SHORT REPORT

Primary Aorto-duodenal Fistula Following Staphylococcal Septicaemia

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Introduction

Primary aorto-duodenal fistulae are extremely rare. This case report describes a previously unreported clinical presentation of primary aorto-duodenal fistula caused by a staphylococcal aortitis that followed a percutaneous coronary artery stent insertion.

Case Report

A 73-year-old lady presented to the emergency department with a 6 h history of haematemesis, abdominal pain and back pain. On examination she was haemodynamically stable and abdominal examination revealed a non-tender abdominal aortic aneurysm (AAA). Haemoglobin was 7 g/dl.

Eleven weeks previously she had undergone a coronary angiogram, followed 2 days later by an angioplasty and stent insertion. Because of a suspected coronary artery dissection the femoral sheath was left in situ for 24 h as a precaution. She was discharged well 3 days later. She returned 1 day after discharge with a staphylococcal septicaemia, which resolved with antibiotic treatment. During this admission she had several episodes of melaena. Upper GI endoscopy demonstrated a gastric ulcer and abdominal ultrasound revealed a 3.4 cm abdominal aortic aneurysm.

Emergency contrast CT scan demonstrated an aorto-duodenal fistula with peri-aortic inflammation (Fig. 1). At endoscopy no abnormality was found in the stomach or duodenum. At laparotomy a 4 cm AAA, adherent to the third part of the duodenum was found. The distal small bowel was full of blood. The proximal aorta and iliac vessels were normal. Following infra-renal aortic cross clamping the duodenum was dissected off the aorta. A $1 \times 1 \text{ cm}^2$ defect in the aorta plugged by thrombus and connected to the third part of the duodenum was found. The aorta was repaired with an in situ bifurcated rifampicin-soaked graft, the duodenal defect was closed with 3/0 polyglyconate and an omental flap was interposed between repairs. A specimen of aortic tissue and an aortic swab were cultured and grew *Staphylococcus aureus* sensitive to flucloxacillin. The patient was treated with the appropriate intravenous antibiotics postoperatively. A peri-graft collection developed in the second post-operative week (Fig. 2). Aspirate from this collection grew *Pseudomonas*. This resolved on double anti-pseudomonal therapy. The patient remained in hospital for 9 weeks for intravenous antibiotic therapy. Serial CT scans and measurement of inflammatory markers confirmed resolution of infection and she was discharged well. Follow-up CT scan at 5 months demonstrated complete radiographic resolution (Fig. 3).

Discussion

Primary aorto-duodenal fistula following cardiac catheterisation has not been previously reported. Bacteraemia following PTCA is not uncommon, occurring in approximately 0.64% patients. However, septic complications (e.g. mycotic aneurysm, septic
arthritis and septic thrombosis) are less common occurring in 0.24% of patients.

Risk factors for bacteraemia include repeat puncture of the ipsilateral femoral artery, retention of the femoral artery sheath for over 24 h after the procedure and the duration of the procedure. Gram-positive organisms are the most usually implicated organisms in this setting.1 Approximately 0.7–1.3% of all aortic aneurysm reconstructions are performed to repair infected aneurysms.2,3 Forty to 70% of infected aneurysms occur in the setting of a known pre-existing atherosclerotic aneurysm.4,5 The finding of a small pre-existing AAA in this case suggests that this may have been the nidus for subsequent bacterial infection. Common causative organisms include Staphylococcus, E. coli, Streptococcus and Salmonella.2,3 Gram-positive cocci most commonly infect atherosclerotic aneurysms, whilst Salmonella is associated with infection of normal vessels.4,5

Management of infected aneurysms and primary aorto-duodenal fistulae is controversial. Formerly extra-anatomic repair was recommended to lessen the risks of graft sepsis. However, multiple studies have now shown no increased risk of infection after in situ repair.2–5 In situ replacement of the aorta with adequate debridement of infected tissue is appropriate where evidence of infection is confined to a small area. This avoids the risks of aortic stump blow-out, limb loss, prolonged operative time and long term anticoagulation associated with extra-anatomic bypass.2 Extra-anatomic bypass is recommended if there is severe and widespread purulent infection.3 Adequate antimicrobial treatment following repair is essential and life-long antibiotics have been suggested for those with in situ grafts, especially in the setting of virulent infecting organisms such as Staphylococcus and Salmonella.2

Fig. 1. CT scan showed an abnormal area of soft tissue and contrast extending between the aortic lumen and the third part of the duodenum. There was some enhancement and streaking of the surrounding fat. There was a breach in calcification of the anterior abdominal walls with a bulge of contrast projected anteriorly into the abnormal soft tissue. No contrast was seen within the bowel lumen.

Fig. 2. CT scan 2 weeks post-operatively showing a fluid collection around the bifurcation of the graft.

Fig. 3. CT scan done 2 months post-operatively showing complete resolution of peri-graft collection.

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References


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