CASE REPORT

Against all odds. Conservative management of Boerhaave's syndrome

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SUMMARY

Spontaneous oesophageal perforation or Boerhaave's syndrome is a life-threatening condition that usually requires early diagnosis and early surgical management. A 79-year-old man presented to the accident and emergency department with an ischaemic left big toe. He reported a 2-week history of worsening symptoms and a claudication distance in his left leg of 20–30 m. Three days post-revascularisation of the leg, the patient reported chest pain radiating to the back. CT angiography of the aorta indicated Boerhaave's syndrome. Following 35 days of conservative management in the intensive care unit and high dependency unit, the patient was stepped down to a surgical ward. A water-soluble contrast study demonstrated minimal leak through the perforated oesophagus. The patient was started on oral intake, which was well tolerated. This case highlights that conservative management may be appropriate.

BACKGROUND

Oesophageal perforations are serious and life-threatening conditions, and are associated with a high morbidity and mortality.¹ Perforations of the oesophagus are uncommon, but spontaneous perforations (Boerhaave's syndrome) are particularly rare and sinister as they account for 10–35% of all perforations,^{1–4} and an estimated mortality of 20–40%.^{3–4} Surgery is the preferred mode of management, and is recommended within 24 h of the perforation to obtain a more favourable outcome.^{5–9} We present a case of Boerhaave's syndrome, where the patient was managed conservatively and survived, thereby highlighting that conservative management may be appropriate in certain situations.

CASE PRESENTATION

A 79-year-old man with a background of hypertension, raised cholesterol, triple vessel coronary artery bypass graft and peripheral vascular disease presented to the accident and emergency department with a left first metatarsal pain (radiating up the left thigh), numbness and discolouration. In addition, the patient reported a 2-week history of worsening symptoms and a claudication distance in his left leg of 20–30 m. CT angiogram confirmed stenosis in both common iliac, left external and internal arteries. He underwent revascularisation of the left leg with no complications during the procedure. Three days postoperatively, the patient reported sudden onset of nausea and vomiting in four occasions. He noted brown vomitus approximately 5 mL on each occasion. Twelve hours later the patient reported a 'sharp' chest pain radiating to the back. On examination, the patient was sweating profusely, dyspnoeic,

with a respiratory rate of 28 breaths per minute, saturating at 92% on 2 L. He was haemodynamically stable with nil radial–radial/femoral delay. There was no evidence of surgical emphysema.

INVESTIGATIONS

Bloods: haemoglobin 15.9 g/L, platelet 134×10^9 /L, white cell count 9.2 mmol/L, urea 4.8 mmol/L, creatinine 91 μ mol/L, troponin negative. ECG showed ST segment depression in leads V5–V6 and was started on acute coronary syndrome protocol. Chest X-ray showed left basal consolidation with pleural fluid. The patient underwent an urgent CT angiography of the aorta, which showed extensive gas tracking up into the superior mediastinum. In addition, the oesophagus was dilated with a defect inferiorly in the left side of the oesophagus. A small pleural effusion and left basal consolidation was also noted (not shown). The CT report highlighted a spontaneous oesophageal perforation (Boerhaave's syndrome).

TREATMENT

He was immediately referred to the upper gastrointestinal surgeons who requested insertion of a nasogastric tube, under fluoroscopy guidance. Water-soluble contrast study (WSCS) highlighted a leak at the distal oesophagus (approximately 3 cm above the gastro-oesophageal junction) into a contained collection. On a multidisciplinary team (MDT) meeting, he was then admitted to intensive care unit (ICU). He was kept nil by mouth and emergency total parental nutrition started. He was started on prophylactic intravenous tazocin, metronidazole, fluconazole and pantoprazole infusion 40 mg twice daily. A left-sided chest drain was placed to drain the left pleural effusion. In addition, the patient had a percutaneous tracheostomy while in ICU to aid ventilation.

OUTCOME AND FOLLOW-UP

After 26 days in the ICU and 9 days in high dependency unit (HDU) the patient was stepped down to the surgical ward with nasojejunal feeding. Repeat WSCS showed a persistent wall leak in the distal oesophagus (figure 1). The patient later started sips of water, which was well tolerated and was discharged with vascular and cardiology outpatients follow-up.

DISCUSSION

Despite a large number of studies, the management of Boerhaave's syndrome remains a controversial

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Figure 1 Water-soluble contrast study demonstrating the wall leak. Note the free mediastinal air along the oesophageal contour (arrow).

topic, with no best practice guidelines to determine management. Surgically, the approach usually undertaken to manage is a primary repair as described by Barrett¹⁰ in 1947 and is usually accompanied by adequate drainage of the mediastinum and the pleural cavity. Repair over a T-tube as described by Abbott *et al*¹¹ is also a popular alternative and allows for the formation of a controlled fistula and a route for drainage of oesophageal secretions and refluxed gastric materials.

However, there is a bias towards surgery.^{8, 9} Cameron *et al* proposed a set of criteria whereby conservative management may be considered. These include: (1) an oesophageal disruption that well contained in the mediastinum; (2) a cavity that is well drained back into the oesophagus; (3) few symptoms should be present; (4) evidence of clinical sepsis should be minimal, thereby suggesting that non-surgical management may be an appropriate alternative in certain circumstances. In fact, some reports have bolstered the use of conservative management.^{12, 13}

Most published literature comprises case reports from single large institutions with papers rarely focusing solely on Boerhaave's syndrome but instead combine aetiologies to guarantee a sufficient cohort. However, there are a few studies that have focused exclusively on Boerhaave's syndrome. One of the largest of these studies was a prospective study in Newcastle of 51 patients with Boerhaave's syndrome, 17 of whom underwent conservative management consisting of systemic antibiotics, the establishment of artificial hydration and radiological drainage.¹⁴ Of the 31 patients who underwent primary thoracotomy and oesophageal repair, 11 patients died in hospital, while there were no deaths in those who were managed conservatively.¹⁴ The key difference between the groups was the rate of systemic inflammatory response syndrome (SIRS), with far fewer patients managed conservatively having SIRS on admission compared with those who were managed surgically (29% vs 98%).¹⁴ Thereby the clinical status of the patient seems to have been a major consideration in patient management, with a more aggressive disease presentation requiring non-conservative management. Another study in Liverpool revealed similar results with only patients with small-contained leaks with minimal signs of sepsis.⁷ However, they recommend that conservative surgery

should be considered when patients are too unstable for surgery.⁷ Although this differs from Cameron's third rule, it seems a reasonable approach as it may lead to a better outcome.

Newer techniques such as plastic-covered self-expanding stents are also starting to be employed.^{15, 16} They are able to bridge the oesophageal tear and their use in Boerhaave's syndrome is recommended for cases that involve extreme delays in diagnosis or a failure of conservative management. Therefore, this approach may have been used in our patient if conservative management failed. However, the long-term effects of stent placement in Boerhaave's syndrome have not been sufficiently assessed; therefore, they are usually used when other approaches have been exhausted.^{15, 16}

In summary, despite the predilection towards surgical management in Boerhaave's syndrome, conservative management is a viable option in situations where there is a contained leak, no underlying oesophageal pathology and minimal symptoms or signs of sepsis. These factors were present in our patient and so our patient was managed conservatively. However, like most conditions without a clear-cut option, an MDT meeting to discuss management options is highly commended and should be undertaken with Boerhaave's syndrome.¹⁷

Learning points

- ▶ Boerhaave's syndrome is rare and has a high mortality and morbidity.¹
- ▶ Patients with minimal signs of sepsis and contained perforations can heal with non-operative conservative management consisting of broad-spectrum antibiotics, strict oral hygiene and total parenteral nutrition.^{2, 17}
- ▶ A multidisciplinary team approach should be considered to ensure optimal management of patients with Boerhaave's syndrome.¹⁷

Contributors CA-I compiled the case report, AH and YAO performed the literature review.

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Patient consent Obtained.

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