A rare case of haemorrhagic shock secondary to spontaneous rupture of a branch of the left colic artery and the right gastric artery

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ABSTRACT

Spontaneous splanchnic artery rupture is associated with up to 70% mortality. Affected vessels are often aneurysmal, secondary to atherosclerosis. We report, to our knowledge, the only case of spontaneous rupture of a branch of the left colic artery and the right gastric artery, possibly secondary to vasculitis.

KEYWORDS

Haemoperitoneum – Inferior mesenteric artery – Left colic artery – Right gastric artery – Vasculitis

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Introduction

Spontaneous rupture of the splanchnic vessels, in the absence of trauma is rare. It is a surgical emergency, presenting with haemorrhagic shock and the rapid onset of haemoperitoneum, requiring prompt intervention.¹ Splenic (60%) and hepatic (20%) artery aneurysms are common. Aneurysms of the left or right gastric (4%) and the inferior mesenteric artery are extremely rare.¹ Eleven cases of spontaneous IMA rupture have been reported, with four fatalities. Right gastric artery aneurysmal rupture has been reported in eight cases, with one death.^{1,2}

We present the first case, to our knowledge, of spontaneous rupture of both a branch of the left colic and the right gastric arteries, possibly secondary to vasculitis.

Case history

A 72-year old woman was admitted with a one-week history of feeling generally unwell, with a background of hypertension, hypercholesterolaemia and spondylolisthesis. She was not on any anticoagulants. Prior to this admission, she had been investigated for vague abdominal pain, lethargy and night sweats. Magnetic resonance imaging and full body computed tomography (CT) showed no evidence of malignancy.

The patient deteriorated rapidly on the ward with a diffusely tender, peritonitic abdomen. Observations revealed marked hypotension and tachycardia. Her haemoglobin was 62 g/l, white cell count $18 \times 10^9/l$, C-reactive protein 24 mg/l, platelets $824 \times 10^9/l$, prothrombin time 11.8 seconds (range 9.1–13.2 seconds), international normalised ratio 1.01 (range 0.8–1.2) and lactate 9.7 mmol/l.

Differential diagnoses included ruptured abdominal aortic aneurysm, viscus perforation or bowel ischaemia. Urgent CT showed an acute haematoma with evidence of active bleeding, probably from a branch of the left colic artery (Figs 1–3).

The patient was aggressively resuscitated. At laparotomy, approximately two litres of blood and clots from the peritoneal cavity were evacuated and a branch of the left colic

Figure 1 Computed tomography during portography, arterial phase, axial view, showing the inferior mesenteric artery (yellow arrow), with the left colic branch (green arrow) and a nodular ectatic vessel with contrast extravasation (red arrow)

Figure 2 Computed tomography during portography, arterial phase, coronal view, showing the left colic branch of the inferior mesenteric artery (yellow arrow), with a nodular ectatic vessel (green arrow) and contrast extravasation with pooling (red arrow)

Figure 3 Three-dimensional reconstruction of the arterial phase showing the inferior mesenteric artery (yellow arrow), with the left colic branch (green arrow), the nodular ectatic vessel (red arrow) and the haematoma (blue arrow)

artery was identified and ligated. Following successful haemostasis, the patient was admitted to intensive care and was discharged to the ward 24 hours later. Three days postoperatively, she deteriorated again with hypotension

and tachycardia with a drop in haemoglobin to 70 g/l. Repeat CT showed a retroperitoneal bleed probably arising from the right gastric artery (Figs 4–6).

Following resuscitation, a second laparotomy revealed four-quadrant haemoperitoneum, retroperitoneal haematoma and bleeding from the right gastric artery which was ligated. The patient was readmitted to intensive care and multidisciplinary team input from the rheumatology and renal physicians diagnosed vasculitis as the likely underlying cause. Treatment was started with cyclophosphamide and steroids.

A few days following the second laparotomy, the patient was transferred back to the ward, where she remained haemodynamically stable with no further bleeding.

Discussion

Kato *et al.* first reported a case of rupture of the inferior mesenteric artery secondary to aneurysm caused by arteritis.⁵ There have been eight documented cases of right gastric artery rupture alone, the most recent in 2017, due to aneurysm secondary to atherosclerosis (Table 1).² In this case, CT showed vessel rupture without any radiological evidence of prior aneurysm. Abnormal vascular remodeling secondary to disruption of vessel wall architecture appears to be the probable pathophysiological process behind the spontaneous rupture. To our knowledge, this is the first reported case of rupture of a branch of the left colic artery and the right gastric artery, secondary to probable vasculitis.

This case highlights the importance of splanchnic artery aneurysm as a cause of intraperitoneal bleeding, necessitating prompt recognition and intervention. Edogawa *et al.* suggested that an inferior mesenteric artery aneurysm greater than 2 cm at the proximal end or 1 cm at the distal end requires operative intervention.¹

Figure 4 Computed tomography during portography, arterial phase, axial view, showing the right gastric artery (yellow arrow) and contrast extravasation

Figure 5 Computed tomography during portography, arterial phase, coronal view, showing the right gastric artery (yellow arrow) and contrast extravasation

We suggest that patients with vasculitis should be followed up by CT angiography to identify aneurysmal vessels and guide early surgery, as mortality rates of between 25–70% have been reported following rupture⁴. A multidisciplinary approach to follow-up and management in these patients would be of benefit. Interventional radiology is increasingly playing an important role in the management of vascular bleeds. Successful arterial embolisation of the left and right gastric arteries was performed in a recent case reported by Nishimura *et al.*⁵ However, interventional radiology is limited to centres where the expertise exists. Thus, management of vascular bleeds via laparotomy is still performed in the vast majority of cases.

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