Homograft replacement of thoraco-abdominal aorta for a leaking mycotic aneurysm

Abstract We report the case of a 67-year-old, diabetic patient who underwent antibiotic-preserved homograft replacement of a thoraco-abdominal segment of the aorta for leaking mycotic aneurysm. This was successful in eradicating the sepsis and no graft complication had occurred at (18 months). Follow-up with computed tomography (CT) scanning. [Eur J Cardio-thorac Surg (1996) 10: 383–385]

Key words Mycotic aneurysm - Homograft - Aortic surgery

Introduction

The optimal surgical management of mycotic aneurysms is still a matter of controversy. The use of homograft material reduces the risk of recurrent infection when used for the treatment of aortic valve endocarditis, and good results have been reported also for the treatment of infected infra-renal aortic prostheses [4]. We report a case of a mycotic aneurysm affecting the thoraco-abdominal aorta treated with in-situ replacement of the affected segment using homograft material.

Case report

Patient

A 67-year-old insulin-dependent diabetic female was admitted to the referring hospital in November 1993 with symptoms of rigors and fever. Blood culture showed heavy growth of Staphylococcus aureus and she was treated with intravenous erythromycin as a single agent, because of penicillin allergy. She was discharged home after 4 weeks. A sudden onset of back pain, 2 weeks later, led to readmission at which time a chest X-ray showed a left pleural effusion, bloody on needle aspiration, and a computerized scan of the chest and abdomen revealed the presence of periaortic haematoma at the level of T10-T12. On admission to our unit, her temperature was 39°C, and there was tenderness on deep palpation of the epigastric region. Routine haematological investigation revealed an elevated white cell count (19x10^9/l) with neutrophilic leucocytosis (14x10^9/l). A chest roentgenogram showed a small left pleural effusion. A contrast enhanced computed tomography (CT) scan of the aorta was performed. Dynamic spiral 3 mm sections were obtained and 3D reconstruction applied. This revealed a saccular pseudoaneurysm arising from the posterior aspect of a heavily calcified lower thoracic aorta in the retrocrural region (T10-T11). The false lumen was well opacified with contrast and the calibre of the true aortic lumen was normal (Fig. 1). There was no clinical or echocardiographic evidence of valvular endocarditis. A presumptive diagnosis of mycotic aneurysm was made and treatment with intravenous vancomycin was commenced prior to induction of anaesthesia.

Operative procedure

Full left posterolateral thoraco-laparotomy with midline abdominal extension was performed. The thoracic cavity was entered via the 7th intercostal space. Old blood and intense haemorrhagic pleural reaction was noticed. Following the abdominal incision, access to the thoraco-abdominal aorta was obtained in the way described by Crawford. This led to entry of an abscess cavity containing a large amount of pus (microscopy and Gram stain demonstrated Gram+Cocci) insinuating into the crura of the diaphragm. Two...
A 384-mograft tube graft was anastomosed end-to-end with continuous 3/0 Prolene sutures after debridement of the infected area. The clamps were removed and haemostasis was secured. The total clamp time was 20 min. The crura were reconstituted over the homograft and the diaphragm reconstructed. The thoraco-laparotomy wound was closed in the usual fashion. Culture of the periaortic tissue resulted in heavy growth of Staphylococcus aureus. The patient had an uncomplicated postoperative course and was discharged home after a 6-week course of intravenous vancomycin. Eighteen months postoperatively she remains well with no evidence of recurrent sepsis. A CT scan (Fig. 2) shows no evidence of graft complications, in particular no aneurysmal dilatation or pseudoaneurysm formation.

**Discussion**

Fig. 1 3D reconstruction of CT scan showing normal calibre aorta (B) and the false aneurysm originating from the posterior aortic wall (A), at level of the lower thoracic vertebrate (T-10 and T-11). The aneurysm consisted of blood, haematoma and a large amount of pus. Mycotic aortic aneurysms are infrequent and, without surgical intervention, usually lead to uncontrolled sepsis or catastrophi haemorrhage. Surgical treatment consists of debridement of all infected aortic tissue, aortic ligation and reconstitution of the distal blood flow by extranatomical bypass [1, 8, 11] or by in-situ graft replacement and lifelong antibiotic therapy [2, 9]. Good results have been reported when using prosthetic graft material in-situ in mycotic aneurysms [2] but the incidence of preoperative periaortic abscess in this series is low. The use of homograft material minimises the risk of persistent infection, recurrent sepsis, and reoperation, when used to treat native or prosthetic aortic valve endocarditis [3, 6, 7, 10]. The risk of recurrent endocarditis is fivefold when a prosthetic valve is used instead of a homograft [5]. Some authors have used in-situ homograft for the replacement of infected infrarenal aortic prostheses and this has been associated with low mortality and morbidity [4].

In our case, dealing with a mycotic aneurysm of a segment of the thoraco-abdominal aorta, with active purulent infection in a diabetic patient, we believed that the use of prosthetic material in-situ would be associated with a higher risk of recurrent sepsis and graft complications. Aortic ligation and extranatomical bypass was not an attractive option because of the segment of aorta involved. As a suitable homograft descending aorta was not available we constructed the conduit using two fresh homograft ascending aortic segments, retaining the valvular apparatus for further freehand homograft valve replacement. The use of homograft material allowed complete eradication of all infected tissue and, with the exception of the suture lines, no prosthetic material was used. We are encouraged by the clinical result of this case and suggest that fresh homograft aortic material, saved in antibiotic solution, could be used in the presence of active sepsis avoiding the use of prosthetic material.

1 Ethicon, Sommerville, N.J., USA
References


