JEJUNAL DIVERTICULA CAUSING UNUSUAL MASSIVE LOWER GASTROINTESTINAL BLEEDING

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SUMMARY

Jejunal diverticula are rare and difficult to diagnose. They are often asymptomatic, but they may infrequently cause serious acute complications, such as diverticulitis with or without perforation, volvulus, intussusception, or hemorrhage. Hemorrhage of jejunal diverticula usually presents as lower gastrointestinal bleeding. Diverticula with bleeding may be associated with some anticoagulants, antiplatelets or nonsteroidal anti-inflammatory agents in the elderly. In our case, upper gastroscopy and colonoscopy could not easily disclose the bleeding. Selective mesenteric angiography is the gold standard for diagnosis of active and fatal bleeding. The management of a bleeding jejunal diverticulum is surgical resection of the involved segment of jejunum.


Key Words: aged, diverticulum, gastrointestinal hemorrhage, jejunum, NSAIDs

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Introduction

Diverticular disease of the small bowel is a rare condition characterized by retroflection of the intestinal wall. Small bowel diverticulum has not been well understood owing to its infrequent incidence and underdeveloped diagnostic tools for the small intestine. Most diverticula of the small intestine are asymptomatic. The frequent site of a diverticulum is the duodenum, followed by Meckel’s diverticulum. Although a jejunal diverticulum is uncommon, it is complicated by diverticulitis with or without bowel perforation, bleeding, and intestinal obstruction1,2. Massive gastrointestinal (GI) bleeding caused by a jejunal diverticulum is extremely rare, with fewer than 50 cases reported. It may be a serious condition with a high mortality rate and difficult definitive preoperative diagnosis3. We report the case of an elderly patient with massive lower GI bleeding from a jejunal diverticulum and discuss the diagnostic evaluations and treatment.

Case Report

A 79-year-old man was admitted to our institution, complaining of dizziness, general weakness, mild epigastric pain, and melena presenting as bloody stool with coffee-ground vomitus. Initially, hemoglobin was as low as 4.0 g/dL (normal range, 13–17 g/dL). Physical examinations showed pale conjunctiva and a distended abdomen. His abdomen was soft with mild epigastric tenderness. No peritoneal signs were presented. Furthermore, he had a history of type 2 diabetes mellitus and gouty arthritis with regular medications. He took long-term nonsteroidal anti-inflammatory drugs (NSAIDs) for gouty arthritis.

Esophagogastroduodenoscopy was carried out; it revealed some coffee-ground material in the stomach and one gastric ulcer at the lesser curved side of the
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antrum without active bleeding. Conservative treatment with an intravenous proton pump inhibitor and blood transfusion with 10 units of red cell was instituted in the following 3 days. The amount of bloody stool seemed to be decreased. His hemoglobin returned to 10.3 g/dL after transfusion of six units of packed red cells and four units of fresh frozen plasma.

Unfortunately, the patient had massive bloody to dark-red colored stool passage of about 5,000 mL on the fourth day after hospitalization. Low blood pressure (71/40 mmHg) presented as shock and confusion. Emergent rigid sigmoidoscopy was done; there was too much blood to complete the examination. Repeat esophagogastroduodenoscopy performed in the intensive care unit showed a gastric ulcer remaining at the lesser curved side of the antrum, but no active bleeding was found in the whole stomach. When an endoscope was inserted into the second portion of the duodenum, much fresh blood from the inlet of the third portion of the duodenum was noted. A bleeder below the second portion of the duodenum was suspected. Emergent angiography was carried out, and superior mesenteric arteriography revealed an oval hypervascular stain with contrast medium extravasation to the mucosa of the proximal jejunum (Figure 1). Because of the intractable, acute and massive GI bleeding, laparotomy was done immediately. At laparotomy, six variable sized diverticula at the proximal jejunum (located at 10, 27, 42, 49, 51, and 56 cm from the Treitz ligament) were found (Figure 2). Active bleeding with fresh blood clotting was noted in the diverticulum located at 10 cm from the Treitz ligament. About 45 cm of jejunum was resected and about 460 cm of small bowel was preserved. The patient was discharged uneventfully on day 13 after operation.

**Discussion**

The first reports of jejunal diverticulosis were described by Sommervit in 1794 and Cooper in 1807. These
acquired lesions consist of mucosa, submucosa and serosa, without muscularis, and occur along the mesenteric side of the small bowel where the arteries enter the intestine. They mainly affect males between 60 and 70 years of age\textsuperscript{4,5}. The incidence of small bowel diverticula is 0.5–7.1\% in small bowel barium studies and 0.3–4.5\% in autopsy studies. The incidence of small and colonic diverticula also increases with age\textsuperscript{1,2}. The incidence of diverticula of the small bowel is low. Diverticula located at the jejunum are extremely rare. Although most jejunal diverticula are asymptomatic, complications of small bowel diverticula present as inflammation, obstruction, dysmotility, perforation, volvulus, intussusception, malabsorption, and bleeding. A few cases of jejunal diverticula causing massive GI bleeding have been reported\textsuperscript{3,6}. The preoperative diagnosis of jejunal diverticula with bleeding is difficult. The history and physical examination is of little help. The patient frequently presents with acute and recurrent lower GI hemorrhage or occasional hematemesis. As in our case, upper GI endoscopy and colonoscopy have limitations in finding the definitive bleeder in the jejunum. Acute lower GI bleeding with negative findings with esophagogastroduodenoscopy and colonoscopy should be considered as possible small bowel bleeding. In our case, scintigraphy with red blood cells labeled with technetium 99 m was not a helpful and suitable technique because of acute and fulminate GI bleeding. Selective superior mesenteric arteriography revealed oval extravasation of contrast from one of the jejunal branches, indicating the bleeder as diverticula with active bleeding in our patient. Tisnado et al.\textsuperscript{7} showed the typical angiographic findings in the bleeding diverticulum; the contrast accumulated in a smooth walled “lake” and did not change the oval appearance for many seconds during the arterial phase and capillary phase, then the contrast spilled into the bowel lumen and outlined the mucosal pattern in the venous phase. If the contrast had immediate extravasation into the bowel lumen from an ulcerative or other mucosal pattern, mucosal lesions including ulcer, tumor, angiodysplasia, aneurysm and arteriovenous malformation should be considered\textsuperscript{7}. Angiography may be a useful diagnostic tool for location of the bleeding. Surgery can allow definitive diagnosis and rule out the presence of tumor and malignancy in the small bowel\textsuperscript{8}.

The mechanism of bleeding from the jejunal diverticula is thought to be ulceration involving an artery, diverticulitis with or without ulceration, or irritation from a concretion. A few reports revealed that diverticulum bleeding is associated with drugs, such as warfarin and low-dose aspirin. An international normalized ratio of 3 under warfarin treatment was detected in a patient with jejunal diverticulum bleeding. As we know, a high international normalized ratio causing coagulopathy is one of the risk factors of GI bleeding. There is strong evidence for a link between GI bleeding and aspirin in the elderly, either ulcer or nonulcer GI bleeding\textsuperscript{9,10}. In our case, the elderly male patient took long-term NSAIDs for gouty arthritis. NSAID-related GI bleeding in the elderly has been reviewed in a previous article\textsuperscript{11}. Topical injury and systemic effects of NSAIDs cause mucosal damage of the stomach and duodenum. NSAID enteropathy of the small bowel is increasingly diagnosed because of the advances in endoscopy, like capsule endoscopy and double-balloon enteroscopy\textsuperscript{12}. It usually manifests as ulcers, diaphragm strictures, or both. There are different mechanisms of upper GI toxicity from small bowel enteropathy of NSAIDs. The stepwise process includes direct mucosal toxicity, mitochondrial damage, enterohepatic recirculation, breakdown of intercellular integrity, and neutrophils activated by bacteria\textsuperscript{13}. NSAID consumption may be associated with more complications of diverticular disease, such as perforation and bleeding\textsuperscript{14}. Warfarin, antiplatelet agents and NSAIDs should be used with caution in elderly patients who have diverticular disease.

In conclusion, diverticular disease is increasing in incidence with age. Diverticular bleeding may be induced by common drugs in the elderly, such as aspirin, warfarin and NSAIDs. Jejunal diverticula with bleeding are rare and difficult to diagnose. This can mimic upper or lower GI bleeding. In our case, upper gastroscopy and colonoscopy cannot easily disclose the bleeder. Selective mesenteric angiography is the gold standard to diagnose active and fatal bleeding. The importance of a careful search for the malformation in the patient with intestinal bleeding is stressed. The management of bleeding jejunal diverticula is surgical resection of the involved segment of jejunum.

References


