

Radiologic Findings of Perforated Jejunal Diverticulitis: A Case Report¹

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We report a case of perforated jejunal diverticulitis in a 68-year-old man with iatrogenic Cushing's syndrome. The patient presented with right upper abdominal pain. Ultrasonography showed a hypoechoic structure connected to a small bowel loop, and subsequent CT examination showed multiple diverticula in proximal jejunal loops with free air trapped within the mesenteric leaf. Segmental resection of the jejunal loop confirmed jejunal diverticulitis with perforation.

Index words : Intestines, diverticula
Intestines, inflammation
Mesentery, diseases
Mesentery, CT

Jejunal diverticulosis has been reported to occur in less than 0.2 - 2% of autopsied patients (1). Acute complications from diverticulitis are relatively rare, occurring in 10% of patients. Reported mortality from perforation was 21 - 40% (2), but the recent mortality rate of complicated diverticulitis is very low (3). Because of the rarity of jejunal diverticulitis, it is rarely considered as the etiology for patient's abdominal pain, and this contributes to the delayed diagnosis and ineffective treatment (4). We experienced a case of jejunal diverticulitis that was correctly diagnosed preoperatively by ultrasonography (U/S) and computed tomography (CT) and treated by surgical resection. We present a case of perforated jejunal diverticulitis including characteristic images.

Case Report

A 68-year-old man, who had a long history of xerotic eczema and had been managed with prednisone for 53 years, was admitted with abdominal pain lasting for 3 days. On abdominal examination, the right upper quadrant was severely tender. The laboratory values showed an increased white blood cell count (13,600 /mm³) and the body temperature was high (38.6 °C).

The supine and erect radiographs of the abdomen showed the presence of dilated colon and small bowel loops without an evidence of free air. Acute cholecystitis was suggested and abdominal ultrasonography was recommended. The U/S examination (Fig. 1A) showed a hypoechoic structure, connected to a small bowel loop, highly suggestive of diverticulum. The presence of hyperechogenic tissue around the diverticulum was suggestive of inflamed fat. CT images of the abdomen and pelvis showed multiple diverticula, misty mesentery, and free air localized within the mesenteric leaf in a proximal jejunal loop (Fig. 1B). The patient underwent

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segmental resection of the jejunum, which contained perforated diverticula. Histopathologic findings confirmed jejunal diverticula at the site of mesenteric attachment and diffuse inflammatory cell infiltration in mesentery (Figs. 1C and 1D). The patient was discharged on postoperative day (POD) 11.

Discussion

Jejunal diverticulosis is a rare clinical entity and detected in 0.2 - 2% of patients (1). In contrast to true diverticula such as Meckel's diverticula, which are fairly common, acquired diverticula consist only of mucosa,

submucosa and serosa without muscularis propria. Thus they are termed pseudodiverticula. The pathogenesis of acquired diverticula of the small bowel is unclear, although it may be ascribed to a pulsion phenomenon (5). It explains that small bowel has natural weak points along the mesentery side where blood vessels penetrate the intestinal wall, and that locally increased intraluminal pressure with abnormal peristalsis causes the protrusion of mucosa and submucosa. Jejunal diverticula occur most frequently in the proximal jejunum, possibly due to the larger size of the vasa recta at this location (6). Jejunal diverticulosis in younger patients was previously reported, however, the incidence of jejunal

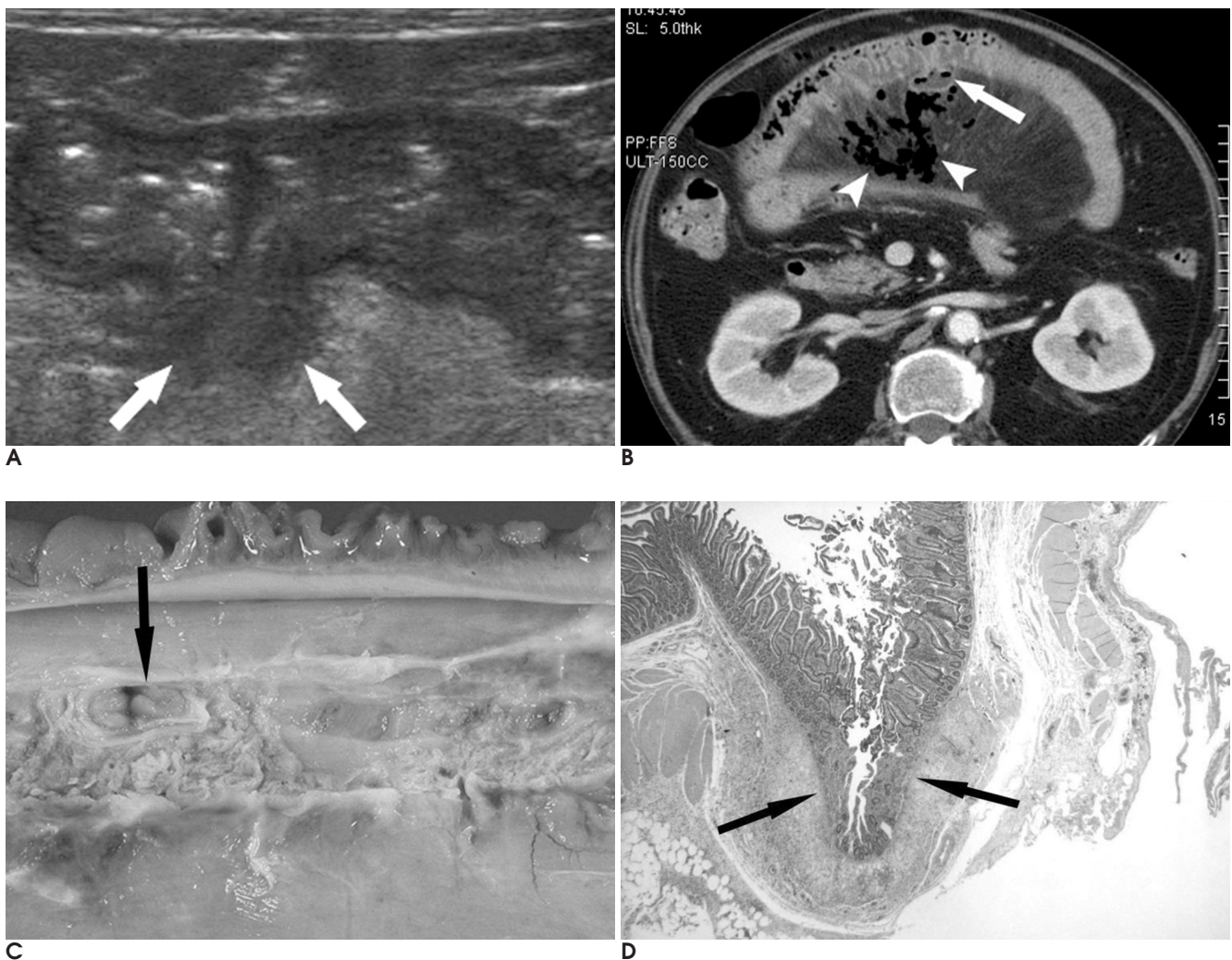


Fig. 1. Perforated jejunal diverticulitis in a 68-year-old man.

A. On transabdominal US image, a hypoechoic structure (arrows) projecting beyond the contour of the small bowel, suggestive of a diverticulum, is visualized. Heterogeneous hyperechogenicity around the diverticulum, suggestive of inflamed mesenteric fat, is also seen.

B. Transverse CT scan shows several air containing diverticula (arrow) along the mesenteric fat. Extraluminal air pockets (arrowheads) trapped within the mesenteric leaf, and misty mesentery representing inflammation of the adjacent mesenteric fat is seen.

C. Photograph of gross specimen shows a cross sectioned jejunal diverticulum (arrow) at the mesentery border.

D. On photomicrograph, there is herniated jejunal mucosa (arrows) through the defect of the muscle coat (H & E staining, $\times 15$).

diverticulosis increases with age, especially during the sixth and seventh decades (1).

Small bowel diverticulosis usually remains asymptomatic and complications related to the diverticula are uncommon. Perhaps the most frequent acute complication of a jejunal diverticula is diverticulitis with or without perforation, occurring in 2.3 - 6.4% of cases (1, 7). Jejunal diverticulitis with perforation is a very uncommon complication of jejunal diverticulitis. To our knowledge, this is the first case report within the country. Mortality of complicated diverticulitis of up to 21% in cases of perforations was reported in 1962 (2), but it has decreased dramatically due to improved diagnostic and surgical techniques, and a recent series reported a mortality rate of 0% (3). Jejunal diverticular perforation is very difficult to diagnose because of its rarity and non-specific symptoms such as acute abdomen, abdominal pain and tenderness with leukocytosis, so that perforation is often misdiagnosed as cholecystitis, colonic diverticulitis, peptic ulcer disease or appendicitis (4). In our case, the symptom of the perforated jejunal diverticulum was similar to acute cholecystitis, showing pain in the right upper quadrant of the abdomen with leukocytosis and fever.

There was a case report of multiple jejunal diverticulitis with perforation in a patient with systemic lupus erythematosus (SLE) who had been treated with prednisone (8). They speculated that systemic lupus erythematosus (SLE) patient could have acquired multiple jejunal diverticulosis due to intraperitoneal adhesion, recurrent peritonitis and vasculitis. Our patient had xerotic dermatitis which had been managed with steroid therapy for a long time. He was diagnosed with iatrogenic Cushing's syndrome and had prominent mesenteric fat possibly due to steroid therapy. As far as we know, there has been no report on the relationship of steroid use and jejunal diverticulitis.

The radiologic diagnosis of jejunal diverticula is difficult. Plain abdominal radiograph as a routine procedure for acute abdominal pain is not usually sufficient to make the diagnosis of jejunal diverticulosis or diverticulitis (4), unless there is pneumoperitoneum due to perforation of jejunal diverticulitis. U/S is a readily available method and can demonstrate the inflamed divertic-

ulum and perforation (9). Kelekis et al (9) reported that CT imaging was superior to U/S, demonstrating the precise localization of the lesion and defining its borders and extent of the inflammatory reaction. CT scan typically shows an inflammatory mass containing gas, wall thickening in the involved segment, and edema of the surrounding tissues including fat or fascial planes. However, there has been only a single case report regarding perforated jejunal diverticulum which was preoperatively made by CT (4). In our case, U/S examination showed a diverticular sac with inflamed mesenteric fat and CT scan demonstrated multiple diverticular sacs and free air trapped within mesenteric leaves of jejunum with adjacent misty mesentery, thus confirming perforated jejunal diverticulitis.

In conclusion, jejunal diverticulitis with perforation is a rare entity and correct diagnosis can be difficult. The U/S can demonstrate the inflamed diverticulum itself. The CT scan can confirm the U/S diagnosis and furthermore can localize the inflamed diverticulum with perforation.

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