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Case Report

Splenic artery pseudoaneurysm resulting from gastric ulcer presenting acute upper gastrointestinal bleeding ☆☆☆

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ABSTRACT

Splenic artery pseudoaneurysm (SAP) is a rare entity, which occurs when the arterial wall is composed only of the intima and media mainly caused by pancreatitis, or abdominal trauma. Regardless of size, SAP is a high mortality disease that carries a high risk of rupture, causing abdominal pain and severe pancreatic and gastrointestinal bleeding. Here, we describe a rare case of SAP rupture caused by a large gastric ulcer due to *Helicobacter pylori* infection and NSAIDs use. Understanding the characteristic enhanced CT images of SAP, the complications of splenic infarction, and the therapeutic efficacy of arterial embolization is essential for the clinician to properly diagnose and treat SAP.

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Introduction

Splenic artery aneurysms are classified into splenic artery true aneurysms and splenic artery pseudoaneurysms (SAP), de-

pending on the presence or absence of an adventitia of artery. Compared to true aneurysms, SAP is rare but carries a high risk of rupture regardless of size and is often diagnosed with hemorrhagic shock. We report here a rare case of SAP resulting from an advanced gastric ulcer presenting with acute up-

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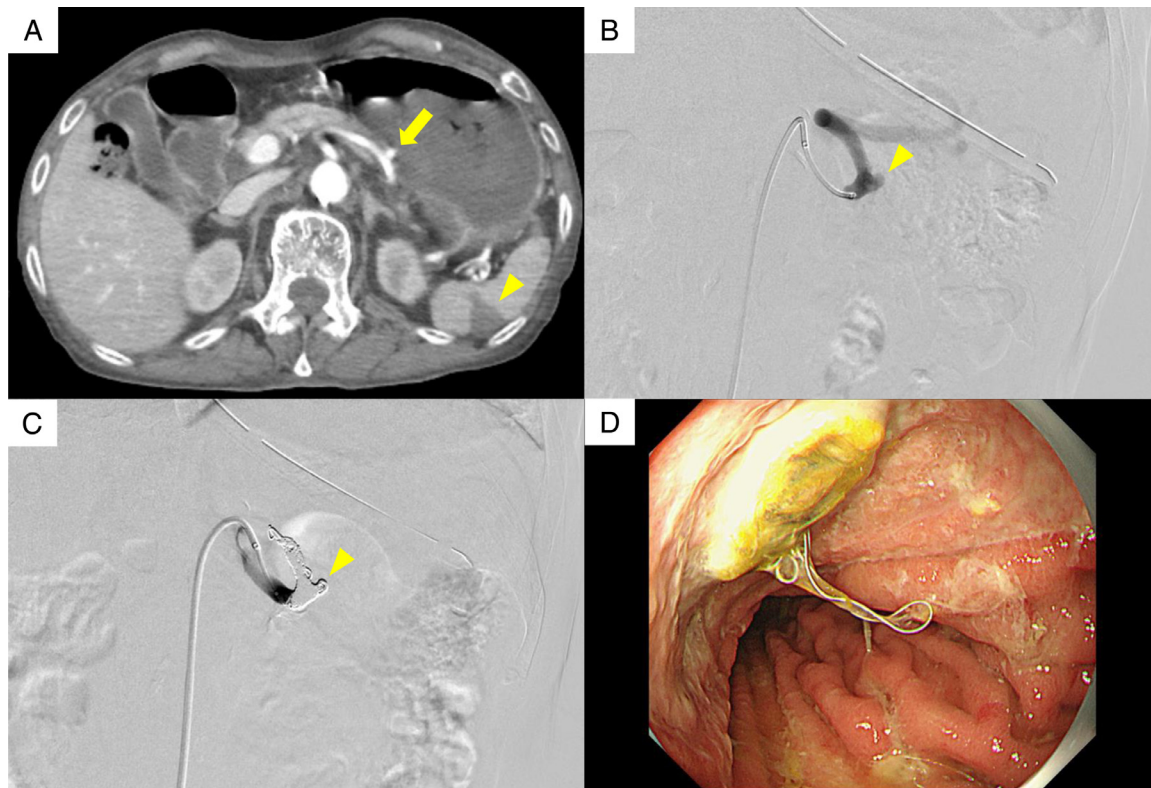


Fig. 1 – (A) Enhanced CT showed SAP bulging into the gastric submucosa (arrow), and a splenic infarction (arrowhead). (B) The angiography indicated SAP (arrowhead). (C) The postembolization angiography showed a completely occluded pseudoaneurysm (arrowhead). (D) Upper gastrointestinal endoscopy revealed a massive gastric ulcer of the posterior wall of the gastric body with the embolic coil penetrating the gastric wall.

per gastrointestinal bleeding, which was successfully treated by transcatheter arterial embolization (TAE).

Case presentation

A 78-year-old female patient presented to the emergency department with significant fatigue for several days. The patient had severe anemia (hemoglobin 5.1 g/dL) and hypotension (systolic blood pressure 80 mmHg). Due to a rib fracture, she had been taking celecoxib for a few weeks. An enhanced CT scan revealed a splenic artery pseudoaneurysm (SAP) in the submucosa with thinning of the posterior wall of the stomach (Fig. 1A). There were also findings of splenic infarction (Fig. 1A). These findings led to the diagnosis of upper gastrointestinal bleeding from SAP caused by a gastric ulcer. Based on the diagnosis, coil TAE of the SAP was performed. SAP confirmed by angiography (Fig. 1B) disappeared after the embolization (Fig. 1C). The patient was also treated with red blood cell transfusion and intravenous proton pump inhibitor. An upper gastrointestinal endoscopy performed on day 6 of hospitalization revealed a massive gastric ulcer on the posterior wall of the gastric body (Fig. 1D), and the coil used for embolizing the SAP was exposed from the ulcer base to the gastric lumen. The patient was discharged symptom-free on day 19 of hospitalization. One month after discharge, endoscopy revealed almost

complete healing of the gastric ulcer, with no findings of malignancy. Since Anti-*Helicobacter pylori* IgG was positive, the patient is scheduled for eradication therapy.

Discussion

The present case featured a large gastric ulcer resulting from oral celecoxib and *Helicobacter pylori* infection eroded to the splenic artery, causing the SAP and subsequent rupture. The wall of a pseudoaneurysm consists of the intima and media, but not the adventitia [1]. Therefore, SAP is at high risk of rupture regardless of size and is rarely asymptomatic. It presents as massive gastrointestinal bleeding into the retroperitoneal-pulmonary, pancreatic ducts, or abdominal cavity, and can be hemodynamically unstable [1,2].

The main etiologies of SAP have been reported to include pancreatitis (52%), and abdominal trauma (29%), while only 7 cases of SAP caused by peptic ulcers as in this case have been reported previously [2–4]. In the case of SAP caused by a gastric ulcer, peptic and gastric enzymes contact the vessel wall, forming a fistula and causing bleeding.

Treatment options for gastric ulcer-induced SAP presenting with acute upper gastrointestinal bleeding include surgery and TAE [5]. Hemostatic treatment by endoscopic procedures is likely to be difficult and may even exacerbate bleeding.

It was reported that the mortality and morbidity risks associated with surgical intervention are 1.3% and 9%, respectively [6]. On the other hand, TAE using coils, detachable balloons, inert particles or gelatin sponges has reported success rates of 75%-85% [7]. Therefore, TAE, which is less invasive than surgical procedures, has become increasingly utilized in the treatment of such bleeding. However, since the rupture of a splenic artery aneurysm due to a gastric ulcer may result from an extra-gastric fistula, a surgical procedure may be needed to eliminate the underlying pathology in such cases.

Short-term follow-up with CT and endoscopy is also essential for checking subsequent gastric perforation or infection even if homeostasis is achieved with TAE only.

Interestingly, the present case showed the presence of splenic infarction by enhanced CT. The cause of splenic infarction was suggested to be vasoconstriction due to decreased blood flow to the spleen, thromboembolism, or rupture of splenic artery aneurysm. The presence of splenic infarction may be a clue suggesting splenic artery aneurysm rupture, as shown in a previous report [4].

Conclusion

Clinicians encountering upper gastrointestinal bleeding can properly diagnose and treat SAP rupture by capturing the enhanced CT findings of SAP, including splenic infarction. TAE is recommended for treatment rather than endoscopic therapy.

Patient consent

The patient involved in this case provided written informed consent.

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