Spontaneous haemorrhage from a left gastric artery aneurysm as a cause of acute abdominal pain

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ABSTRACT

Visceral artery aneurysms are rare, with a reported incidence of less than 2% in the general population.^{1,2} Aneurysms of the left gastric artery are particularly uncommon, accounting for 4% of all visceral aneurysms.^{3,4} Although the majority are discovered incidentally and can be managed conservatively, prompt treatment of those ruptured or at risk of rupture is crucial to reduce the associated morbidity. Increasing awareness of visceral artery aneurysms as a cause of spontaneous intraperitoneal haemorrhage will improve early recognition and impact on survival. We present a rare case of spontaneous rupture of a left gastric artery aneurysm.

KEYWORDS

Ruptured aneurysm – Haemoperitoneum – Visceral artery aneurysm – Gastric artery aneurysm

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Case history

A 60-year-old woman presented to our local hospital with acute onset chest and upper abdominal pain, with vomiting and hypotension. Examination demonstrated a soft but tender and distended abdomen, with a systolic blood pressure of 78mmHg and haemoglobin of 116g/l. She had a past medical history of hypertension treated with amlodipine, bendroflumethiazide and ramipril.

Despite aggressive fluid resuscitation, she remained hypotensive. Her haemoglobin dropped to 67g/l and 2 units of red blood cells were transfused. This prompted urgent contrast-enhanced computed tomography (CT) of the chest and abdomen, which demonstrated an acute intraperitoneal bleed with a large haematoma in the lesser sac. A diagnosis of spontaneous haemorrhage from a left gastric artery aneurysm was made, owing to a demonstrable focus of active contrast extravasation close to the left gastric artery (Fig 1). The images were reviewed at the regional vascular centre and the patient was transferred for coil embolisation of the left gastric artery (Fig 2). Post intervention, the patient made a gradual but full recovery.

Following successful embolisation, further investigations were performed to identify contributory factors for the aneurysm development and to assess for further aneurysms. Echocardiography showed mild mitral regurgitation. Magnetic resonance angiography of the brain demonstrated

normal anatomy of the circle of Willis and no evidence of intracranial aneurysms. CT angiography confirmed two further visceral artery aneurysms both on the splenic artery, one measuring 6mm in diameter and the other 11mm. On review of the initial CT imaging, these splenic artery aneurysms could be seen but they were not reported at the time; they were visualised at angiography during embolisation. The patient has remained under long-term surveillance of these aneurysms, with regular imaging and outpatient follow-up. She has also been referred to a specialist rheumatology clinic to exclude underlying connective tissue disorders.

Discussion

Visceral artery aneurysms (VAAs) affect branches of the abdominal aorta supplying the abdominal organs, with 80% found on the splenic and hepatic arteries.¹ They are rare and have a reported incidence of less than 2% in the general population, a figure that is rising with the more frequent use of CT imaging.^{1,2} Splenic artery aneurysms are the most common form, comprising 60% of VAAs. They are the least likely to rupture.¹ Gastric artery aneurysms are much more rare, accounting for less than 4%.^{3,4}

VAAs are most commonly associated with a history of hypertension and underlying atherosclerosis, previous vascular or surgical intervention and, more rarely, connective tissue disorders and vasculitis. Gastric artery aneurysms can

Figure 1 Axial computed tomography of the abdomen demonstrating: (a) active contrast extravasation from the left gastric artery into a haematoma adjacent to the lesser curve of the stomach; (b) peri-hepatic haematoma; (c) splenic artery aneurysm (not bleeding)

also result from localised inflammatory processes such as pancreatitis and peptic ulcers.^{2,4} Portal hypertension and pregnancy are associated with an increased chance of aneurysm rupture.⁵

VAA often remain asymptomatic and may never be found in a patient's lifetime.² Left gastric artery aneurysms (LGAAs) in particular are associated with a high rate of rupture and, consequently, have a high mortality of up to 70%.⁵ The majority of patients with LGAAs present for the first time with signs of rupture, an acute abdomen and hypovolaemic shock.^{5,4} More rarely, patients may present with epigastric discomfort or, as in this case, with associated chest pain.⁵ Diagnosis of a ruptured LGAA can be difficult and requires a high level of suspicion in all unexplained cases of haemoperitoneum. CT is a widely used and easily accessible form of imaging, which often aids in making the initial diagnosis.⁴

Management of a ruptured VAA is aimed at controlling life-threatening haemorrhage with vigorous resuscitation and definitive intervention. Intervention largely consists of minimally invasive endovascular therapies, usually by embolisation (using coils or glue) in the emergency setting. Covered stents may be considered for VAA treatment if flow has to be maintained through the vessel.⁵ Good characterisation and location of the lesion on imaging can help aid choice of technique.⁵ In the case presented, coil embolisation of the left gastric artery was suitable, because of the good collateral blood supply in this region. Post-intervention all-cause 30-day mortality has been reported between 6.2% and 6.7%.^{1,2}

Early intervention is indicated for all aneurysms with bleeding or signs of rupture.^{1,2} The decision to monitor or

Figure 2 Image from the embolisation procedure demonstrating coils in the left gastric artery from the coeliac axis (arrow)

intervene with VAAs depends on the artery affected, aneurysm size and underlying disease. For most splenic artery aneurysms, the threshold for intervention is a minimum diameter of 2 cm.^{2,5} In this case, the patient continues to remain under surveillance for the two splenic artery aneurysms, as both were smaller than this minimum threshold. Confirmation of a connective tissue disorder, such as Ehlers-Danlos, would prompt more urgent treatment of smaller aneurysms, because of the increased risk of aneurysm rupture.⁵ The patient is currently under investigation for connective tissue disorders, which may alter her long-term management if a new diagnosis is made.

Summary

Treatment of VAAs depends on each individual case. Factors to be considered include anatomical location, aneurysm size, clinical symptoms, associated comorbidities and the interventional technologies available. Although rare, ruptured VAAs should be considered in all patients presenting with acute abdominal pain and haemoperitoneum. Increasing awareness will undoubtedly improve outcome and reduce associated morbidity.

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