Phlegmonous Enteritis in a Patient with Congestive Heart Failure and Colon Cancer

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Phlegmonous enteritis is a rare infective inflammatory disease of the intestine, predominantly involving the submucosal layer. It is difficult to diagnose and often fatal. Its association with alcoholism and various liver diseases, although rarely reported, is well documented. We report a case of phlegmonous enteritis in a male patient with congestive heart failure and colon cancer, and describe the ultrasonographic and CT findings.

Phlegmonous gastritis and phlegmonous enterocolitis are rare types of gastrointestinal tract infection, and have been observed in association with alcoholism and hepatic cirrhosis (1-5). They may, however, also be found in healthy subjects (6). Although mucosal lesions can be present and inflammation may extend to the serosa, the constant feature of this disease entity is the intense purulent process that spreads throughout the submucosal layer (1-6).

Clinical diagnosis is difficult because the lesion is confined to the submucosa and easily misdiagnosed as submucosal edema or ischemic change. Thus, diagnosis has often relied on the presence of surgically resected or postmortem specimens (1-6). Except for one description of the CT findings of phlegmonous enteritis (6), the radiological imaging findings have not been reported in the literature.

We report a case of phlegmonous enteritis in a patient with congestive heart failure and colon cancer who underwent ultrasonographic and CT examinations followed by right hemicolectomy with distal ileal resection.

CASE REPORT

A 65-year-old man with intermittent, colicky periumbilical pain which first occurred two months earlier was admitted to hospital. He had an eight-year history of congestive heart failure caused by mitral valvular regurgitation and atrial fibrillation. He was nonalcoholic, and there was no history of diarrhea, hematochezia, or melena. Physical examination showed an increased bowel sound. Vital signs at admission were stable, and laboratory findings including white blood cell count, a liver function test and electrolytic balance were within the normal ranges. Electrocardiography revealed atrial fibrillation, and chest radiography demonstrated cardiomegaly (not shown). To exclude acute appendicitis, initial ultrasonography (US) was performed, and this demonstrated diffuse, segmental, concentric wall thickening of the terminal ileum just proximal to the ileocecal valve. The mucosal folds were blunted and there was low level echogenicity (Fig. 1A). Nonspecific ileitis, Crohn’s disease, intestinal tuberculosis or ischemic enteritis were suggested as possible causes of the bowel wall thickening, and in order to evaluate the terminal ileum, colonoscopic examination was performed. The
ascending colon was found to be completely obstructed by a circumferential mass lesion, and the colonoscopic fiber could not be advanced further. Subsequent CT scanning showed a markedly dilated small bowel and ascending colon, with concentric, hyperattenuating, focal wall thickening in the hepatic flexure of the ascending colon (Fig. 1B). In addition, the terminal ileum was dilated and showed diffuse, concentric wall thickening of its long segments with heterogeneous contrast enhancement. In the thickened wall, focal areas of poor contrast enhancement were also noted (Fig. 1C). There appeared to be several possible diagnoses, including ischemic enterocolitis caused by thromboembolism of mesenteric vessels arising from atrial fibrillation, inflammatory bowel disease involving the ascending colon and terminal ileum, and ischemic or infectious enteritis associated with colon cancer. Although surgery was recommended, the patient refused. Stool culture yielded lactose-fermenting Gram-negative bacillus, urine culture yielded *Citrobacter freundii*, and Gram staining of urine revealed the presence of Gram-negative rods; no organisms were isolated from blood cultures. In addition to conservative management of congestive heart fail-

![Fig. 1. A 65-year-old man with adenocarcinoma of the ascending colon and phlegmonous enteritis involving the terminal ileum.](image1)

A. Ultrasonogram shows marked, diffuse, segmental wall thickening of up to 10 mm in the terminal ileum. The mucosal folds are blunted (arrows).
B. Contrast-enhanced CT scan reveals colonic obstruction, with a well-enhanced concentric mass lesion visible in the hepatic flexure of the colon (arrows).
C. Contrast-enhanced CT scan at the lower level shows concentric thickening of the terminal ileum (arrowheads) along with diffuse dilatation of the ascending colon and small bowel loops. The thickened wall in the terminal ileum shows heterogeneous contrast enhancement and a small, poorly enhanced lesion (arrow).
D. Microscopic examination shows marked edematous thickening of the submucosa, with dense infiltrations of neutrophils and the formation of small irregular abscesses (arrows). The mucosa is intact, with extension of neutrophilic infiltration of submucosa into the muscular layer and serosa.
Some reports have suggested that earlier di-
tologic findings were consistent with phlegmonous enteri-
tration extended into the subjacent muscular layer and
ilened bowel wall, there was extensive destruction of under-
folds of thickened ileal loop were blunted by submucosal
Microscopic examination also showed that the mucosal
dence of mucosal lesion. The colonic mass was confirmed
ascites was also present. A cut section of the thickened ter-
imal ileum revealed marked submucosal edema to a
dedema associated with portal hypertension has been de-
case, in which only nonspecific small bowel wall thickening
to changes in the intestinal mucosa, with increased intesti-
with infiltrations of neutrophils. In some areas of the thick-
Neutrophil infiltration extended into the subjacent muscular layer and
evidence of granuloma formation, and the histologic findings were consistent with phlegmonous enteriti-
DISCUSSION
Phlegmonous enterocolitis is a rare inflammatory bowel
disease with a high mortality rate of at least 60%. The lit-
areation between this disease entity and a variety of liver dis-
ed cases has been well documented (1-3), though cases associ-
ed with portal hypertension has been described in liver cirrhosis, and the loose connective tissue in
submucosa can be excellent soil for the rapid and dif-
fusely thickened. About 500 ml of clear, yellowish
Phlegmonous enteritis are confined to the submucosa. Bowel wall
edema associated with portal hypertension has been de-
scribed in liver cirrhosis, and the loose connective tissue in
submucosa can be excellent soil for the rapid and dif-
spread of the organisms involved in an episode of bact-
Our case demonstrated certain features different from
those of previously reported cases. First, the patient was
not alcoholic and had no evidence of liver disease or sep-
ticemia. He had a long-standing heart problem, with ob-
structive colon cancer. Second, his clinical course was silent
for a long period, being discovered only at surgery; previ-
ously reported cases, on the other hand, manifested an
acute and serious clinical course, one which led even to
sudden death. In our case, the early use of broad-spectrum
antibiotics might have helped his condition to persist.
The literature in English includes only one case report
dealing with the radiologic findings pertaining to this dis-
ease. Mooney et al. (6) reported the CT findings in one
case, in which only nonspecific small bowel wall thickening
with a small amount of ascites was noted. In our case, the
terminal ileum showed marked wall thickening, and
thumbprinting and blunted mucosal folds were revealed by
ultrasonography. CT scanning demonstrated concentric
thickening of the ileal wall, with heterogeneous contrast
enhancement. The hypoechogenic focal areas in this
thickened wall, shown at microscopic examination to be
submucosal abscesses, are, in our case, thought to provide a
cue to the diagnosis of phlegmonous enteritis. The inves-
tigation of further cases is, however, required.

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