CASE REPORT

Severe upper gastrointestinal bleeding in extraluminal diverticula in the third part of the duodenum

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SUMMARY

The successful management of upper gastrointestinal (GI) bleeding requires identification of the source of bleeding and when this is achieved the bleeding can often be treated endoscopically. However, the identification of the bleeding can be challenging due to the location of the bleeding or technical aspects. Therefore it might be necessary to use other measures than endoscopy such as CT angiography. Duodenal diverticula is a rare cause of upper GI bleeding and can be challenging to diagnose as they often require specialised endoscopy procedures such as endoscopy with a side-viewing scope. This case describes the first successful management of this rare condition with an upper GI endoscopy with a colonoscope and afterwards intravascular coiling.

BACKGROUND

Upper gastrointestinal (GI) bleeding is a common condition. There are several causes of this condition that have to be considered, that is, *Helicobacter pylori* infection, drugs such as non-steroidal anti-inflammatory drugs (NSAIDs) or anticoagulation agents. Most cases of GI bleeding can be treated endoscopically although in up to 10 % of patients there is a tendency for recurrence and will need several endoscopic procedures before there is adequate haemostasis; and the mortality is also around 10 % so all possible methods of haemostasis have to be used.¹

Duodenal diverticula are a rare cause of upper GI bleeding although they occur in up to 22 % of people in autopsy studies and are mostly solitary.² It is estimated that they are responsible for 0.14 % of all upper GI bleeding.³ Duodenal diverticula are most often seen with endoscopic retrograde cholangiopancreatography (ERCP) procedure or a side viewing duodenoscope but can also be diagnosed by other modalities such as CT or MRI.^{3 5} Treatment is only recommended if the diverticula is symptomatic.⁴ The most serious complication is perforation and demands acute laparotomy, but bleeding also occurs.^{3 5} The duodenal diverticula are most often seen around the ampulla in the second part of the duodenum.³ The distribution between genders is unclear and ranges from 1:1 to an abundance in men but persons around 50 or 60 years of age seem to be mostly affected.^{3 4}

CASE PRESENTATION

A 69-year-old man known to be suffering from diabetes and previous deep venous thrombosis was

admitted to our department due to melaena. Besides tachycardia the patient had BP 154/90 mm Hg and haemoglobin level 6.4 mmol/L. He used the anti-coagulant drug 'Edoxaban' as part of a randomised controlled trial. Treatment with this drug was stopped at admittance. An emergency gastroscopy came out normal and therefore the patient was planned for a colonoscopy that was impossible to complete due to stool and melaena. Because of the continuous need for blood transfusion, a CT angiography was performed. This was normal (figure 1). The patient suddenly became hypotensive with BP level 60/40 mm Hg and the haemoglobin level fell to only 1.9 mmol/L. An acute CT angiography was performed showing extravasation from an unnameable branch from the superior mesenteric artery, into the third part of the duodenum via an extraluminal diverticula without relation to the major papillae (figure 2). An acute gastroscopy was inconclusive, and an upper GI endoscopy with a colonoscope was performed. This approach revealed the extraluminal diverticula and the bleeding was stopped with injection of epinephrine saline. The patient was thereafter transferred to another hospital with interventional radiology services for coiling of the artery and transferred back to our department. He had no further bleeding recurrences and was discharged a week later.

INVESTIGATIONS

Gastroscopy is usually the initial treatment for suspected GI bleeding. This is a fast, easy and safe

Figure 1 Axial CT of the abdomen with no sign of bleeding.

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Figure 2 Axial CT of the abdomen with bleeding into the duodenum.

examination that also makes it possible to treat the bleeding if identified. If the gastroscopy is inconclusive and there is doubt with regard to the source of bleeding a colonoscopy or sigmoidoscopy can be performed. These methods can also treat and identify the sources of bleeding.

If none of these methods can identify the bleeding a CT angiography or a bleeding scintigraphy can be performed. These methods are limited by the fact that the bleeding has to be ongoing to be detected and are also often limited by the fact that they are not always available 24 h in emergency situations.^{6 7}

DIFFERENTIAL DIAGNOSIS

Upper GI bleeding of other causes.

TREATMENT

- ▶ Epinephrine saline injection
- ▶ Intravascular coiling

OUTCOME AND FOLLOW-UP

After 12 months the patient is still alive.

DISCUSSION

To our knowledge this is the first case where a patient with major bleeding from an extraluminal duodenal diverticula without relation to the major papillae has been treated initially using a colonoscope and afterwards final treatment by the use of intravascular coiling following bleeding identification through a CT angiography. Normally this condition is diagnosed and treated by side-viewing modalities such as duodenoscope^{3 5} but can also be managed using push endoscopy.⁸

For identification of the source of bleeding several alternatives exist. We chose a CT angiography prior to further treatment, because extravasation possibly could identify the location and vessel causing the bleeding, following several endoscopy procedures that had failed to stop the bleeding. It has to be kept in mind that other good alternatives exist such as bleeding scintigraphy with Technetium 99m-labelled RBG or MRI but these are more readily available in the ambulatory setting,^{9 10} and we find that CT angiography is a good way to visualise the vessels prior to eventual coiling procedures.

This approach raises an important question as the colonoscopy might produce infections such as endoscopic shuffling.⁸ This is however a rare complication in a rare condition.¹¹ It has

to be kept in mind that the side-viewing modalities such as duodenoscopy, (ERCP) or push endoscopes are not always available and often require specialists, whereas colonoscopy and gastroscopy can be performed by all endoscopically trained doctors, and we find the method useful in selected cases.

The most important aspect is to control the bleeding, and if this can be achieved by endoscopy and radiological procedures, the physiological stress and potential complications in terms of morbidity and mortality¹² when performing an emergency laparotomy can be avoided. The possibility for laparotomy is important to have in mind but a laparotomy might include major resections, that is, Whipple procedures.⁵

Learning points

- ▶ 'Gastroscopy' with a colonoscope may prevent laparotomies for gastrointestinal (GI) bleeding in the most distal part of the duodenum/proximal part of jejunum which traditionally is a difficult area for surgeons.
- ▶ Epinephrine saline injection followed by intravascular coiling has proven efficient.
- ▶ CT angiography or bleeding scintigraphy can be used to diagnose some cases of severe bleeding if there is active bleeding.

Contributors MW treated the patient and wrote the article. JFA conducted the radiological diagnosis of bleeding in the duodenum and analysed the manuscript critically. MLL treated the patient and analysed the manuscript critically.

Competing interests None.

Patient consent Obtained.

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