An Iatrogenic Sigmoid Perforation Caused by an Aortobifemoral Graft Mimicking an Advanced Colon Cancer

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Abstract

A 74-year-old man was transferred to our hospital due to melena and syncope. He had a history of an abdominal aortic aneurysm treated with aortobifemoral grafting 15 years previously. One month before admission, he reported several episodes of melena for which he underwent repeated gastrointestinal endoscopic examinations. None of these examinations revealed the site of gastrointestinal bleeding. Aortoenteric fistulae can therefore be missed if they are not considered in the differential diagnosis of gastrointestinal bleeding due to their rarity. As a result, secondary aortoenteric fistulae should therefore be considered in any patient presenting with gastrointestinal bleeding and a history of aortic surgery.

Key words: aortoenteric fistulae, iatrogenic sigmoid perforation, aortobifemoral graft, lower gastrointestinal bleeding

Introduction

Aortoenteric fistulae (AEF) are a rare cause of acute upper gastrointestinal (GI) bleeding; however, they are associated with high mortality if left undiagnosed and untreated. AEF are defined as a direct communication between the aorta and the GI tract. Secondary AEF usually occur some years after aortic reconstructive surgery, although they can present anywhere from six months to more than 10 years postoperatively (1).

The most common cause of secondary AEF is prosthetic abdominal aortic vascular grafts (2, 3). Pressure necrosis and graft infection have been implicated in the development of fistulae in this setting. Other secondary causes include penetrating ulcers, tumor invasion, trauma, radiation therapy and foreign body perforation (4, 5).

The third or fourth portion of the duodenum is the most common site for AEF development, while the colon is involved only rarely (6). AEF are potentially catastrophic causes of GI bleeding that are easy to miss if not considered in the differential diagnosis.

We herein report a case of iatrogenic sigmoid perforation caused by an aortobifemoral graft mimicking advanced colon cancer.

Case Report

A 74-year-old man was transferred to our hospital due to melena and syncope. His medical history included a previous brain infarction and aortobifemoral graft replacement for an abdominal aortic aneurysm.

The patient had a history of an abdominal aortic aneurysm treated with aortobifemoral grafting 15 years previously. An enhanced computed tomography (CT) scan showed that the left graft limb was connected to the adjacent sigmoid (Fig. 1). CT scans of the chest and abdomen were normal.

A complete blood count showed the following results: hemoglobin, 10.7 g/dL; white blood cell count, 1,390/mL; and platelet count, 163,000/mL. The levels of tumor markers (carcinoembryonic antigen [CEA] and carbohydrate antigen...
[CA] 19-9) were within the normal ranges.

One month before admission, the patient reported several episodes of melena for which he underwent repeated GI endoscopic examinations. None of these examinations revealed the site of GI bleeding. An endoscopic examination revealed a nodular elevated lesion similar to colorectal cancer in the sigmoid colon (Fig. 2a, b). The patient received warfarin for atrial fibrillation, and a specimen could not be obtained. Upon admission to our institution, the patient referred to previous episodes of GI bleeding attributed to tumor bleeding.

His complete blood count and basic metabolic panel were notable for a decrease in the hemoglobin level from 12.0 g/dL five days before admission to 8.7 g/dL.

On the 9th day of admission, the patient experienced a large episode of melena with a drop in blood pressure to 77/58 mm Hg, and we performed repeat colonoscopy to identify the bleeding point. However, we could not detect the bleeding point using endoscopy.

The patient underwent surgery, which revealed an intact aortic graft firmly adhering to the sigmoid colon. En bloc sigmoid resection of the left graft limb (Fig. 3) followed by temporary proximal diversion using Hartmann’s procedure was also performed. The pathologic findings revealed non-specific inflammatory granulation tissues, microabscesses with bacteria and arterial walls with atherosclerosis (Fig. 4). There was no evidence of malignancy. The final diagnosis was AEF with bacterial graft infection.

The patient’s postoperative course was uneventful, and re-bleeding did not occur after surgery. The patient was discharged in good condition on postoperative day 60 and was scheduled to undergo surgical intestinal continuity restoration.

**Discussion**

AEF are defined as a direct communication between the aorta and the GI tract (7). There are two types of AEF: primary and secondary. Primary AEF form spontaneously in the absence of prosthetic aortic materials.

AEF are a rare cause (<1: 1000) of GI hemorrhage. Overall, in one-third of patients with AEF and cancer, the primary malignancy arises in the GI tract. The thoracic aorta is nine times more likely to be affected by enteric fistulae than the abdominal aorta due to the relative frequency of cancer in the nearby esophagus and the short length of adjacency (8-10).

Secondary AEF are fistulae that develop in the presence of prosthetic aortic materials and were first described by Brock in 1953 (11). Secondary AEF usually occur some years after aortic reconstructive surgery, although they can present anywhere from six months to more than 10 years postoperatively (12). They are thought to be associated with chronic low-grade infection of and around the graft, possibly secondary to suture line failure (6, 13).

AEF most commonly involve the third or fourth portion of the duodenum (87% of cases) and more rarely the jejunum (7%), ileum (4%) or colon (2%) (1, 14) because they are relatively fixed (6).

AEF usually present with “herald” bleeding, manifesting either as melena, hematochezia or hematemesis, which may occur intermittently for several days. Other presentations included sepsis, abdominal pain, retroperitoneal abscesses and back pain with contained rupture of proximal parastomal aneurysms (12).

Our report shows that sigmoid perforation may not be im-
In the study, the operative (<30-day) mortality rate was 21% in patients without intervention and improved to 14% to 70% with surgical treatment (18). In one rate without intervention is poor, although it can be improved very importantly for improving the survival rate.

CT is the standard radiologic method used to detect AEF. The diagnostic criteria of AEF include the presence of peri-graft fluid collection or soft-tissue attenuation, ectopic gas, pseudoaneurysms or focal bowel wall thickening (15). Endoscopy is also useful; however, it may not enable visualization of ongoing bleeding from enteric fistulae. Although we were not able to detect the intraluminal presence of the graft segment, it is difficult to distinguish colorectal neoplasms from AEF in such cases.

Recent reports highlight that FDG-PET achieves >90% sensitivity and 70% to 80% specificity in the diagnosis of infectious processes (16, 17). A focal accumulation pattern of FDG is a particularly specific sign of infection in the diagnosis of graft infection (14).

Secondary AEF are a surgical emergency. The survival rate without intervention is poor, although it can be improved to 14% to 70% with surgical treatment (18). In one study, the operative (<30-day) mortality rate was 21% in patients with shock at presentation and those requiring preoperative transfusions or suprarenal aortic clamping during AEF repair associated with lethal outcomes (12). In conclusion, AEF can be missed if not considered in the differential diagnosis of GI bleeding due to their rarity. Secondary AEF must be considered in any patient presenting with GI bleeding and a history of aortic surgery.

The authors state that they have no Conflict of Interest (COI).

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