

Superior Mesenteric Artery Aneurysm in a Patient with Chronic Abdominal Pain

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Abstract- Superior mesenteric artery (SMA) aneurysm is a rare disease. In this case report, we present a 32 years old woman who was admitted to our hospital with chronic abdominal pain. SMA aneurysm was diagnosed after radiological evaluation. The patient underwent ligation of the superior mesenteric artery aneurysm and remained well 12 months after the surgery.

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Introduction

Superior mesenteric artery (SMA) aneurysm is the third most common splanchnic artery aneurysm, accounting for 5.5% of these lesions (1). The prevalence of these aneurysms is the same between male and female. These aneurysms are most commonly placed at the first proximal 5cm of the artery. The most common cause of SMA aneurysm is considered to be infection; however a recent report suggested that an infectious etiology accounted for less than 5% of these aneurysms (2). Other causes include atherosclerosis, connective tissue disease, cystic medial necrosis, pancreatitis and trauma(3). SMAaneurysm is also seen with colon cancer (4), lupus erythematosus (5) and intestinal tuberculosis (6). Although many splanchnic artery aneurysms are asymptomatic, more than 90% of SMA aneurysms are symptomatic, with associated abdominal pain and gastrointestinal bleeding. Acute mesenteric ischemia may result from thromboembolism ofthe artery (7). The most common symptoms of SMA aneurysms include nausea, pain, hemorrhage, hemobilia and jaundice. The main risk of SMA aneurysms is rupture which has high rate of mortality (1).In the present case, we report a woman with chronic abdominal pain who was found to have superior mesenteric artery aneurysm and treated with aneurysm ligation.

Case Report

A 32 years old woman presented at a rural clinic with

intermittent pain in right upper quadrant of abdomen that had started about 3 months earlier and progressed over the time. Ultrasonography was performed with suspicion to cholelithiasis. The gallbladder was normal, but ultrasonography revealed a 25mm x 20mm mass in the epigastric region which appeared to be SMA aneurysm. The patient was referred to our clinic then for further assessment and treatment.

Physical examination on initial admission at our clinic (Department of surgery, Shohada Tajrish Hospital) revealed a well nourished cooperative patient. Her vital signs were pulse rate 86/min, blood pressure 120/80 mmHg, oral temperature 37.1°C and respiratory rate 16/min. Physical examination of head and neck and chest was normal. Her abdomen was flat with no scars, bowel sound was normoactive and no bruit was heard. She had no epigastric or right upper quadrant (RUQ) tenderness, no palpable mass or organomegaly was detected and her peripheral pulses were palpable. Routine laboratory tests were within normal limits.

Angiography and selective superior mesenteric artery arteriography was accomplished via femoral artery catheterization and revealed an isolated 50mm x 50mm saccularSMA aneurism with no peripheral vascular connection (Figure 1).

There was no other visible vascular deformity or aneurysm. A transthoracic echocardiography was performed prior to the surgery. The result was normal without any evidence of endocarditis or cardiac valve vegetation.

The patient underwent surgery after initial

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Figure 1. Preoperative angiography revealed SMA aneurysm.

preparation. Wide spectrum antibiotics were prescribed before the surgery. A long midline incision was made. The exploration of abdomen revealed no pathology except a palpable pulsatile mass. We approached to superior mesenteric artery origin by rotating the spleen, the stomach, the left colon and the tail of pancreas to the right. The left lobe of liver was freed. A saccular aneurysm was detected about 5cm from the origin of superior mesenteric artery which had a visible neck and a few small collateral vessels. Control was taken proximal and distal to the aneurysm with a vascular loop (Figure 2). The neck of the aneurysm was then ligated with 1-0 silk. The aneurysm was opened and some small collateral vessels with backflow were ligated within the aneurysm sac. Samples of the aneurysm wall and contents were sent to the pathology department for examination. The visceral organs were then placed back to their position and the abdomen was closed.

Gastrointestinal activity resumed after 2 days and oral nutrition was started 3 days after the operation. The patient was discharged from the hospital after 5 days with good condition and recommended to perform transesophageal echocardiography to rule out endocarditis and also advised to undergo a CT scan of

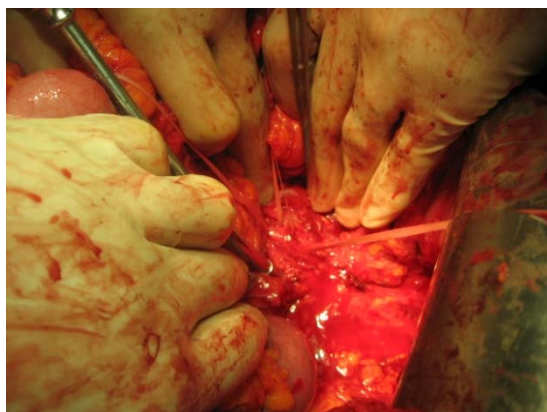


Figure 2. Superior mesenteric artery aneurysm

abdominal vessels every year to detect other possible splanchnic artery aneurysms. The patient remained well after 1 year of follow up with no complications.

Discussion

Because of the high risk of rupture or thrombosis (50%), SMA aneurysms can interrupt perfusion of internal organs and these aneurysms are potential lethal illnesses, therefore surgical treatment is reasonable in the absence of complicating factors (8).

Debakey and Cooley introduced the first treatment of SMA aneurysm in 1953 by excising the aneurysm without revascularization (9). Since then, the most common procedures attempted to treat these aneurysms have been aneurysmorrhaphy and simple ligation and about a third of SMA aneurysms have been treated successfully by operation (3). Surgery may be performed via a trans mesenteric technique, but proximal aneurysms require either a left retroperitoneal approach with medial reflection of the colon, pancreas, and spleen, or a transscleral approach (10). SMA aneurysms can be ligated and excised safely because of the extensive collateral flow to the intestines via the celiac artery and the inferior mesenteric artery, thus temporary SMA occlusion and observation of the small bowel viability is recommended (3). Arterial reconstruction of the SMA after ligation of the aneurysm can be performed with an interposition graft if the viability of the small bowel is suspected (8,10). Due to high incidence of infectious etiology, saphenous graft is preferred over prosthetic grafts (8). In our case there was no need for arterial reconstruction due to adequate collateral flow.

Endovascular treatment can also be considered in these patients and associates lower morbidity and mortality rates and shorter hospital stay, but nowadays many aneurysms are not suitable for this management and it is a technically difficult approach, that requires a specific training and the first cases represent a learning curve (11,12). Endovascular treatment is primarily used in small asymptomatic aneurysms in anatomical locations where surgery is potentially difficult or dangerous (13). The treatment choices include embolization of the aneurysm (14) or stent grafting (15). Anatomy conducive to transcatheter embolization includes aneurysms with a small neck, which are distal to the origin of the SMA and assessment of bowel viability should be warranted with angiographic determination of collateral flow (2).

In conclusion, we report a case of SMA aneurysm

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who presented with chronic RUQ abdominal pain. Diagnosis was suggested with ultrasonography and confirmed by angiography. The patient underwent surgery and the aneurysm was ligated successfully without any complications.

References

1. Messina LM, Shanley CJ. Visceral artery aneurysms. *Surg Clin North Am* 1997;77(2):425-42.
2. Stone WM, Abbas M, Cherry KJ, Fowl RJ, Gloviczki P. Superior mesenteric artery aneurysms: is presence an indication for intervention? *J Vasc Surg* 2002;36(2):234-7.
3. Stanley JC, Zelenock GB. Splanchnic artery aneurysms. In: Rutherford RB, editor. *Vascular Surgery*. 4th ed. Philadelphia: WB Saunders; 1995. p. 1572-3.
4. Nakamura K, Nozue M, Sakakibara Y, Kuramoto K, Satoh M, Kobayashi S, Kashimura H, Fukutomi H, Todoroki T, Fukao K. Natural history of a spontaneous dissecting aneurysm of the proximal superior mesenteric artery: report of a case. *Surg Today* 1997;27(3):272-4.
5. Ko SF, Hsien MJ, Ng SH, Wong HF, Lee TY, Lee CM. Superior mesenteric artery aneurysm in systemic lupus erythematosus. *Clin Imaging* 1997;21(1):13-6.
6. Oran I, Parildar M, Memis A. Mesenteric artery aneurysms in intestinal tuberculosis as a cause of lower gastrointestinal bleeding. *Abdom Imaging* 2001;26(2):131-3.
7. Carr SC, Mahvi DM, Hoch JR, Archer CW, Turnipseed WD. Visceral artery aneurysm rupture. *J Vasc Surg* 2001;33(4):806-11.
8. Komori K, Mori E, Yamaoka T, Ohta S, Takeuchi K, Matsumoto T, Kume M, Sugimachi K. Successful resection of superior mesenteric artery aneurysm. A case report and review of the literature. *J Cardiovasc Surg (Torino)* 2000;41(3):475-8.
9. DeBakey ME, Cooley DA. Successful resection of mycotic aneurysm of superior mesenteric artery. *Am Surg* 1953;19(2):202-12.
10. Zimmerman-Klima PM, Wixon CL, Bogey WM Jr, Lalikos JF, Powell CS. Considerations in the management of aneurysms of the superior mesenteric artery. *Ann Vasc Surg* 2000;14(4):410-4.
11. Mendonça CT, Weingartner J, de Carvalho CA, Costa DS. Endovascular treatment of contained rupture of a superior mesenteric artery aneurysm resulting from neurofibromatosis type I. *J Vasc Surg* 2010;51(2):461-4.
12. Ruiz-Tovar J, Martínez-Molina E, Morales V, Sanjuanbenito A, Lobo E. Evolution of the therapeutic approach of visceral artery aneurysms. *Scand J Surg* 2007;96(4):308-13.
13. Gabelmann A, Görlich J, Merkle EM. Endovascular treatment of visceral artery aneurysms. *J Endovasc Ther* 2002;9(1):38-47.
14. Bindman DJ, Rogoff PA, Bartlett FF, Shortsleeve MJ. Transcatheter embolization of a ruptured superior mesenteric artery aneurysm with Gianturco coils: a case report. *Cardiovasc Intervent Radiol* 1990;13(5):289-90.
15. Drescher R, Köster O, von Rothenburg T. Superior mesenteric artery aneurysm stent graft. *Abdom Imaging* 2006;31(1):113-6.