

» **Case Report** «

Elective Treatment of Middle Colic Artery Aneurysm

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Middle colic artery aneurysms are rare and most have been reported with rupture or symptom. We report the successful elective treatment of a middle colic artery aneurysm without symptom, which is very rare. It failed to perform transcatheter arterial embolization for anatomical reasons, and, thus, the patient, a 77-year-old man, underwent surgical resection in spite of a history of laparotomy. Although a common cause of middle colic artery aneurysms is segmental arterial mediolysis, the present pathological findings indicated that fragmented or degenerated elastic fibers may also play an important role like aortic aneurysms.

Keywords: middle colic artery aneurysm, resection, SAM

Introduction

Aneurysms of the superior mesenteric artery (SMA) branch, particularly of the middle colic artery, are extremely rare.¹⁾ Moreover, most middle colic artery aneurysms have been reported with rupture or with symptom. We report herein the successful elective treatment of a middle colic artery aneurysm without symptom.

Case Report

A 77-year-old man with a history of Hartmann's operation due to sigmoid volvulus was referred to our hospital for tarry stool because of gastric ulcer in 2008. He had no history of hypertension, dyslipidemia, and

smoking habit. The patient's height was 161 cm and body weight was 58 kg. Upon arrival, the patient's blood pressure was 88/63 mmHg and pulse was 102/min. Physical examination was unremarkable except for the abdominal tenderness. Laboratory examination showed a red blood cell count of 8.4 g/dL and hematocrit of 26.5%. Enhanced abdominal computed tomography (CT) incidentally revealed two middle colic artery aneurysms measuring 20 × 19 mm and 23 × 21 mm, respectively (Fig. 1). Angiography was performed at about 2 months when the treatment of the gastric ulcer was finished and he had no symptom (Fig. 2). As it failed to perform transcatheter arterial embolization for anatomical reasons, surgical resection was selected in spite of the history of laparotomy. A standard midline approach was employed to expose the aneurysms of the transverse mesocolon. The aneurysms, measuring 23 × 20 mm and 28 × 23 mm, respectively, were ligated and excised without a colectomy (Fig. 3A) as the transverse colon had not been compromised. Histopathology showed fibrin was marked in the media and adventitia, and there was no cholesterol. Moreover, chronic inflammatory cells, such as lymphocytes and plasma cells, were sparsely present in the adventitia. Elastica van Gieson (EVG) staining revealed frag-

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Received: May 1, 2014; Accepted: May 29, 2014
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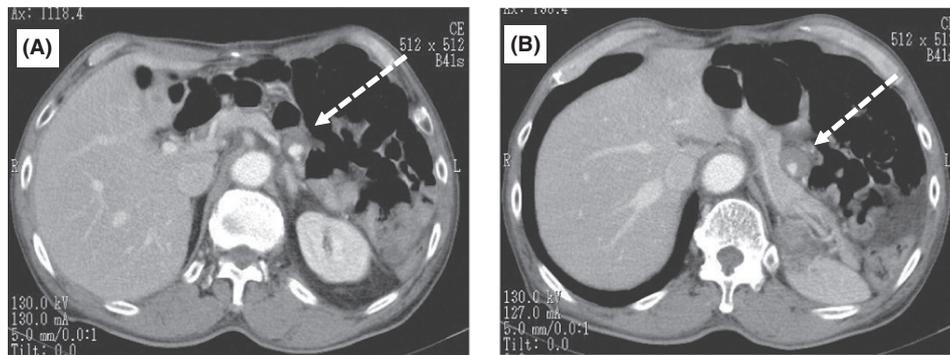


Fig. 1 Preoperative enhanced abdominal computed tomography (CT) incidentally revealed two middle colic artery aneurysms. **(A)** The proximal aneurysm measured 20 × 19 mm and, **(B)** the distal aneurysm measured 23 × 21 mm.

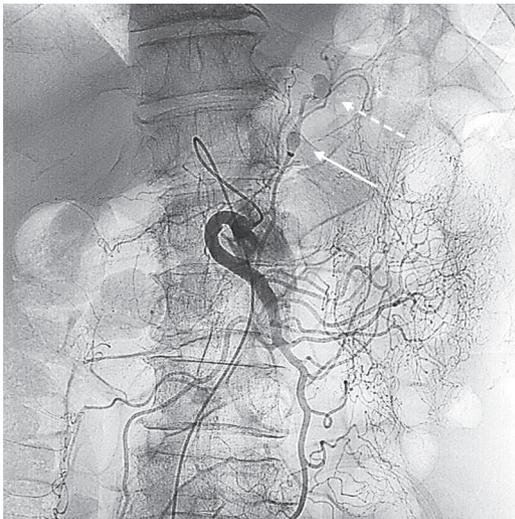


Fig. 2 Angiography of the superior mesenteric artery (SMA) showed a proximal middle colic artery aneurysm (solid arrow) and distal aneurysm (dotted arrow).

mentation and a decrease of elastic fibers in the tunica media (Fig. 3B).

The patient's postoperative course was uneventful. He was discharged 7 days after surgery, and the course remained uneventful at 5 years after surgery.

Discussion

Visceral arterial aneurysms are relatively rare. The most common sites of visceral arterial aneurysms are the splenic artery (60%), hepatic artery (20%), SMA (5.5%), celiac artery, gastrointestinal/epiploic arteries (4%), intestinal artery (3%), and duodenal/pancreatic

arteries (1.5%).²⁾ Moreover, only 2% of all reported splanchnic artery aneurysms have been located in the jejunal, ileal, or colic arteries.³⁾ Hirokawa, et al.⁴⁾ reviewed the literature on 35 cases of middle colic artery aneurysms. The mean age and range were 59.3 ± 13.3 and 19–78 years, respectively. The ratio of males to females was 19:16; thus, there appears to be no significant gender difference. A total of 45.7% of all cases (16/35) had multiple aneurysms. In almost all cases, the chief complaint was abdominal pain,⁴⁾ while only three of the 28 aneurysm cases were asymptomatic.¹⁾ Most cases were treated surgically, while case reports of patients treated by transcatheter arterial embolization have been increasing.⁴⁾ Huo⁵⁾ has also reviewed 26 cases of middle colic artery aneurysms and the results were similar to the Hirokawa's report. In the present case, although he was referred to our hospital for tarry stool because of gastric ulcer, CT incidentally revealed the aneurysm before treatment for the gastric ulcer, and, thus, the present case was asymptomatic. As most middle colic artery aneurysms have been reported with rupture or with symptom, the present case was without symptom, which is very rare, and it is important to be awake of asymptomatic visceral arterial aneurysms during examination. As for middle colic artery aneurysm, we think that transcatheter arterial embolization may be the primary treatment, as there is a rich collateral network.

Common causes of middle colic artery aneurysms are atherosclerosis, angiodysplasia, arteritis, and infection. Among these, segmental arterial mediolysis (SAM), which was first described by Slavin and

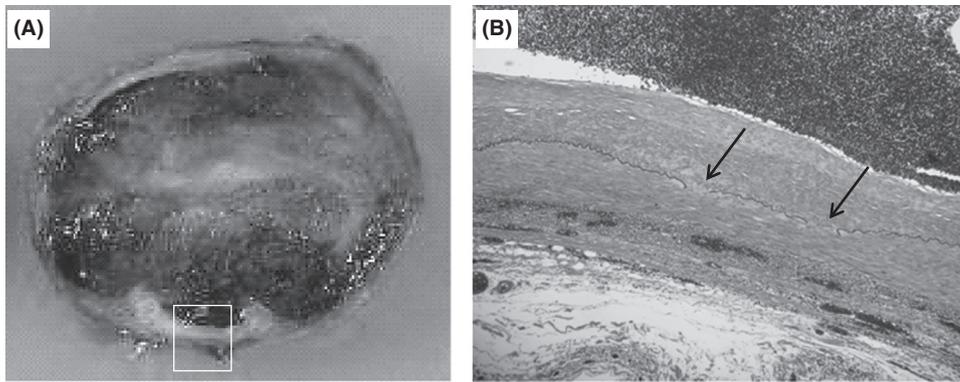


Fig. 3 (A) Resected specimen of the middle colic artery aneurysm, and (B) Elastica van Gieson (EVG) staining of the square of the resected specimen. EVG staining revealed the fragmentation and decrease of elastic fibers in the tunica media (arrows).

Gonzalez-Vitale in 1976 as segmental mediolytic arteritis (SMA),⁶⁾ is the most common.¹⁾ Multiple aneurysms and wall irregularity have been described as the primary characteristics of SAM.⁷⁾ In the present case, histopathology showed that chronic inflammatory cells, such as lymphocytes and plasma cells, were sparsely present in the adventitia, and EVG staining revealed fragmentation and a decrease of elastic fibers in the tunica media. Honestly speaking, we expected to confirm SAM, but the histopathology did not reveal SAM, atherosclerosis, and infection but for the fragmentation and degeneration of elastic fibers. The pathological hallmark of an aortic aneurysm is considered to be remodeling of the aortic wall, involving fragmentation and a decrease of elastic fibers in the tunica media.⁸⁾ In the present case, similar pathological findings to the fragmentation and degeneration of elastic fibers were shown. Although it may be impossible to compare the middle colic artery with the aorta, the pathological findings indicated that fragmented or degenerated elastic fibers may also play an important role in middle colic artery aneurysms.

Conclusion

Middle colic artery aneurysms are rare¹⁾ and most have been reported with rupture or with symptom. We report the successful elective treatment of a middle colic artery aneurysm without symptom. Although a common cause of middle colic artery aneurysms is SAM,⁵⁾ the pathological findings of the present case indicated that fragmented or degenerated elastic

fibers may also play an important role like aortic aneurysms.

Disclosure Statement

All authors declare that they have no conflict of interest.

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