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Case Report

Arteriovenous Fistula of Superior Mesenteric Artery: An Unusual Cause of an Massive Lower Gastrointestinal Bleeding

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Introduction: The most common causes of lower gastrointestinal (GI) hemorrhage are diverticulosis and angiodysplasia. Arteriovenous fistula (AVF) of the intestine is an uncommon cause of GI hemorrhage.

Case Presentation: Herein, we report a case of an embolization of an AVF originated from the superior mesenteric artery and vein as a cause of acute massive lower GI bleeding.

Conclusion: The patient underwent a right hemicolectomy and ileotransversostomy.

Key words: Arteriovenous fistula – Superior mesenteric artery – Superior mesenteric vein – Lower gastrointestinal bleeding

The most common causes of lower gastrointestinal (GI) hemorrhage are diverticulosis and angiodysplasia.[1] Arteriovenous fistula (AVF) of the intestine is an uncommon cause of GI hemorrhage.[2] An AVF is a direct communication between an artery and a vein without interposition of the capillary bed. AVFs commonly involve the hepatic, superior mesenteric, and splenic arteries.[3] Herein, we report a case of an embolization of an AVF that originated from the superior mesenteric artery and vein as a cause of acute massive lower GI bleeding.

A 24-year-old woman was admitted to our hospital because of massive lower GI hemorrhage with no known underlying disease. The medical and surgical history was insignificant, other than a history of intestinal polyp surgery performed by Argon plasma coagulation 1 year ago.

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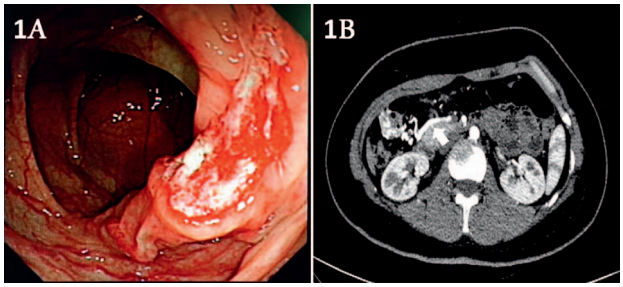

Fig. 1 (A) Appearance of a solitary ulcer located in hepatic flexure of colon. (B) The abdominal CT scan was performed, which showed marked enhancement of the superior mesenteric vein in the arterial phase, the fistual of the neck between the superior mesenteric artery, and the superior mesenteric vein.

Physical examination was unremarkable. Blood analysis showed hemorrhagic anemia (hemoglobin, 8.8 g/dL), normal coagulation parameters, and normal liver function test results.

Lower gastrointestinal endoscopy was performed after she has a hemodynamically stable situation, which showed a solitary ulcer located in hepatic flexure of colon (Fig. 1A). After taken for a gastrointestinal endoscopy, she continued to have bloody diarrhea. An abdominal computed tomography (CT) scan was performed, which showed marked enhancement of the superior mesenteric vein in the arterial phase, the fistula of the neck between the superior mesenteric artery, and the superior mesenteric vein (Fig. 1B). The brisk shunting of blood from the superior mesenteric artery to the superior mesenteric vein was thought to be the source of the underlying cause to hepatic flexure of colon resulting in a solitary ulcer. A CT visceral angiogram confirmed a large AVF (Fig. 2A and 2B).

The treatment of AVF is either surgical or minimally invasive through interventional radiology (IR) techniques. IR offers many advantages over surgical treatment, include decreased morbidity and

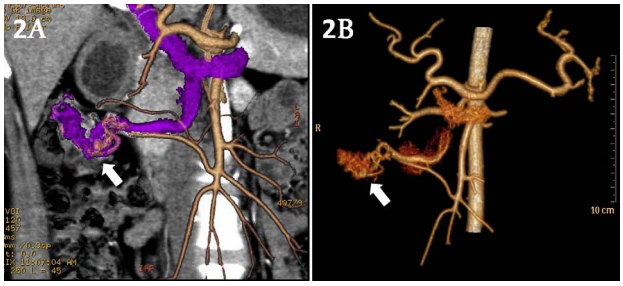

Fig. 2 (A and B) CT visceral angiogram confirmed a large arteriovenous fistula.

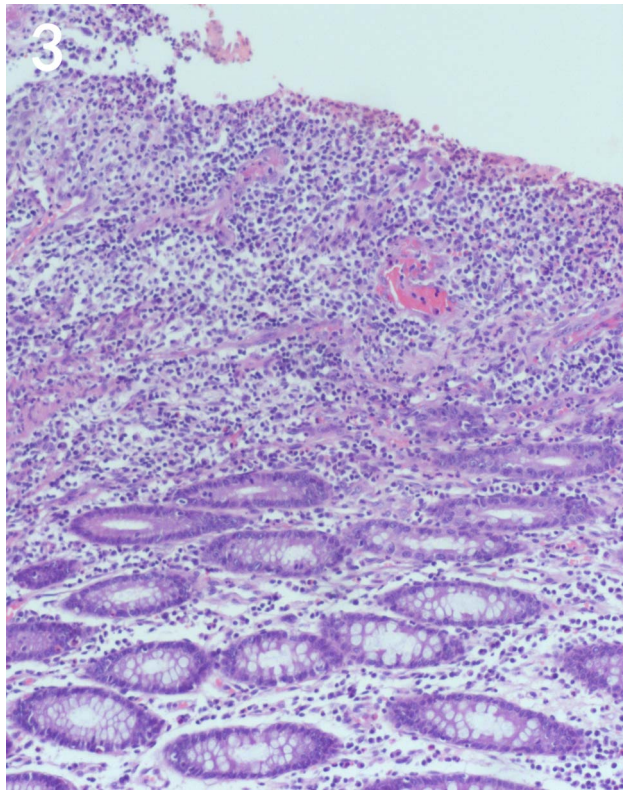

Fig. 3 Pathologic result of the surgical specimen was chronic inflammatory.

mortality, reduced risk of subsequent complications, and a significant reduction in the time required for recovery. However, the patient's condition worsened, and the hemoglobin value decreased despite transfusion; therefore, we selected open surgery.

The patient underwent a right hemicolectomy and ileotransversostomy. Macroscopically, a white lesion of $3.0 \times 3.0 \times 1.0$ cm was seen. The pathologic result of the surgical specimen was a chronic inflammatory ulcer, possible due to an AVF (Fig. 3).

Discussion

Congenital visceral AVFs are uncommon and exist in the published literature primarily as case reports. The occurrence of a superior mesenteric AVF (SM-AVF) is exceedingly rare and has been primarily associated with traumatic injuries, including gunshot wounds and abdominal surgery.[4,5] Clinically, visceral AVFs can cause symptoms of abdominal pain and symptoms of portal hypertension including variceal bleeding. When the diagnosis of SM-AVF is suspected, abdominal duplex ultrasonography can help to identify highly specific high diastolic blood flow in the fistula region

and the aneurismal dilatation of the SM-AVF.[6] However, the most reliable test to confirm the diagnosis and provide the best treatment strategy is contrast-enhanced CT angiography. Most of the cases of acute lower GI hemorrhage caused by SM-AVF are controlled with supportive treatment. Persistent bleeding with hemodynamic instability requires further investigation and management,[7] which may be surgical.[8]

GI bleeding from an AVF is unusual but potentially lethal. General mortality for untreated cases of a portal AVF is estimated at approximately 26%.[9] An AVF is a direct communication between an artery and a vein without interposition of the capillary bed. Cases of AVFs have been reported, mainly between the hepatic, superior mesenteric, and splenic arteries[10] and are particularly rare. Ischemia colitis, which caused the ulcer later, is one of the most frequent manifestations of inferior mesenteric AVFs. Increased blood flow via the AVF can lead to venous hypertension and decreased arterial flow, resulting in ischemia to the colon.[10]

Since the first report by Movitz and Finne in 1960, only 42 cases of iatrogenic SM-AVFs have been documented, with most occurring as a late complication of bowel resection.[11] This patient had no history of laparotomy, so her SM-AVF between the superior mesenteric vein and superior mesenteric artery were thought to be congenital. Based on the cases reported, surgery with hemicolectomy is the most common management of this condition.[12]

Acknowledgments

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