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Case Report

Aorto-Duodenal Fistula: A Rare Cause of Upper Gastrointestinal Haemorrhage

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Abstract

Digestive haemorrhage (HD) is a frequent reason for consultation at the Emergency Department. Approximately 80% of GI haemorrhages are upper GI, i.e. related to a lesion located above the angle of Treitz. The main causes are ulcer disease, portal hypertension, gastritis and ulcerated lesions of the stomach, and reflux oesophagitis. In approximately 10% of cases, a rarer cause (Mallory-Weiss, acquired vascular malformations, Dieulafoy, primary PAEF or secondary aortodigestive fistulas, biliary or pancreatic tract anomalies, tumours,...) is responsible. We report the case of a patient with high HD in whom aortoduodenal fistula was the cause diagnosed on abdominal CT.

Keywords: Hematemesis, Melena, Hematoquezia, Lower gastrointestinal bleeding (LGIB), Gastrointestinal hemorrhage.

INTRODUCTION

Aortoduodenal fistula remains an uncommon but potentially fatal condition [1]. Significant progress has been made in recent years in both endoscopic haemostatic treatment and medical therapy. These advances have led to a reduction in overall mortality. In this article, we will discuss the case of a patient in whom an aortoduodenal fistula was considered to be the cause of his upper GI haemorrhage.

OBSERVATION

Mr S.L, 72 years old, with a history of chronic smoking (15 packs/year) and chronic active alcoholism. He presented with upper gastrointestinal haemorrhage in the form of haematemesis and medium-sized melenas for a week, associated with abdominal pain in the form of localised epigastralgia.

Clinical examination revealed mucocutaneous jaundice, diffuse abdominal tenderness and a deep left parumbilical flailing mass. All of this developed in a context of deteriorating general condition.

The biological work-up showed an anaemia of 7.3 g/dl normochromic normocytic and the rest of the blood count was normal. There was functional renal failure and an elevated total bilirubin of 25 mg/l, predominantly direct.

An abdominal CT scan was ordered, showing a retroperitoneal collection opposite the duodenum (the D3-D4 junction) with hypodense hematoma containing air bubbles, thickened wall and enhanced after injection of PDC, measuring 62*34*58 mm (T*AP*H). This collection comes into contact with the subrenal abdominal aorta over 180° and the proximal segment of the inferior mesenteric artery, which is laminated. Overall, this is a periaortic haematoma complicated by an aerated inter-aortico-duodenal haematoma (superinfected or ruptured in the duodenum: aorto-duodenal fistula).

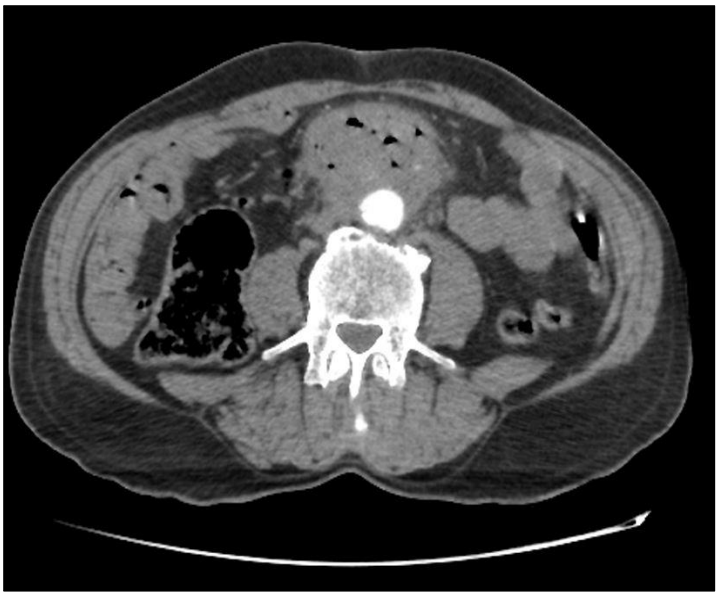

Figure 1: CT cross-section of superinfected haematoma

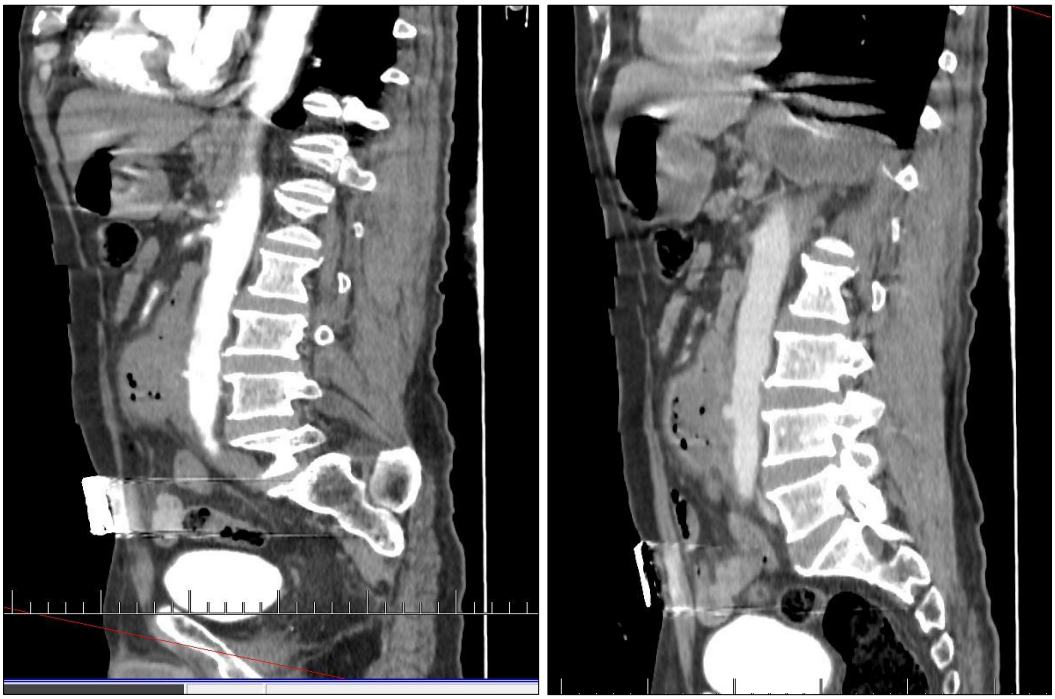

Figure 2: Sagittal section of CT scan of aortoduodenal fistula

FOGD was not performed to avoid the risk of duodenal perforation.

Surgery was indicated by the vascular and visceral surgeons.

The patient died before any intervention and therapeutic management.

DISCUSSION

PAEF is defined as a communication between the native aorta and the gastrointestinal tract, in contrast to secondary fistulae, which arise between the suture line of a vascular graft and the gastrointestinal tract [2, 3]. PAEF are uncommon, with an incidence of 0.04-0.07% [3, 4], at a large autopsy series and is also found to be present in 0.69-2.36% [5, 6] of all abdominal aortic aneurysms. In the published data, the mean age at diagnosis of PAEF was 64 years, with a male to female ratio of 3:1 [4]. In all, 83% of PAEF were associated with an aortic aneurysm (mean diameter, 6.2 cm) [4].

In all, 54% of PAEF occur at the fixed retroperitoneal part of the distal duodenum, anterior to the aorta with two-third in the third part [4-7]. Other sites reported included esophagus (28%), small and large bowel (15%), and stomach (2%) [4]. These are

considered to be caused by atherosclerosis (88%), infection, tumor, and foreign body [4-7].

Classically, PAEF are associated with the following clinical triad: Gastrointestinal bleeding (647-94%) [4], abdominal pain (327-48%) [4], and pulsatile abdominal mass (174-25%) [4]. These findings occur only in 11% of cases [4], thus posing a significant diagnostic challenge. Other reported symptoms include back pain, fever, and sepsis [7]. Interestingly, two-third of the patients had a low hemoglobin level and only a quarter had a raised white cell count at presentation [4].

A patient who presents only with brief and self-limiting herald gastro-intestinal bleeding in the absence of all the aforementioned symptoms together with equivocal biochemistry and imaging, such as in our case, and then has an exsanguinating bleed a week later, demonstrates all the difficulties encountered in making an accurate clinical diagnosis.

Endoscopy is one of the main modalities for investigating an upper gastrointestinal bleed. It can be useful in the exclusion of other causes of gastrointestinal bleeding. However, there have been reports of 22.2% of patients with AAA [8] and 23% of patients with PAEF [9], who had concurrent gastric ulcers, which could be misleading on endoscopy and can be even catastrophic [10, 11].

We opted for a CT aortogram as our initial method of investigation because the source of the bleed was unclear. The use of CT aortograms in suspected PAEFs has increased the detection rate by 52% and is considered to be the most sensitive diagnostic modality for PAEF in hemodynamically stable patients [4]. Gas bubbles in the presence of a posterior hematoma is said to be pathognomonic of a PAEF on a CT scan. Occasionally, the CT scan could show contrast in the duodenum confirming the diagnosis, whereas other subtle signs such as gas within the calcified wall of the aneurysm with an adherent bowel loop, extraluminal gas in the periaortic region, bowel wall thickening over the aorta, or disruption of aortic fat cover could also suggest a PAEF [4-9].

Several surgical approaches have been used in the management of PAEFs, but there is no agreed consensus with no large or long-term studies. Although the overall mortality from PAEF is in the range of 61-100%, the mortality rate from the surgery is 30-40% [4].

PAEFs pose numerous diagnostic and therapeutic challenges. Therefore, we suggest maintaining a high index of suspicion in patients presenting with major gastrointestinal bleeding even in the absence of the classic triad of symptoms for PAEF. Recognition of a herald bleed is invaluable. While maintaining moderate hypotension, it is essential to investigate promptly. In the hemodynamically stable patient, CT should be mandatory. We also suggest endoscopy as a valuable tool in management of PAEF, not purely for exclusion of other causes of bleeding, but more importantly for a thorough assessment of the distal duodenum. If the endoscopy is inconclusive in the presence of gastrointestinal bleeding, with a CT suggestive for PAEF, a low threshold for laparotomy is advisable. The previously published data support in-line aortic reconstruction in preference to extra-anatomical bypass and aortic exclusion. The role of endovascular treatment looks promising and is invaluable in high-risk surgical patients; long-term antibiotics are mandatory in this situation.

CONCLUSION

Aorto-duodenal fistula is defined as communication between the aorta and the mostly distal duodenum (80%) and is often the cause of catastrophic upper GI haemorrhage with few survivors.

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