CASE REPORT

Gastropericardial fistula after Roux-en-Y bypass for reflux disease

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SUMMARY

A 49-year-old man was admitted to his local hospital with a 3-day history of left-sided chest pain which started after a coughing paroxysm. His surgical history included laparoscopic Toupet fundoplication 30 months earlier and revisional reflux surgery (Roux-en-Y gastric bypass) 11 months earlier. On admission, he was found to be tachycardic at 110 bpm, hypotensive (90/65 mm Hg). He had ST depression in ECG leads V2-5 with a normal troponin I level. Chest radiography indicated a pneumopericardium which prompted referral to the oesophagogastric surgery unit. Endoscopy and CT with oral contrast confirmed a gastropericardial fistula. This was managed by total gastrectomy through a left thoracoabdominal approach. The patient was discharged home 2 months later. We report the fourth case of gastropericardial fistula in the literature as a long-term complication of Roux-en-Y gastric bypass with a favourable outcome and mini literature review.

BACKGROUND

Pneumopericardium secondary to perforation of the alimentary tract is a rare occurrence and its discovery on the chest radiograph prompted investigations in this patient. Aside from the underlying disease process, the significance of the condition lays in the potential for the development of cardiac tamponade¹ which may lead to respiratory distress, hypotension and raised central venous pressure or pulsus paradoxus¹ and ultimately be fatal. The diagnosis was confirmed on endoscopy and a contrast-enhanced CT scan. Resection of the affected alimentary tract and windowing and lavage of the pericardium are the recommended therapy.

CASE PRESENTATION

A 49-year-old man was admitted to his local hospital with a 3-day history of left-sided chest pain which started after a coughing paroxysm. On admission his vital signs were a temperature of 35.6°C, a pulse rate of 110 bpm, blood pressure of 90/65 mm Hg, a respiratory rate of 20 per minute, an oxygen saturation of 96% on air and a Glasgow Coma Score of 15. ECG showed ST segment depression in leads V2-5, although troponin I levels were within normal limits. A plain chest radiograph (figure 1) demonstrated a widened mediastinum with pneumopericardium. Although not demonstrated on an initial non-contrast CT scan, concerns about oesophageal rupture prompted transfer to our tertiary care oesophagogastric surgery centre. A left-sided chest drain was placed prior to transfer.

The patient had a surgical history of laparoscopic Toupet fundoplication 30 months earlier. Eleven months earlier he underwent open retrocolic Roux-en-Y gastric bypass because of unresolved gastro-oesophageal reflux disease. A feeding jejunostomy was placed for nutritional support. Gastroscopy 6 months earlier, performed for ongoing dyspepsia demonstrated ulceration at the gastrojejunal anastomosis. He was started on a high-dose proton pump inhibitor.

On arrival at our unit, the patient was admitted directly to the intensive care unit (ICU). Observations were similar to those recorded prior to transfer.

INVESTIGATIONS

A repeat CT scan (figures 2 and 3) with water soluble oral contrast (200 mL of 5% Gastrografin) demonstrated an intact oesophagus, and the presence of mediastinal and pericardial air, with leakage of water soluble oral contrast from the gastric pouch into the pericardium.

DIFFERENTIAL DIAGNOSIS

Gastropericardial fistula
Oesophagopericardial fistula

TREATMENT

The patient was admitted into our institution ICU for resuscitation. Twelve hours after admission, he was taken for exploratory surgery. Gastroscopy identified a fistula between the gastric pouch and the pericardium (figure 4). He underwent total

Figure 1 Plain chest radiograph highlights the pneumopericardium.

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Figure 2 Coronal section on CT scan showing the gastropericardial fistula and pneumopericardium.

gastrectomy with Roux-en-Y oesophagojejunostomy via a left thoracoabdominal approach (dividing the left eighth rib in the mid clavicular line). The pericardium was irrigated and windowed to allow adequate drainage. The left thoracoabdominal approach was selected because of concerns about hiatal adhesions from the previous operations and the potential need to have access to normal oesophagus.

OUTCOME AND FOLLOW-UP

The patient had a slow recovery and postoperative course was complicated by venous thromboembolism managed with

Figure 3 Sagittal section on CT scan showing the gastropericardial fistula tract.

Figure 4 Fistula tract between pericardium and gastric pouch.

therapeutic low molecular weight heparin. He was discharged home 2 months postoperatively, with provision for supplementary home enteral nutrition via the jejunostomy, as is our common practice.

DISCUSSION

Review of the literature indicates that there have been three earlier reports of gastropericardial fistula after Roux-en-Y gastric bypass surgery.²⁻⁴ It has also been reported after oesophagectomy, after fundoplication, in association with spontaneous peptic ulceration, tumour and trauma. The management comprises abscess drainage with appropriate lavage and windowing of the pericardium coupled with resection of the affected alimentary tract and fistula. In our patient, the time interval between gastric bypass and development of the fistula was relatively short, while much longer intervals have been reported (11 years).² The exact mechanism in our patient remains unclear but it seems likely that ongoing peptic ulceration and possibly ischaemia contributed to the development of the fistula.

Learning points

- ▶ Pneumopericardium is the baseline diagnosis that needs to be established promptly to limit the development of cardiac tamponade and fulminant sepsis.
- ▶ Gastropericardial fistula is a possible cause of pneumopericardium, those at greatest risk are those with a history of oesophagogastric surgery.
- ▶ Establishing a diagnosis of gastropericardial fistula requires CT scan with water soluble oral contrast, to assess for leakage of contrast into the pericardium.
- ▶ Early surgical intervention is required, intraoperative gastroscopy to assess the upper gastrointestinal tract to further define the presence of the fistula and aid planning of surgical intervention.
- ▶ ECG may be normal or may include non-specific ST wave changes, or those consistent with pericarditis, such as saddle ST waves, especially in complicated pneumopericardium.³

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Competing interests None.

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