CASE REPORT

Massive gastric dilation complicating diabetic gastroparesis

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SUMMARY

A middle-aged man presented at 4:00 with tense distended abdomen, severe pain and numb legs. His medical background included poorly controlled insulin-dependent diabetes. Abdominal x-ray showed a massively distended, featureless viscus on the left side of the abdomen thought to be a sigmoid volvulus. CT scan was delayed due to respiratory compromise from diaphragmatic splinting. Nasogastric and flatus tube decompression were attempted. Eventually CT was obtained and provisionally reported as a sigmoid volvulus. Emergency laparotomy was performed due to the risk of impending perforation. Operative findings were of a hugely distended stomach extending into the left iliac fossa almost completely occupying the abdominal cavity. Gastrotomy was used to decompress the stomach. No mechanical obstruction was identified. Postoperatively he had an episode of massive haematemesis thought to be due to sloughing of gastric mucosa. He was taken back to theatre and died on table.

BACKGROUND

The case presented here illustrates a rare presentation of massive gastric dilation probably associated with diabetes. This was impossible to decompress nasogastrically due to obstruction of the gastro-oesophageal junction by the distended stomach. In addition the pressure exerted by the distended stomach was so severe that it compressed the aorta and resulted in lower limb ischaemic symptoms. To the authors knowledge a case with all these aspects has not been published in the literature. This case raises diagnostic and treatment challenges that were experienced by the junior on-call surgical team and radiologist. By following basic surgical principles appropriate management was instigated.

CASE PRESENTATION

A middle-aged man presented to the emergency department with severe abdominal pain, distension and shortness of breath. He complained of nausea but had not vomited. In addition, he described a sudden loss of sensation in both the legs. He gave a 2-week history of increasing constipation but the pain and distension had increased rapidly over a 12 h period.

His medical background included poorly controlled type 1 insulin-dependent diabetes, and he was registered blind secondary to diabetic retinopathy, peripheral vascular disease and sickle cell trait. His diabetic regime was glargine insulin 22 units in the morning and novorapid insulin 6–7

Figure 1 Abdominal x-ray showing distended featureless viscus.

units three times daily. In the recent past he had been admitted with hypoglycaemic seizures. Further history was difficult to obtain due to his respiratory status.

He was visibly distressed. Heart rate, blood pressure and temperature were normal, but his respiratory rate was increased and oxygen saturations could only be maintained above 90% with 100% oxygen. His abdomen was massively distended and tympanic with generalised tenderness. Rectal examination was unremarkable.

INVESTIGATIONS

His blood sugar on admission was 12 and arterial blood gas on 15 litres of oxygen suggested type II respiratory failure with additional metabolic acidosis (pH 7.17, base excess -5.8 mmol/L, HCO_3^- 18.5 mEq/L, pO_2 28.9 kPa, pCO_2 8.2 kPa, lactate 2

Figure 2 Chest x-ray showing distended featureless viscus.

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Figure 3 CT scan showing distended stomach, which in this image could be mistaken for a volvulus.

Figure 4 CT scan showing compressed aorta.

mmol/L). His other admission blood tests were haemoglobin 13.3 g/dl, white cell count $5.3 \times 10^9/L$, platelets $210 \times 10^9/L$, international normalised ratio 1, sodium 138 mmol/L, potassium 4.1 mmol/L, urea 6.1 mmol/L, creatinine 126 $\mu\text{mol/L}$, estimated glomerular filtration rate 53 mL/min, amylase 50 U/L and liver function tests normal.

Abdominal x-ray showed a massively distended, featureless viscus (figures 1 and 2) filling the entire left side of the abdomen. The possibility of this being gastric was entertained and nasogastric (NG) tube placement was performed,

seemingly without difficulty, but very little was aspirated. Therefore it was assumed to be a sigmoid volvulus. Flatus tube decompression was attempted but the rigid sigmoidoscope could not be passed beyond 10 cm. Following the failure of these simple measures a CT was obtained (figure 3) which showed a huge gas and fluid-filled viscus filling almost the entire abdominal cavity. Notably the distension was so pronounced that the aorta was compressed and almost occluded (figure 4) as was the gastro-oesophageal junction (figure 5).

Figure 5 CT scan showing gastro-oesophageal compression causing the NG tube to curl back on itself (this image shows descending and ascending parts of NG tube as two white circles).

DIFFERENTIAL DIAGNOSIS

- ▶ Sigmoid volvulus
- ▶ Caecal volvulus
- ▶ Gastric dilation
- ▶ Abdominal compartment syndrome

TREATMENT

Three hours after admission an emergency laparotomy was performed due to the risk of impending perforation and the patients deteriorating respiratory condition. Operative findings were of a hugely distended stomach extending into the left iliac fossa almost completely occupying the abdominal cavity. A gastrotomy was created to decompress the stomach. This sudden decompression was followed by a sudden drop in blood pressure and cardiac arrest. Following approximately 4 min of resuscitation an output was returned. Further exploration of the abdomen identified no mechanical cause for the gastric dilation. In total, approximately 6000 ml of fluid was aspirated from the stomach along with large quantities of gas. Owing to the unstable condition of the patient, nothing further was performed, the gastrotomy was closed, NG placement secured and the abdomen closed.

OUTCOME AND FOLLOW-UP

Two hours postoperatively the patient had an episode of massive haematemesis and rapidly deteriorated. He was returned to theatre and a further laparotomy performed. The stomach was opened and there was general sloughing of the gastric mucosa with bleeding from almost all points within the stomach. Despite attempts at gastric packing he died on the table.

Multidisciplinary team consensus was that despite the initial misdiagnosis the management was correct in light of impending perforation.

DISCUSSION

Gastroparesis is a clinical disorder in which there is delayed gastric emptying in the absence of mechanical obstruction. Diabetic gastroparesis is a well-recognised complication of poorly controlled diabetes and is thought to be due to chronic hyperglycaemia.¹ There are reports quoting that this entity does

not cause increased death rates.^{2 3} Emergency decompression with NG tube is the treatment of choice.^{4 5} One case report describes severe gastric dilation causing aortic and mesenteric compression in a 22-year-old after an eating binge which ended in fatality from re-perfusion injury.⁶ To the authors knowledge a case of massive diabetic gastroparesis, causing both aortic compression and gastro-oesophageal compression has not been published in the literature.

Learning points

- ▶ Differential diagnosis of a distended featureless viscus should always include the stomach.
- ▶ In rare cases gastroparesis can present similarly to a sigmoid volvulus, a high index of suspicion is required to diagnose such a case.
- ▶ Massive abdominal viscus distension can cause compression of the aorta with associated lower limb symptoms.
- ▶ Operative intervention should only be considered in extreme circumstances when perforation is imminent.

Contributors WRB wrote the case report and edited as required. AJS proof read and edited the case report.

Competing interests None.

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