CASE REPORT

Spontaneous intraperitoneal haemorrhage from short gastric artery avulsion secondary to forceful retching

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SUMMARY

Spontaneous intraperitoneal haemorrhage can occur in any age group. It is defined as presence of free blood in the peritoneal cavity which can result from a non-traumatic and non-iatrogenic cause. Common causes are visceral, coagulopathy related and vascular. The clinical presentation is usually non-specific; it can vary from mild abdominal pain to a shock status. We report a very rare case of a 17-year-old male patient who presented to our institution with spontaneous intraperitoneal bleeding secondary to avulsion of one of the short gastric artery following forceful retching.

BACKGROUND

Spontaneous intraperitoneal haemorrhage (SIH) is a rare entity that presents mainly with acute abdominal pain and shock that may be fatal when it happens. Common causes are visceral, coagulopathy related and vascular. The clinical presentation is usually non-specific; it can vary from mild abdominal pain to a shock status. We are presenting a rare unusual case of SIH due to short gastric artery avulsion after forceful retching.

CASE PRESENTATION

A 17-year-old male patient was referred to our institution with a 12-h history of sudden onset of the severe abdominal pain. He reported that he had some abdominal discomfort in the evening followed by self-induced vomiting. This was followed by an excessive retching and severe abdominal pain, which progressed in its severity.

The pain extended from the epigastric area to the right upper and lower quadrants. He was admitted previously in another hospital where a non-contrast CT scan was performed and revealed a retrogastric mass for which he was referred to our hospital for further management. On admission, he was tachycardic with a heart rate of 110 bpm and blood pressure of 100/70 mm Hg. He had severe abdominal pain. He had a tender abdomen with guarding localised to the epigastric area and right upper and lower quadrants. Decision was to go for an exploratory laparotomy, which revealed a large haematoma in the abdominal cavity mainly in the retrogastric region. The abdomen was carefully inspected for a possible source of bleeding which revealed a tear in one of the short gastric arteries.

INVESTIGATIONS

Complete blood count was taken and haemoglobin was 10 g/dL and his international normalised ratio

(INR) was 1.2. A repeat CT scan with intravenous contrast revealed a significant haemoperitoneum with a retrogastric mass (figure 1).

DIFFERENTIAL DIAGNOSIS

- Gastrointestinal stromal tumour
- Sarcoma

TREATMENT

Bleeding controlled with a 3/0 Vicryl tie. The abdomen was washed out and closed.

OUTCOME AND FOLLOW-UP

The patient did very well postsurgery and was discharged home 3 days after.

DISCUSSION

Idiopathic spontaneous intraperitoneal haemorrhage was first reported by Barber in 1909¹ and was later termed 'abdominal apoplexy' by Green and Powers in 1931.² Spontaneous haemoperitoneum is defined as blood within the peritoneal cavity from a non-traumatic cause. Implicit in the diagnosis is not that the haemoperitoneum arises from no cause or an unknown cause but from a non-traumatic cause, and hence a potentially treatable underlying cause.

On CT scan the appearance of blood within the peritoneum varies depending on the site of origin of the bleeding, the extent of the bleeding and the length of time between the initial bleeding and the CT acquisition. Blood that is several hours old may have in part clotted, and clotted blood has a high attenuation when seen on CT imaging when comparing intravascular blood with clotted blood

Figure 1 CT scan with intravenous contrast revealed a significant haemoperitoneum with a retrogastric mass.

To cite: Faraj W, Alaeddine M, Haydar A, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2012-008250

usually having a Hounsfield unit (HU) value between 40 and 70 HU. Acute blood has an HU value close to 30–40 HU.^{3–4} Blood seen on the CT scan at the time of presentation may have a heterogeneous attenuation, as fresh blood mixes with the older blood and clot lysis begins.

The presence of active extravasation also alters the management strategy for these patients, as extravasation mandates emergent surgical or endovascular management to arrest the bleeding. Identifying a high attenuation haematoma in close proximity to the liver or spleen may indicate rupture of a hepatic or splenic mass as the cause for the hemoperitoneum. It is often difficult or impossible to identify a mass within the liver or spleen on the diagnostic CT study, as the mass may be completely obscured by surrounding haematoma, which has a similar attenuation to a soft tissue mass.

Differential diagnosis are many, it can be secondary to blunt trauma, aneurysm rupture (central or visceral), solid organ malignancy (hepatic or renal, splenic), inflammatory erosive processes (pancreatitis or pseudocyst), vascular coagulopathic, gynaecological and an unusual entity called segmental mediolytic arteriopathy (SMA).⁵

Gynaecological cause could be due to rupture of an ovarian cyst, ectopic pregnancy, endometriosis and haemorrhagic corpus luteum cyst torsion.

Liver causes could be benign such as hepatic adenomas, giant haemangiomas and focal nodular hyperplasia or malignant, such as primary hepatocellular carcinoma (HCC) and metastatic disease. HCC rupture has been reported as occurring in between 4% and 12% of patients with HCC, in one large report of 70 cases of spontaneous hepatic rupture this has most frequently been reported in the setting of cirrhosis secondary to alcohol or chronic viral infection. The exact cause of HCC rupture is uncertain, but proximity of large masses to the hepatic surface without intervening normal liver parenchyma predisposes to haemoperitoneum. Metastatic lesions from a wide range of primary malignancies resulting in spontaneous rupture have been reported, most in the form of case reports. These include metastatic colon, lung, renal cell carcinoma and testicular choriocarcinoma.

Splenic causes could be attributed to delayed splenic rupture due to blunt abdominal trauma or spontaneous rupture of the spleen which could be due to underlying splenic infection including cytomegalovirus, malaria and Epstein-Barr virus. Disseminated infection with *Bartonella henselae* has also been reported. Other rare cause is a host of splenic masses that may undergo spontaneous rupture (splenic hamartoma, lymphoma, leukaemia, primary or secondary angiosarcoma).

Coagulopathy causes present either as acute pain anteriorly when into the rectus abdominis or back pain when the bleed is into the psoas muscle, and the pain is usually worse with movement.

Spontaneous haemoperitoneum is a very rare entity with patients on anticoagulation. Congenital factor X deficiency has also been reported as resulting in spontaneous haemoperitoneum after rupture of luteal cysts.⁶

Vascular hemoperitoneum may be divided into arterial and venous causes.

The aetiology of spontaneous haemoperitoneum resulting from venous rupture is very different; it usually results from an episode of elevated intra-abdominal pressure. Spontaneous venous rupture usually results from abdominal varices, most frequently as a consequence of cirrhosis and portal hypertension. Spontaneous hemoperitoneum due to variceal rupture carries a mortality of approximately 75%.

Arterial causes may be split into spontaneous rupture of an abnormal vessel or rupture of a normal vessel undergoing abnormal stress. Causes of arterial hemoperitoneum due to abnormal vessels include aneurysm, pseudoaneurysm or mycotic aneurysm with rupture and arterial dissection with rupture.

Aneurysms of the visceral circulation are rare, accounting for 0.1–10.4% in autopsy statistics. The splanchnic vessels most commonly involved are the splenic (56%), hepatic (19%), superior mesenteric (8%) and gastric (5%). SMA was first described by Slavin and Gonzalez-Vitale in 1976.⁷ It is a rare non-atherosclerotic, non-vasculitic disease of unknown aetiology, thought to be a form of fibromuscular dysplasia. It is characterised by cytoplasmic vacuolar degeneration of the arterial media with deposition of mucoid material in the intima and media.

In our case, it was clear that the excessive retching preceded the abdominal pain and this narrowed our differential to one mechanism which was only described by Hayes *et al*⁸ in 1994. This is thought to be directly related to the mechanism of retching, which may cause partial volvulus. This mechanism creates traction on the gastrosplenic attachment and leads to a shearing force that tears the short gastric arteries. In this particular case, a tear in a posterior short gastric artery lead to bleeding into the lesser sac and blood reached the peritoneal cavity through the foramen of Winslow.

In conclusion, avulsion of short gastric arteries should be considered in a patient with abdominal pain and signs of peritoneal haemorrhage and a history of violent retching and vomiting. Early suspicion and detection help provide the patient with appropriate prompt management. This is why this entity should be kept in mind in a patient presenting with similar symptoms

Learning points

- ▶ Spontaneous intraperitoneal haemorrhage should be in the differential diagnosis of acute abdominal pain.
- ▶ Careful detailed history should be performed in patient with unusual presentation.
- ▶ The absence of active extravasation of the intrarterial contrast in CT scan should not rule out the possibility of bleeding.

Contributors WF worked on the main design of the paper. MA on the collection of reference, MH on reference and revision and finally MK on the major revision of the study.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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