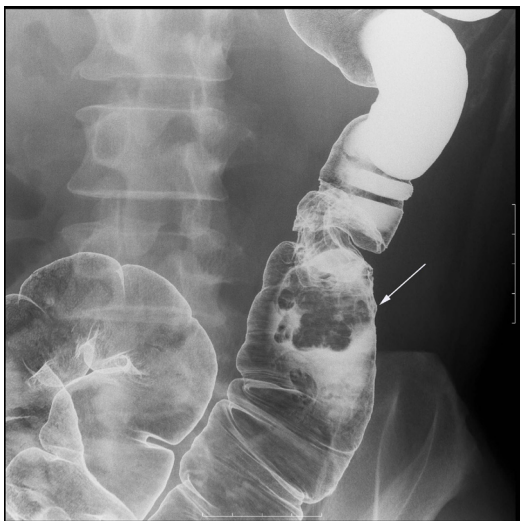

Fig. 2. Lower gastrointestinal radiographic series of the descending to sigmoid colon.
The lower gastrointestinal radiographic series showed a multi nodular mass in the sigmoid colon (arrows).

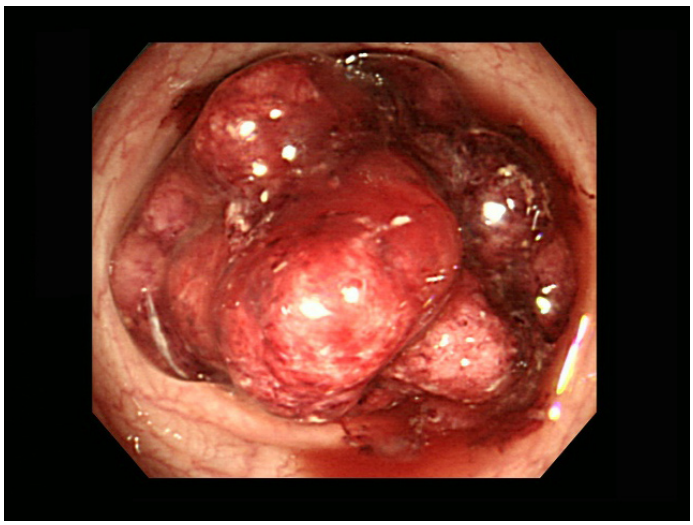

Fig. 3. The tumor in the descending colon of the lower endoscopy.
Lower endoscopy showed a round and glossy tumor with nodulous surface in the sigmoid colon. Markedly bleeding was observed around the tumor.

Histopathological examination of the mass revealed an adenocarcinoma in tubular adenoma.

DISCUSSION

Intussusception in adult is uncommon and usually associated with neoplasms, of which up to 70–80 % are malignant.[13] In the present case, intussusception secondary to a mobile leading colon adenoma, which prolapsed into the distal bowel of the descending colon, was found at ultrasonographic examination.

Clinical symptoms of intermittent abdominal discomfort and hematochezia in an adult would suggest possibility of diverticulosis, (angioplasia), inflammatory and neoplastic disorders as the differential

Fig. 4. Contrast-enhanced CT of the abdomen
Enhanced CT showed a round shaped mass in the lumen of the sigmoid colon (arrows). The mass was iso-density and enhanced heterogeneously.

diagnosis.[14] With recent advancement in ultrasound technology and device, ultrasonography has been widely used in the diagnosis of such gastrointestinal lesions. Ultrasound is useful to characterize intestinal gross lesions as well as integrity of tract layers. In the present case, the ultrasonographic examination showed intussusception in the sigmoid colon, demonstrating a multiple concentric ring sign and a mobile leading colon polyp.

The internal texture of the tumor showed iso- to hyper-echoic and heterogeneous, in contrast to that for typical colon adenocarcinoma featured by a hypoechoic mass.[12] The internal texture of the tumor in the present case was assumed partly reflecting histological features of well-differentiated tubular adenocarcinoma, such as various and stratified structures including tubular glands, vasculars and fibrotic tissues. The stratified structures with tissues of different impedance of the tumor would generate hyperechoic internal echo of it.

For the diagnosis of adult intussusception, CT are proved to be of the most useful diagnostic radiological methods and increasingly common for the diagnosis to be made.[6,8] Early intussusception has been described as a "target mass" associated with obstruction on CT.[8] In the present case, CT did not apparently show the target mass. It seems to be most useful when symptoms are typical for intussusception like obstruction or ileus. However, its symptoms are various and often non-specific such as intermittent abdominal discomfort and hematochezia like in the present case. Most of colon intussusception occurs in the right side including ileocoecal and coecal-ascending ones.[14] These symptoms are typical for obstruction such as nausea, emesis and abdominal pain. In the case of left side, intussusception of descending/sigmoid colon more likely causes hematochezia as an initial manifestation. This may have led to the detection of colon intussusception in an early stage of the disease in the present case. The ultrasound examination can be contributory to the initial diagnosis, as a non-invasive imaging method. One of limitation in accurate diagnosis of intestinal diseases by ultrasound is that it largely depends on the skill of examiners. In addition, labor cost of the examiner must offset the effectiveness of a case-finding by the examination. Clarification of cost-effective usage of ultrasound in differential diagnosis in gastrointestinal symptoms would be warranted.

In summary, this is the novel report that describes ultrasound diagnosis of an adult intussusception due to a pedunculated colon adenoma with ++ adenocarcinoma in the descending colon, suggesting that ultrasound imaging is a modality of choice for differential diagnosis of intestinal intussusception with hematochezia in adults.

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