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A Case Report: Spontaneous Rupture of Dissecting Aneurysm of the Middle Colic Artery

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Aneurysms of the superior mesenteric artery branches are rarely reported, even among them colic artery aneurysms are seldom. We report a case of 78-year-old male with ruptured dissecting aneurysm of middle colic artery. The patient complained abdominal pain and nausea during hospital stay for renal stone. The patient suddenly developed severe abdominal pain, leading to shock. He underwent emergency surgery under a preoperative diagnosis of intraperitoneal hemorrhage. At exploratory laparotomy, a large hematoma involving the mesentery root of the transverse colon was associated with a ruptured aneurysm measuring 15×10 mm in size, which was located to the mid-portion of middle colic artery. Right-hemicolectomy was carried out because of ischemic changes in the ascending colon. Histological examination demonstrated a ruptured dissecting aneurysm of the middle colic artery approximately 5 cm in length, associated with destruction of the tunica interna and media. The aneurysm was thought to result from idiopathic segmental arterial mediolysis, because no definitive evidence of atherosclerosis or arteritis was observed.

Key words : Middle colic artery aneurysm, Visceral artery aneurysm, Dissecting aneurysm, Idiopathic segmental mediolysis

INTRODUCTION

Rupture of the splanchnic artery aneurysm has been described as abdominal apoplexy. The pathogenesis of splanchnic artery aneurysm has been considered arteriosclerosis, medial degeneration, mycotic alteration, arteritis, systemic lupus erythematosus, trauma and alpha-1-antitrypsin deficiency [1-7]. The most frequent site of visceral arterial aneurysm is the splenic artery (60 %), followed by hepatic artery (20 %) and superior mesenteric artery (SMA), celiac trunk (5.5 %), and last, by aneurysms of jejunal, ileal, and colonic arteries and their tributaries (3 %) [8]. Aneurysms of the SMA branches are rare, with a reported incidence of 1-5 % [2-4, 6, 8], and middle colic artery (MCA) aneurysms are very uncommon. We report a case of ruptured MCA aneurysm detected on initial surgery, and demonstrate the histological findings of the dissecting aneurysm.

CASE PRESENTATION

A 78-year-old male with medical history of renal stone and gout was admitted with abdominal pain and nausea. The upper abdominal pain radiated to the back associated with diarrhea, but without melena. Abdominal pain had occurred several days before admission, and became so severe that he was admitted to our hospital for further examination and treatment.

Physical examinations on admission demonstrated blood pressure 110/62 mmHg, pulse rate 92/min and body temperature 37.1 ˚C. The abdomen was not distended and showed no palpable masses. There was generalized upper abdominal tenderness without guarding or rebound. Laboratory data re-

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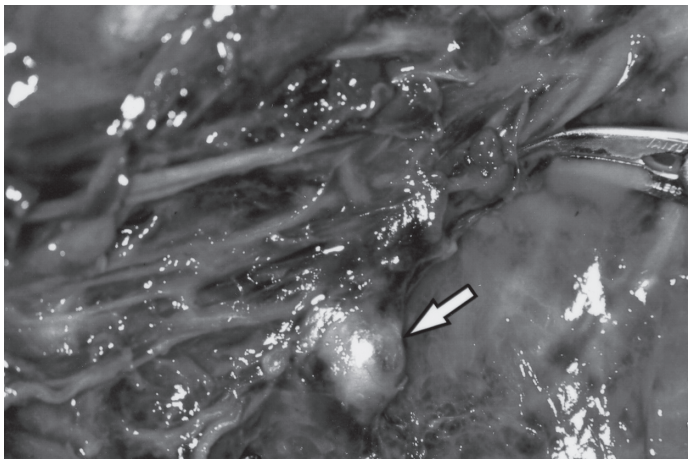

Fig. 1 A ruptured aneurysm measuring 15×10 mm in size was located to the mid-portion of middle colic artery (arrow).

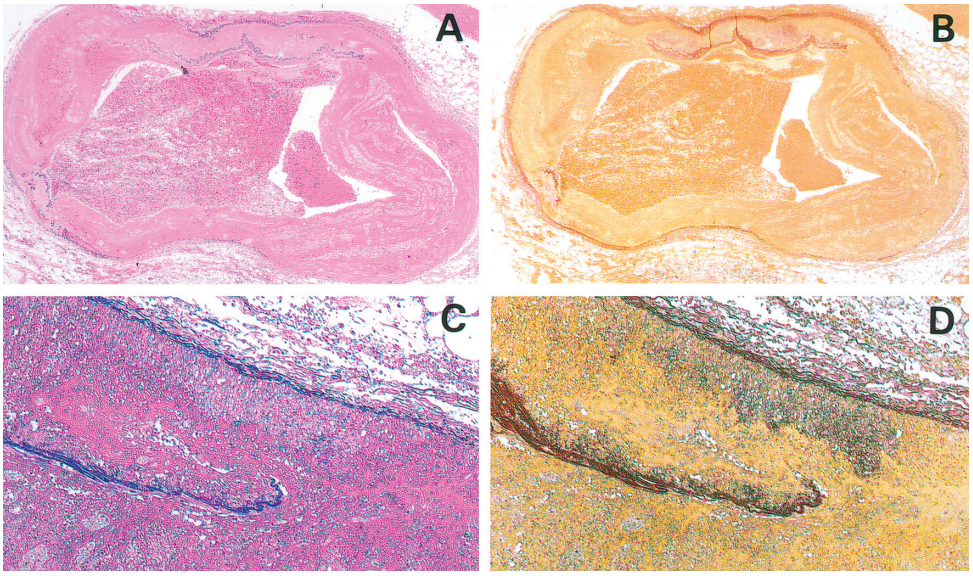

Fig. 2 Histological section. The middle colic artery showed a ruptured dissecting aneurysm associated with destruction of the tunica interna and media (**A**, original magnification ×5, H & E; **B**: original magnification ×5, Elastica-van Gieson stain). The dissecting space was filled with fresh blood clots. The arterial wall revealed destruction of the internal elastic lamina as well as the tunica media (**C**, original magnification ×30, H & E; **D**, original magnification ×30, Elastica-van Gieson stain).

vealed leukocyte count of 9100/mm^3, hemoglobin of 12.0 g/dl and hematocrit of 37.1 %. Levels of serum amylase, glutamic-oxalacetic transaminase, glutamic-pyruvic transaminase and alkaline phosphatase were within normal limits, and urinalysis was normal. Abdominal radiogram showed a nonspecific gas pattern and no calcification in the abdominal region. Conventional endoscopy of the upper gastrointestinal tract revealed superficial gastritis and duodenal ulcer scar only. On the second day after admission, the patient suddenly developed severe abdominal pain and hypotension, and became pale with a cold sweat. Hematocrit decreased to 27.6 %, and the abdomen became distensive. Abdominal ultrasonography revealed a irregular hypoechoic mass measuring 60×

40 mm in the upper abdomen, and a small amount of free fluid in the abdominal cavity. He underwent emergency surgery under a preoperative diagnosis of intraperitoneal hemorrhage. At exploratory laparotomy, approximately 3.7 L of fresh blood clots was present in the abdomen. A large hematoma involving the mesentery root of the transverse colon was associated with a ruptured aneurysm measuring 15×10 mm in diameter, which located to the mid-portion of MCA (Fig. 1). Right-hemicolectomy was carried out because of ischemic changes in the ascending colon. The postoperative course of the patient was uneventful. Postoperatively, selective angiography of the aorta and its visceral branches showed that there were no additional aneurysms in the celiac, hepatic, splenic, gastric or mesenteric arteries. Histological examination demonstrated a ruptured dissecting aneurysm of the MCA, associated with destruction of the tunica interna and media (Figs. 2A-D). The dissecting aneurysm was approximately 5 cm in length and completely resected at surgery. There was no definitive evidence of atherosclerosis or arteritis observed. The resected colon revealed ischemic colitis due to the ruptured aneurysm. The patient was discharged on the postoperative 34th day without complication.

DISCUSSION

Aneurysms of the visceral arteries most commonly involve the splenic artery, followed by the hepatic artery, SMA and celiac trunk [8]. Aneurysms of the SMA branches are rarely reported [2-4], and colic artery aneurysms are not common. Aneurysms of the SMA branch reported previously were small, and detected by angiography [2, 3] in association with mesenteric hematoma or as massive gastrointestinal bleeding. However, detailed morphological findings of aneurysms were not yet reported, although we described here histological findings of MCA. Spontaneous intra-abdominal hemorrhage due to the visceral artery is often called "abdominal apoplexy" [9]. Abdominal pain results from the mass effect of a rapidly expanding hematoma on adjacent structures or from bowel ischemia due to hypoperfusion. These patients usually complain of mild abdominal discomfort for several days prior to sudden onset of severe abdominal pain and swelling. The diagnosis of MCA aneurysm is difficult, because the aneurysms are small and usually asymptomatic until rupture. Computed tomography (CT) is thought to be the best initial imaging study for ruptured intra-abdominal aneurysm [4]. Angiography is the best way to detect the aneurysm for definitive diagnosis [10]. In this case, however, the patient was unstable and could not undergo preoperative CT or angiography. In the present case, there were no additional aneurysms detected postoperative selective angiography, although a previous report described multiple SMA branch aneurysms [11].

As treatment of the visceral artery aneurysms, embolization using steel coils has been described instead of surgery [12]. The occlusion or the coiling of the aneurysm may be limited because of the risk of bowel infarction. Surgical procedures including arterial ligation, aneurysmectomy and intestinal resection are thought to accomplish curative treatment of MCA aneurysm. Rupture of MCA aneurysm can be successfully managed with surgery when bleeding is not severe. The mortality following aneurysmal rupture has been reported to be approximately 20 % [13]. Therefore, prophylactic surgical repair of asymptomatic aneurysms is advocated.

Slavin and co-workers reported that visceral artery aneurysm is caused by idiopathic segmental mediolysis [14-16]. In our case, the aneurysm was thought to result from idiopathic segmental arterial mediolysis because arterial dissection was found in the tunica media without significant atherosclerosis or arteritis.

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