CASE REPORT

Candida albicans Mycotic Abdominal Aortic Aneurysm

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Introduction

Intra-arterial fungal infections affecting the thoracic and abdominal aorta are extremely rare. They are usually associated with chronic immunosuppression, diabetes or use of contaminated needles by drug abusers.1 This report describes a case of primary Candida albicans aortitis with aneurysm formation and discusses important aspects of diagnosis and management.

Case Report

An 80-year-old diabetic Asian female was admitted with a 3 month history of feeling unwell and weight loss of 7 kg. She had an episode of melaena 1 week prior to admission and complained of mild left sided abdominal pain. She was tender in the left iliac fossa and was found to be anaemic (Hb. 6.9 g/dl) and to have an elevated C-reactive protein (CRP) (143 mg/l). Following a blood transfusion (3 units of red cell concentrate) she was commenced empirically on clavulinic acid. Apart from one episode of pyrexia the patient’s clinical condition was unchanged for 7 days. The development of a leukocytosis (16.7 × 109/1) and a further elevation in CRP (277 mg/l) prompted a CT scan which revealed retroperitoneal air surrounding a normal calibre infrarenal aorta (Fig. 1). A differential diagnosis of a retroperitoneal duodenal perforation or infection of a pancreatic pseudocyst with gas forming organisms was considered. A CT-guided aspiration of the periaortic area was sought to confirm the diagnosis and obtain specimens for microbiological analysis. Forty-eight hours later a second CT scan was performed which showed persistence of the periaortic gas and an enhancing mass thought to be an infected non-ruptured aneurysm adjacent to the infrarenal aorta (Fig. 2). Clinically the patient remained well but the white cell count rose to 42 × 109 and the CRP to 336 mg/dl.

On day 11 an axillobifemoral bypass graft was carried out prior to undertaking a laparotomy to exclude and drain the infected aorta. The infrarenal aorta was grossly infected and adherent and penetrating into the third part of the duodenum. It was impossible to determine whether adherence of the infected vessel had caused the duodenal perforation or whether the duodenum had perforated into the aorta. The duodenal perforation was closed, the

Fig. 1. CT scan of abdomen showing retroperitoneal air (arrows) surrounding an intact, normal calibre infrarenal aorta.

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infected aorta excised and extensive debridement of infected tissue carried out. The proximal stump of infrarenal aorta and the common iliac arteries were oversewn and covered with an omental flap. The patient was returned to the intensive care unit and extubated 24 h postoperatively. Histological examination of the resected aorta showed areas of necrosis and abscess formation while a similar examination of the margins of the duodenal perforation revealed only inflammation. Gram stain of the necrotic aortic tissue was negative but cultures of the aortic wall grew C. albicans. The patient was commenced on intravenous fluconazole and cefuroxime and returned to the surgical ward. Following development of a severe right-sided bronchopneumonia, the patient's condition deteriorated and she died with a stroke on day 7 postoperatively.

Discussion

Primary infective aortitis is a rare condition nowadays seen mostly in immunosuppressed patients. In the pre-antibiotic era infective aneurysms almost always occurred in association with bacterial endocarditis giving rise to so-called "mycotic aneurysms", a term devised by Sir William Osler in 1885. With the introduction of antibiotics the incidence of bacterial endocarditis declined dramatically and primary bacterial aortitis was most commonly attributed to infection by Gram-negative organisms. Salmonella typhi accounted for more than 30% of such infections with a mortality rate of greater than 50% particularly in males over 50 years of age. Recently, Gram-positive organisms, especially Staphylococcus aureus have been identified as the predominant bacterial cause of aortitis. Primary bacterial aortitis has been described in association with trauma, invasive diagnostic procedures, intravenous drug abuse, bacteraemia in the presence of an abdominal aortic aneurysm and in the immunosuppressed patient.

Infection of arteries by fungi are extremely rare. The main species implicated are Histoplasma capsulatum, Aspergillus fumigatus, C. albicans and Penicillium. Femoral and iliac aneurysms due to C. albicans infection caused by spread of contiguous focal fungal infection have been previously described. Candida aortitis is an extremely rare condition. A review of the recent literature revealed only one previous case of Candida aortitis and pseudoaneurysm formation. This had developed in a premature neonate with respiratory distress syndrome and disseminated candidiasis following umbilical artery catheterisation. Our patient developed severe vaginal candida infection while in hospital, probably as a result of her diabetes and this was the most likely source of her aortic infection. However, theoretically it could also have resulted from penetration of a duodenal ulcer into the abdominal aorta. The occurrence of melaena in the weeks prior to admission may have been a "herald" bleed from an early aortoduodenal fistula. However, the third part of the duodenum is an unlikely site for ulceration and the patient had not been taking any medication which could predispose to duodenal ulcer formation.

The present case highlights several features in the diagnosis and management of infective aortitis. The diagnosis of this condition remains extremely difficult. Patients generally present with vague and non-specific symptoms not attributable to the vascular system. The development of a pulsatile abdominal mass is relatively uncommon and 50% of ruptures in infected vessels occur prior to development of an
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In our case the initial CT scan did not prove diagnostic showing air surrounding a normal calibre aorta. The diagnosis of infective aortitis was based on the appearances of the second CT scan two days later. The development of an aneurysm within 48 h illustrates the rapidity with which the infective process progresses. The findings by CT or MR scan of retroperitoneal para-aortic gas and aortic dilatation should give rise to the suspicion of aortic infection. Ultrasound is relatively non-specific. Indium labelled white cell scanning has been used but is not entirely reliable. Results are variable and a negative scan does not exclude infection. Angiography is not recommended routinely for this condition but it may facilitate planning of operative intervention and give some information regarding the proximal and distal vessels.

The recommended management of an infective aortic aneurysm is currently under debate. Excision of all infected tissue and extra-anatomical bypass along an uncontaminated path is generally recommended. In our patient we elected to carry out the axillobifemoral bypass prior to exploring the abdomen, thus minimising the ischaemia time to the colon and lower limbs. Recently, in situ reconstruction of the infected aorta has been proposed to reduce the prolonged operating time and the theoretical problems with long term patency of extra-anatomical grafts. Mortality rates using the two approaches are comparable. Aggressive treatment with antibiotics in the post-operative period for up to 6 weeks is recommended. Particular attention to detection of postoperative sepsis is important and frequent CT scans are recommended to detect foci of continuing infection. Specifically, vertebral osteomyelitis and cholecystitis are potential sources of postoperative sepsis especially after in situ reconstruction.

References


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