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Case Report

Intra-Abdominal Hemorrhage Caused by Ruptured Aneurysm of the Left Gastric Artery : A Case Report

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ABSTRACT

Ruptured visceral artery aneurysms, because of their rare occurrence, are often overlooked as a cause of intra-abdominal bleeding. We describe a ruptured spontaneous aneurysm of the left gastric artery (LGA) in a 67-year-old man, who was successfully treated by means of an emergent surgical procedure without complications. The patient presented with acute epigastric pain to the emergency room of Kawaguchi Municipal Medical Center. Physical examination showed severe tenderness and rebound tenderness of the abdomen. Contrast-enhanced computed tomography was, therefore, performed and revealed a low-density 15-mm-diameter mass near the lesser curvature of the stomach, massive ascites, and an aneurysm of the LGA. An emergent operation was performed. After the hematoma was removed, the ruptured aneurysm of the LGA was resected. This case suggests that visceral artery aneurysm should be considered as a cause of intra-abdominal hemorrhage. Moreover, contrast-enhanced computed tomography is a useful method to achieve a prompt and correct preoperative diagnosis and to lead to a positive surgical outcome. (Jikeikai Med J 2017 ; 64 : 15-8)

Key words : visceral artery aneurysm, left gastric artery aneurysm

INTRODUCTION

A ruptured visceral artery (VA) aneurysm is a rare but potentially lethal condition. Thus, it should be considered as a differential diagnosis for an acute abdomen. Left gastric artery (LGA) aneurysms account for only about 4% of VA aneurysms[1,2]. Once an aneurysm has ruptured, the mortality rate increases to 70%[3]. We herein report on a patient with a VA aneurysm who was successfully treated with an emergency laparotomy.

CASE REPORT

A 67-year-old man presented to the emergency room of Kawaguchi Municipal Medical Center with severe epigastric pain of sudden onset. The patient had no significant medical history and no previous abdominal surgery. The findings of physical examination on the patient's arrival were as follows : blood pressure, 90/68 mm Hg ; heart rate, 109 beats per minute ; body temperature, 36.5°C ; body weight, 55.0 kg ; and height, 170.0 cm. The examination also revealed severe abdominal tenderness and rebound tenderness in the epigastrium. The laboratory data

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showed a hemoglobin concentration of 11.4 mg/dl, a white blood cell count of 16.0×10^3 μl, and a prothrombin time international normalized ratio of 0.97 (Table 1). Contrast-enhanced computed tomography (CT) of the abdomen revealed massive fluid collection around the liver and an enhanced mass in the lesser omentum near the gastric wall. The mass was shown with 3-dimensional CT to be a peripheral LGA aneurysm, 15 mm in diameter (Fig. 1). Therefore, on the basis of the preoperative diagnosis of LGA rupture, emergency laparotomy was performed.

Intraoperative examination revealed 1,000 ml of blood in the peritoneal cavity with a tense hematoma in the lesser sac. Exploration of a hematoma under the hepatogastric ligament revealed bleeding from a ruptured aneurysm of the replaced LGA (Fig. 2). During surgery, the patient received 15 units of whole blood and 4 units of fresh frozen plasma. The LGA was ligated with 3-0 absorbable sutures, and the aneurysm was resected. The postoperative course was uneventful.

Histological examination confirmed the diagnosis of an

Table 1. Laboratory data on arrival

White blood cell	1.6×10^3/μl	AST	21 IU/l	Sodium	142 mmol/l
Red blood cell	4.91×10^6/μl	ALT	14 IU/l	Potassium	5.3 mmol/l
Hemoglobin	11.4 g/dl	LDH	188 IU/l	Chlorine	104 mmol/l
Hematocrit	36.4%	Cholinesterase	306 mU/ml	C-reactive protein	0.26 mg/dl
Platelets	194×10^3/μl	Total bilirubin	0.98 mg/dl	Urea nitrogen	24.2 mg/dl
Prothrombin time	106%	Direct bilirubin	0.16 mg/dl	Creatinine	1.25 mg/dl
PT-INR	0.97	ALP	215 IU/l	Total protein	5.9 g/dl
APTT	23.0 sec	Amylase	35 IU/l	Albumin	3.7 g/dl
FDP	9.0 μg/ml	Creatine kinase	50 IU/l		

PT-INR, international normalized ratio of prothrombin time ; APTT, activated partial thromboplastin time ; FDP, fibrin and fibrinogen degradation products ; AST, aspartate transaminase ; ALT, alanine aminotransferase ; LDH, lactate dehydrogenase ; ALP, alkaline phosphatase

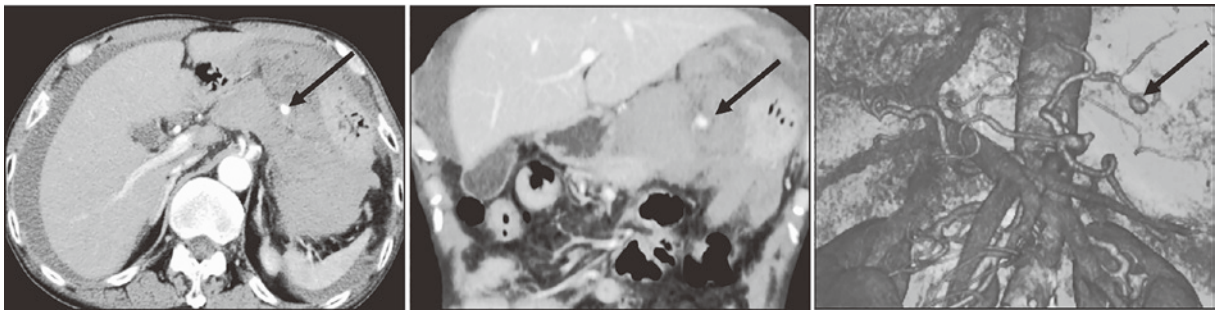

Fig. 1. Contrast-enhanced computed tomography demonstrated an enhancing small mass with a hematoma in the lesser omentum. Three-dimensional computed tomography revealed the enhanced mass to be a left gastric artery aneurysm.

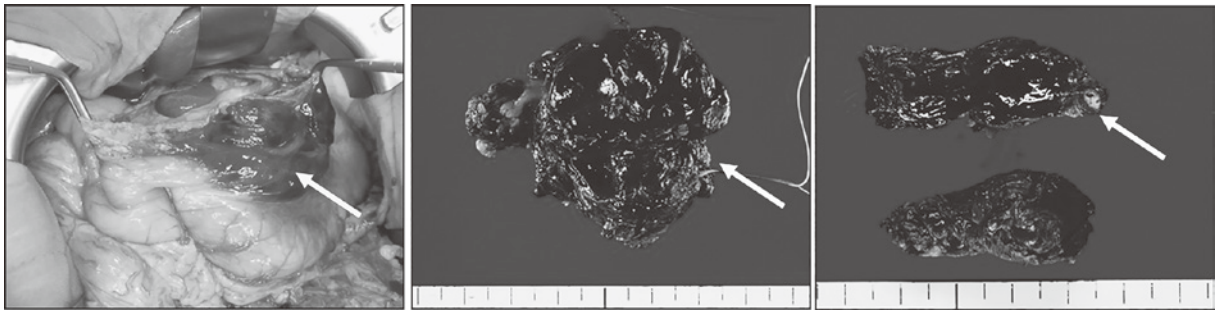

Fig. 2. Operative findings after intra-abdominal lavage showed hematoma including a left gastric artery aneurysm 4 cm in diameter in the lesser curvature of the stomach. The resected specimen showed a slightly hard mass and intraluminal hematoma.

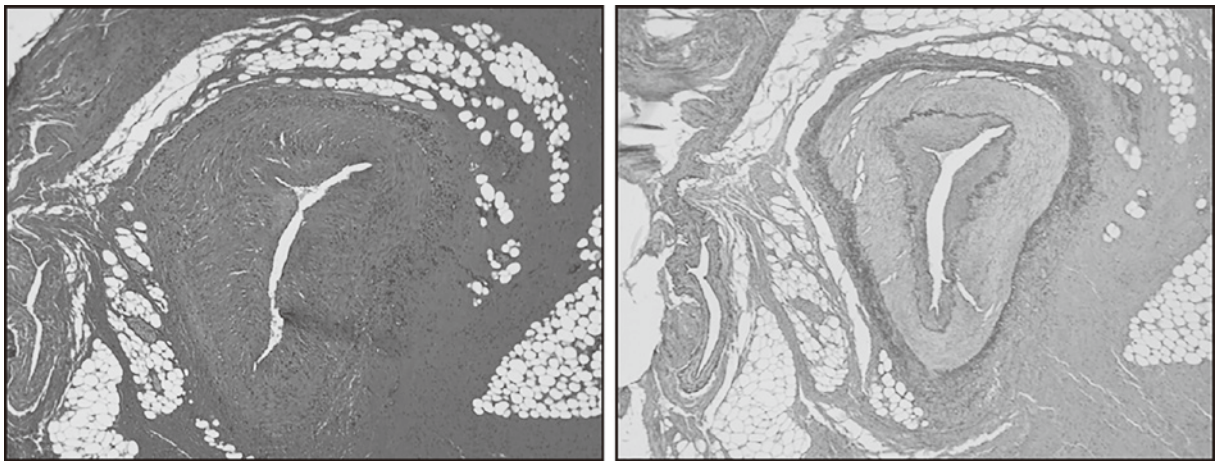

Fig. 3. Pathological examination of the left gastric artery aneurysm showed plasmotomy of elastic fibers of the wall of the artery (×40, Elastica van Gieson stain).

LGA aneurysm 1.8 cm in diameter. Histopathological examination of the artery revealed vascular wall injury with a loss of all endothelial cells and irregularity of the internal elastic membrane (Fig. 3). The patient has been followed up as an outpatient and has remained asymptomatic for 24 months.

Discussion

A 1970 review[3] of 1,098 cases of VA aneurysms found that the artery involved was as follows : splenic, 60% ; hepatic, 20% ; superior mesenteric, 5.5% ; celiac, 4.0% ; gastric or gastroepiploic, 4.0% ; and ileac or jejunal, 3.0%. The causes of VA aneurysms have been suggested to be variable and to include infection, arterial sclerosis, collagen disease, trauma, congenital vascular abnormality, iatrogenic complications, and such inflammatory conditions as pancreatitis and cholangitis[1,4]. Moreover, an important cause of VA aneurysms is segmental arterial mediolysis, which was first described by Slavin and Gonzalez-Vitale in 1976[5]. Segmental arterial mediolysis, which is an uncommon vascular disease without inflammation or atherosclerosis, is characterized by the development of a dissecting aneurysm, hematoma, aneurysm, occlusion, or hemorrhage after lysis of the arterial media[5]. The present patient had no known predisposing condition.

An LGA aneurysm is most commonly identified in the fifth and sixth decades of life, with a male-to-female ratio of 3 : 1[1]. Ruptures occur in 90% of cases[3], and 70% of ruptured lesions are intramural and present with torrential hematemesis. The remaining extramural ruptures present with intraperitoneal hemorrhage[6]. Of cases of VA aneurysms, 22% present as emergencies and 8.5% result in death[1].

Ruptured LGA aneurysms are often difficult to diagnose at an early stage because most patients present with nonspecific signs and symptoms, such as abdominal pain, nausea, and vomiting[7]. The diagnosis of LGA aneurysm has been established with noninvasive imaging studies, such as ultrasonography, CT, and angiography[1,2]. Among these studies, CT with contrast enhancement has greatly improved the early detection rate[8].

Ruptured LGA aneurysms are treated with interventional radiologic or surgical procedures. As an interventional radiologic procedure, the standard regimen is embolization with metallic coils, and another option is stent graft repair. The current consensus for the management of a ruptured LGA aneurysm recommends prompt interventional approaches[9,10]. A recent study has found that the endovascular treatment for VA aneurysms was technically successful in 98% of cases[11]. However, a report from 2016 has found a re-intervention rate of 3.8% after initial endovascular treatment, which is higher for symptomatic VA aneurysms (11.1%) than for asymptomatic VA aneurysms (1.3%)[8]. As an interventional approach, embolization is a useful and less-invasive procedure, but some interventional radiologists warn of a risk of aneurysmal rupture[9,12]. On the other hand, stent graft repair also has disadvantages associated with the difficulties in the passage of the sheath and stent graft to a tortuous VA aneurysms[9]. Because the mortality rate after rupture of a VA aneurysm is 70%[3], intra-ab-

dominal bleeding might need to be controlled with a surgical procedure if endovascular techniques have been ineffective. A recent report has advocated ligation and excision with a laparoscopic technique as a less-invasive surgical method[13]. Therefore, to decrease the risk of subsequent rupture, all incidentally found LGA aneurysms should be electively treated with ligation or embolization[8].

CONCLUSION

We have reported a rare case of a ruptured LGA aneurysm in a 67-year-old man who was treated successfully and without complications by means of emergent laparotomy. Rupture of a VA aneurysm should be considered in the differential diagnosis of an intra-abdominal hemorrhage. If contrast-enhanced CT leads to a prompt and accurate diagnosis, surgical management can achieve a positive outcome.

FOOT NOTES

The authors have no conflict of interest regarding this article. We have obtained written informed consent from the patient for publication of this case report and accompanying images.

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