CASE REPORT

Improving outcome following life-threatening gastrointestinal bleeding not amenable to endoscopy in an ASA grade 5 patient: lessons learned

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SUMMARY

We present a 74-year-old woman, who developed massive haematemesis and hypovolaemic shock. Her management was challenging, as the bleeding site could not be identified during oesophagogastroduodenoscopy, she was not fit for a general anaesthesia and not able to lie flat due to heart failure, caused by pericardial effusion. She underwent an emergency laparotomy and gastrotomy under a combined thoracic epidural and lumbar spinal regional anaesthesia in a sitting position, 45° to horizontal plane. The bleeding site was identified as a Dieulafoy lesion on the posterior wall of the stomach and was controlled by under running the lesion. She had an uneventful recovery and is symptom-free post-surgery for a year at present.

BACKGROUND

Surgeons are often encountered with the decision to undertake an emergency gastrointestinal procedure in a patient with extensive comorbidities. We present a 74-year-old woman with a massive upper gastrointestinal (GI) bleeding and extensive life threatening comorbidities posing diagnostic and management challenges and we discuss our diagnostic and treatment approach. This case highlights the complexity of some patients and proposes therapeutic options to overcome these difficulties.

CASE PRESENTATION

A 74-year-old Asian woman developed haematemesis while as an inpatient in the cardiology department. She was admitted 10 days before, for a tuberculous pericardial effusion and tamponade which was drained and she had a drain in situ. She complained of epigastric discomfort and then developed three episodes of haematemesis. She had no melaena and denied any history of alcohol use. She had significant comorbidities that included a stage 4 chronic kidney disease, inferior myocardial infarct (2004), two ischaemic strokes (1998), asthma, non-insulin-dependent diabetes mellitus and hypertension. She was on oral hypoglycaemic drugs, antihypertensive medications and aspirin.

Upon examination she looked agitated and anxious; her blood pressure was 105/80 mm Hg, heart rate 123 bpm with respiratory rate of 25 bpm. Abdominal examination revealed distension and tenderness in the epigastrium. A digital rectal examination was unremarkable.

INVESTIGATIONS

Her haematological investigations showed a haemoglobin (Hb) of 5 g/dl, mean cell volume 81 fl, platelets $115 \times 10^9/l$, urea 25.6 mmol/l, creatine 204 $\mu\text{mol/l}$ and normal electrolytes. Coagulation screen showed international normalised ratio of 1.5 and prothrombin time 20.8. Her liver function tests were unremarkable.

A CT showed a large distended stomach (figure 1). An emergency oesophagogastroduodenoscopy was unsuccessful owing to the large amount of clot and fresh blood and the patient being non-cooperative and was therefore abandoned.

DIFFERENTIAL DIAGNOSIS

The differential diagnoses of an upper GI bleeding in this patient are oesophageal varices, but patients have a history of liver disease more commonly owing to alcohol abuse which she denied. Other common causes are peptic ulcer disease (PUD), gastric cancer and gastritis. Again this patient did not have risk factors for PUD like smoking or recent non-steroidal anti-inflammatory drug use, and furthermore she did not have any symptoms suggesting gastric cancer, like recent upper GI discomfort, indigestion and weight loss.

TREATMENT

She was taken for a laparotomy under combined lumbar spinal (L2–L3) and thoracic epidural (T8–T9) and owing to her cardiac failure she was

Figure 1 A CT without contrast showing a large distended stomach with air/fluid level.

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operated in a sitting position, 45° to horizontal plane. An upper midline incision and a 5 cm anterior gastrotomy were made. About 1 litre of clot was removed from the stomach, which was then lavaged with 200 cc warm normal saline. An actively bleeding Dieulafoy lesion (DL) on the posterior wall of stomach 10 cm from gastro-oesophageal junction was seen (figure 2) which was under run with 3–0 PDS. Haemostasis was achieved and no other lesions were identified.

Gastrotomy was closed with 3–0 PDS inner all layers continue and outer seromuscular continue. After controlling the bleeding in the stomach, the jejunum and duodenum seemed more distended than before and on milking back the contents into the stomach fresh blood was noticed, therefore the decision was taken to proceed to a duodenotomy to make sure we do not miss another synchronous DL or an ulcer. Anterior duodenotomy showed bile refluxing back and no fresh blood or clot. No lesion was found on first or second part of the duodenum. It was closed with 3–0 PDS inner all layers and outer seromuscular interrupted with omental patch reinforcement. The peritoneal cavity was washed with 2 litres of warm normal saline and a mass closure with 0 PDS and clips to the skin was carried out.

OUTCOME AND FOLLOW-UP

She was admitted in HDU for 10 days and required inotropic support with noradrenaline for 2 days, and this was likely as a result of the vasodilatory effect of the spinal and epidural block causing hypotension. She had also received a massive transfusion (12 units of red blood cells within 24 h) and this was an extra factor to increase her postoperative mortality and morbidity, owing to the known complications of a massive transfusion. Despite all the above adverse factors, she made a good recovery and was sent home 4 weeks later. She remains asymptomatic a year later with no further episode of haematemesis or malaena and with a stable Hb of 12.5 g/dl.

DISCUSSION

DL is a rare, but known cause of upper GI bleed. It was initially identified by Gallard in 1884 and named after a French surgeon called George Dieulafoy who described it later. He called it 'exulceratio complex' which meant a non-typical peptic ulcer. The incidence ranges from 0.3–6.7% and affects men more than women and patients above 60 years of age.¹ The aetiology is unknown, but there is evidence to support its congenital origin. There is the absence of any abnormality in the histological reports of these vessels, the lack of branching unlike normal vessels on the gastric wall and that they are found in children.² In addition, one-third of DL are reported outside the stomach like oesophagus,³ jejunum,⁴ duodenum,⁵ rectum,⁶

Figure 2 Intraoperative findings showing a Dieulafoy lesion.

colon⁷ and this is another reason to suggest its completely different pathogenesis from that of a peptic ulcer. In a paper published by Linhares *et al*,⁸ where they study the data from all patients presented with upper GI bleeding, they found that all patients with DL presented with symptoms of haemodynamic compromise. This patient had a grade 2 hypovolaemic shock.

Dieulafoy bleeding by itself carries a mortality of 23–35%.³ Endoscopy is the first-line treatment with a success rate of the first endoscopy up to 71%.⁷ A variety of different haemostatic methods can be used. In a study by Jun Cui *et al*,⁹ in which they compared the success rate of different haemostatic methods in dealing with DL, the best results are observed in those who receive a combination of haemoclip and aethoxysklerol injection during endoscopy (up to 96.7% success rate). Despite the high success rate, the challenge is to identify the lesion at a first point, as the bleed can be intermittent, hidden between gastric folds and in addition to that other abnormalities may coexist that can mislead, like peptic ulcer disease, oesophagitis and oesophageal varices. For the above reasons in a stable patient there should always be a second attempt of endoscopy as this maximises the chances of finding the lesion. Other methods like an endoscopic ultrasound can also help locating the bleeding,¹⁰ but this is not always available.

If endoscopy is not successful, a laparotomy with a prior angiogram if available to locate the source of bleeding should be the next step. In this patient there was 1 litre of fresh and clotted blood in the stomach and that made it difficult to identify the DL during endoscopy. Interventional radiology was not available as an emergency and in addition an angiogram was contraindicated owing to her kidney impairment.

The decision to operate under the combined lumbar spinal and thoracic epidural was an important factor for the favourable postoperative outcome of this patient. It is well known that high-risk gastrointestinal procedures carry a 30-day perioperative mortality and morbidity of 20–40%¹¹ and this is further amplified with increasing the comorbidities of the patient, more importantly renal, cardiovascular and respiratory, and also by the use of general anaesthesia. Our patient had all the above risk factors and in addition she had an ASA (American Society of Anaesthetics) score of 5. The only factor that could be changed to improve her outcome was to avoid general anaesthesia. In a prospective study performed by Skipworth *et al*¹¹ in our hospital, 12 high-risk patients with ASA 3–4 score underwent 13 colorectal/gastrointestinal procedures under a combined lumbar spinal and thoracic epidural anaesthesia. Three of those were elective and 10 an emergency. They compared the mortality and morbidity, need of intubation, length of stay and post-operative analgesia requirements against results from similar studies done under general anaesthesia. Their results showed significantly less morbidity and mortality. They found that only 1/12 patients required intensive care admission for respiratory support in the form of continuous positive airway pressure and none required intubation. The median length of their stay was 7 days with the exception of only 2 patients who extended their stay more owing to social reasons. The 30-day mortality was 2/12 (15.4%) but both of these patients refused any initial treatment.

General anaesthesia is a very useful and sometimes a less-stressful method of anaesthesia for the patient compared to a regional one. However, in the case of the cardiovascular unstable patient the vast majority of general anaesthetic agents cause a degree of myocardial depression causing a further drop in the blood pressure, hence worsening lactic acidosis and more cardiovascular insult owing to the effects of lactic acid to the heart.

This leads to a further drop in cardiac output and worsens the hypotension and lactic acidosis. This vicious circle can precipitate myocardial ischaemia and cardiogenic shock especially in a patient with a history of IHD like our patient. Therefore, regional anaesthesia is the preferred method in a cardiovascular unstable patient. Furthermore, spinal and epidural anaesthesia allow for early feeding and mobilisation as local anaesthetic drugs like buvicacaine have less effect on the myelinated motor and proprioceptive fibres compared with the unmyelinated C fibres for pain. However, when this method is used, close monitoring of respiratory, cardiovascular and neurological status is needed to avoid the adverse effects of high spinal anaesthesia.

This case is unique as it is one of the few cases where a patient with significant multisystem comorbidities and life-threatening bleeding from a DL was managed successfully in a multidisciplinary setting by specialised anaesthetic and surgical technique. We have not come across a similar case in literature.

Learning points

- ▶ Clinicians need to keep in mind the possibility of a Dieulafoy lesion when dealing with patients with large amount of haematemesis, haemodynamic compromise or a rapid drop in haemoglobin content in the absence of liver disease.
- ▶ There should be a low threshold for laparotomy if the oesophagogastrroduodenoscopy fails, owing to the rapid decompensation and high mortality.
- ▶ The use of combined spinal lumbar and thoracic epidural anaesthetic, should be employed in high-risk patients undergoing gastrointestinal operations as it can significantly decrease the mortality and morbidity.

Competing interests None.

Patient consent Obtained.

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