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Case Report

A Case of Superior Mesenteric Artery Aneurysm Mimicking an Abdominal Aortic Aneurysm and Presenting as a Pulsating Abdominal Mass

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A 62-year-old male with a smoking history of 30 pack-years presented with a 1-year history of a periumbilical pulsating mass. He had been treated for hypertension for 2 years. Physical examination revealed a huge pulsating mass in the periumbilical abdomen. Femoral and popliteal arterial pulses were palpable. Computed tomography showed arterial dissection in the proximal segment of the superior mesenteric artery, a huge aneurysm (52×50 mm) with mural thrombus and two smaller aneurysms (20×20 mm) in the right ileocolic and ileal branches, along with atherosclerotic changes. Interposition using the great saphenous vein was performed after aneurysmal isolation and ligation of jejunal branches in the sac. Distal flow was reestablished by end-to-end and end-to-side anastomoses of the right ileocolic and ileal branches, respectively. No complications were observed at 1-year follow-up.

Key Words: Aneurysm, Superior mesenteric artery, Abdominal aortic aneurysm

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INTRODUCTION

Superior mesenteric artery (SMA) aneurysms are uncommon and account for 6.9% of all visceral artery aneurysms [1,2]. SMA aneurysms are also difficult to detect until complications such as rupture and thrombus develop, and approximately 38% are ruptured at initial presentation [2]. Furthermore, associated mortality is high at 40%-60% [3]. The SMA is one of the most common sites of mycotic aneurysm formation, and 50%-60% of SMA aneurysms are of mycotic origin [4,5]. SMA aneurysms now tend to be diagnosed earlier due to the increased use of computed tomography (CT). As soon as an aneurysm is identified by imaging, surgical resection is generally recommended [6]. We present a case of a huge SMA aneurysm mimicking an abdominal aortic aneurysm.

CASE

A 62-year-old male with a smoking history of 30 pack-years presented with a periumbilical pulsating mass of one year duration. He had no concurrent medical problems but had been treated for hypertension for 2 years. Physical examination revealed a huge pulsating mass but no tenderness of the periumbilical abdomen. Femoral and popliteal arterial pulses were palpable. His hemoglobin level and leukocyte count were 13.7 g/dL and 8.0×10^9/L, respectively. He was suspected of having an abdominal aortic aneurysm. Ultrasound examination of the abdomen revealed a huge mural aneurysm located alongside a normal aorta (Fig. 1A). CT angiography depicted one huge aneurysm with mural thrombus and two small aneurysms in the right ileocolic and ileal branches with arterial dissection in the proximal segment of the SMA (Fig. 2A).

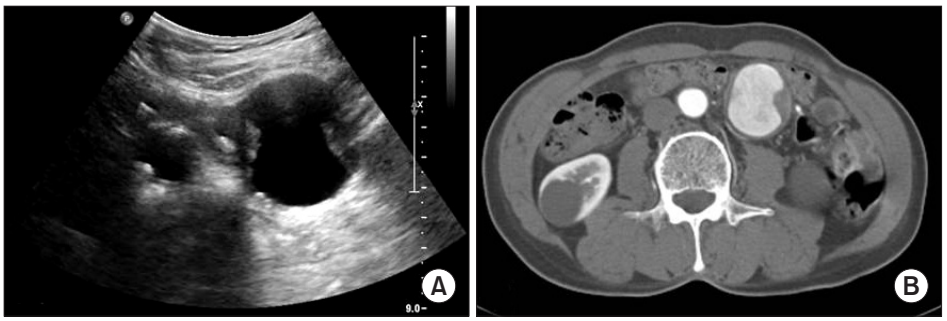

Fig. 1. (A) Ultrasonography showed a huge mural aneurysm located alongside the aorta. (B) Computed tomographic angiography showing the huge aneurysm with mural thrombus.

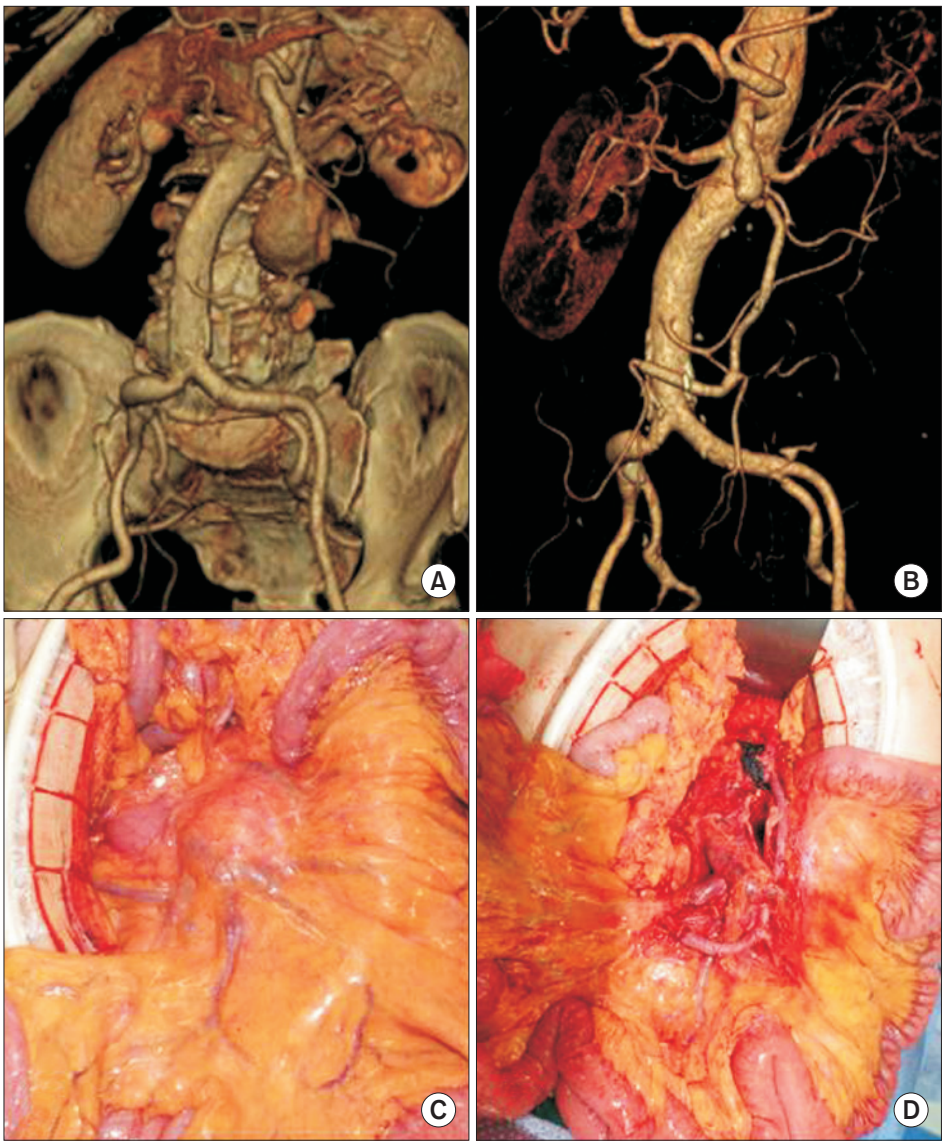

Fig. 2. (A) Preoperative angiogram showed one large (52×50 mm) and two small (20×20 mm) sized aneurysms in the right ileocolic and ileal branches of the superior mesenteric artery which showed proximal dissection and atherosclerotic change. (B) Postoperative angiogram showing interposition of the saphenous vein graft between the proximal superior mesenteric artery (SMA) and distal ileocolic and ileal branches. (C) Operative finding of a pulsating mass below the third portion of the duodenum. (D) Operative finding showing the great saphenous vein graft between the proximal SMA and the distal ileocolic and ileal branches.

During operation, one 52×50 mm and two 20×20 mm-sized saccular true aneurysms containing mural thrombosis were found along the SMA with proximal dissection and atherosclerotic change (Fig. 2C). Interposition was performed using the great saphenous vein after aneurysmal isolation and ligation of jejunal branches in the sac (Fig. 2D). Distal flow was reestablished using end-to-end and end-to-side anastomoses of the right ileocolic and ileal branches, respectively. Patency was confirmed in CT angiography (Fig. 2B). No complications were observed at 1-year follow-up.

DISCUSSION

Visceral artery aneurysms are uncommon and most are detected incidentally in patients complaining of abdominal pain or gastrointestinal bleeding [3,7-9]. However, approximately 48% of patients are asymptomatic, and aneurysms in such patients are difficult to detect until they rupture and cause hypovolemic shock [2]. Nevertheless, the presence of a visceral artery aneurysm should be suspected in any patient with abdominal pain, sepsis, and a history of endocarditis. In our case, three SMA aneurysms were found incidentally in a patient suspected of having an abdominal aortic aneurysm.

The increased use of modern imaging techniques has resulted in the detection of more asymptomatic patients [10,11]. SMA aneurysm is the third most common splanchnic aneurysm; splenic and hepatic artery aneurysms are more common [5]. It has been estimated that 60% of these aneurysms are mycotic and that 20% are associated with atherosclerosis. Furthermore, the majority of affected patients have a history of bacterial endocarditis [5,12]. A recent study showed that atherosclerosis was the most common pathologic finding, and that only 4.8% of patients had an infectious etiology [2]. However, many authors believe that atherosclerosis may be a secondary process [2,12]. Our case was of atherosclerotic origin and the patient had no history of endocarditis. Fewer infective SMA aneurysms may be related with widespread antibiotic usage. Mortality associated with SMA aneurysm has been reported to range from 40% to 60% [3]. In Stone's series [2], the rupture rate was 38.1% at presentation, and the mortality rate for ruptured aneurysms was 37.5%.

Ultrasound is not reliable for delineating the presence or extent of infection. CT angiography is the most useful for diagnosing infected aneurysms [2]. Findings on CT angiography suggestive of an infected aneurysm include the following; saccular, eccentric or multilobulated aneurysm, soft tissue inflammation or mass around a vessel, aneurysm with intramural air or air collection around the vessel, and perivascular fluid collection [6]. In the mesenteric circulation, indistinct fat planes may be indicative of vascular inflammation [13]. If a diagnosis of infected aneurysm remains in doubt, a repeat scan can be performed after a short interval to evaluate for rapid enlargement or changes to the aneurysm that suggest infection [14]. Management of infected aneurysms follows the general principles of managing vascular graft infection. The main surgical aim is removal of all necrotic and infected tissue and management of any ensuing ischemia. The vascular reconstruction depends primarily upon the patient's underlying vascular status and the anatomic site of the aneurysm, which determines the likelihood of ischemia distal to the site following aneurysm excision but also on the availability of autologous graft material [15]. Surgical approaches mainly include ligation, aneurysmorrhaphy and aneurysmectomy, although simple ligation is usually used [3]. In a study by Stone et al. [2], 62.5% of operative patients were treated by ligation. When a lesion is located at a distal site and there is no danger of ischemic change of small bowel, ligation and excision may be feasible because of potential collateral circulation from the celiac artery or inferior mesenteric artery to the SMA [2,16,17]. However, if the lesion is located at a more proximal site, at the junction of the SMA and aorta, or if there is no evidence of collateral circulation, reconstruction of the SMA is mandatory. In our case, though the proximal SMA was spared, reconstruction was inevitable because proximal arterial clamping resulted in a color change of the mid and distal jejunum. Furthermore, preoperative SMA angiography did not depict all branches originating from the aneurysms, as many more branches originating from the aneurysms were encountered during surgery, and some branches from the sacs could not be saved. We had to sacrifice most of the branches originating from the sacs.

Some aneurysms are treated by endovascular stent graft repair [15]. However, patients should be observed for potential bowel ischemia after endovascular repair due to ligation of many small aneurysmal branches. During endovascular treatment, branch arteries originating from the proximal and distal aneurysm necks and the aneurysm itself must be evaluated. If covered, blood supply to the intestine may be compromised. In Mendonça's report [16], at least three jejunal branches were covered without bowel ischemia, which may have been related to a good collateral circulation. Others have reported endoleak after endovascular repair resulting from retrograde filling of collateral vessels [17]. Compared with open surgery, endovascular repair may be a safer, preferable option in patients with severe cardiac or pulmonary diseases.

Some recommended that surgical treatment might be considered under the following conditions [18]; many arteries originating from the proximal and distal aneurysm necks or the aneurysm itself in which case coverage of these vessels might cause bowel ischemia, giant aneurysms that do not have adequate landing zones and thus stent graft stability is unclear, or an aneurysm that has an infectious etiology. However, therapeutic options should be selected after considering comorbidities and lesion characteristics.

We present a rare case report of a patient with a huge pulsating mass in the periumbilical abdomen, which mimicked an abdominal aortic aneurysm. Preoperative CT angiography was found to be useful for differentiating from other abdominal lesions.

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