

Adult Cardiology - Case Report

Recurrent Aortic Graft Infection: Successful Treatment using Omental Flap A Case Report

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Recurrent aortic infection graft infection has not previously been reported. We report the case of a 56-year-old male who presented with recurrent fever after aortic graft replacement. A computed tomographic (CT) scan done six months after aortic graft replacement documented a large mediastinal abscess from the brachiocephalic vein down to the subxiphoid process with no signs of leak. A second CT scan was obtained because of recurrent complaints of fever and heart failure symptoms. Evidence of contrast leakage with slight progression in size of the previously noted density in the anterosuperior mediastinum was noted. Aortic graft replacement successfully repaired his aorta, intravenous antibiotics with packing of the cavity around the aorta with omentum eliminated the recurrence of aortic graft infection six months after surgery. *Phil Heart Center J 2007;13(2):168-170.*

Key Words: aortic graft infection ■ omental flap

Case Report

A 56 year old male was admitted due to recurrent episodes of fever after undergoing an emergency aortic valve replacement with placement of aortic graft due to a Thoracic Aortic Aneurysm, Dissecting, De Bakey Type I in 2004. He then had an emergency mediastinal exploration secondary to a massive pericardial effusion with cardiac tamponade six hours after surgery. On the 19th post-op day, he developed surgical site infection for which he underwent debridement of the sternal wound with sternal rewiring. He was discharged on the 33rd post-op day in stable condition with Cotrimoxazole 800mg BID, Amlodipine 10mg/day, and Metoprolol 50mg TID. About three months after discharge, he developed high-grade fever for four days associated with pleuritic chest pain and purulent discharge from the sternotomy site. He underwent sternal wound debridement and was given Vancomycin 500mg q 6hrs for fourteen days. In the succeeding months, he had three other admissions due to the same complaint. Debridement of sternal wound was also done during each admission and IV Vancomycin given. On all these admissions, cultures of blood and wound discharge were positive for *Staphylococcus aureus*. About one year later, he again had recurrence of high grade fever with discharge from the lower edge of sternotomy site. A thoracic CT scan revealed a large mediastinal abscess. He subsequently underwent mediastinal exploration with extensive debridement of the anterior mediastinum. He was treated with Tazo

cin 4.5gm q8hrs for 6 weeks with relief of symptoms



Figure 1



Figure 2

Figure 1 and 2. Large mediastinal abscess overlying the aortic graft from the brachiocephalic vein down to the subxiphoid process

Three weeks after discharge, he had recurrence of fever and wound discharge. Blood and wound cultures were positive for *S. aureus*. He was treated with Vancomycin IV. He had two other admissions after discharge with the same complaint and all admissions had blood culture growth of *S. aureus* and treatment with Vancomycin IV done.

Barely ten days after discharge from last admission, fever recurred but now associated with easy fatigability, chest heaviness and shortness of breath. He was readmitted and thoracic CT scan was done which revealed contrast medium leakage with a hematoma formation in the anterosuperior mediastinum measuring 9.8 x 8.5 x 10cm

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in size. He was appraised of a repeat surgical intervention but he refused and hence was continued on Vancomycin 1gm every 12hrs for 8 weeks. He was again discharged afebrile.

Three days prior to admission, he again had fever. Blood culture revealed heavy growth of *Staphylococcus aureus*. During the course of treatment with vancomycin 1gm IV every 12hours, our patient was blood culture negative by the 7th week. Thoracic CT scan revealed evidence of leakage with progression in size of the previously noted density in the anterosuperior mediastinum.



Figure 3

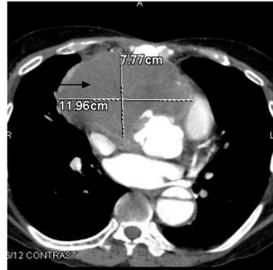


Figure 4

Figure 3 and 4. Dissecting aortic aneurysm (De Bakey/Stanford A) in the ascending Aorta with evidence of contrast leakage and slight progression in size of the previously noted density over the anterosuperior mediastinum.

He subsequently underwent mediastinal exploration. Intraoperatively, a huge hematoma formation with purulent discharge was noted overlying the aortic graft. Extensive debridement was done, tissue culture later revealed heavy growth of *Staphylococcus aureus*. Replacement of the infected ascending aorta graft was done, thereafter with placement of an omental flap over the newly implanted aortic graft. The patient recovered fully and was discharge after six weeks of postoperative antibiotics therapy. The patient has remained in good health for six months, with no signs of recurrent graft infection or pseudoaneurysm formation. He then went on to undergo cardiac rehabilitation with no episodes of recurrent infection.

Discussion

The risk of intra-vascular device related infection has increased because of an ever-enlarging pool of patients who have indwelling medical devices implanted for sustaining or improving life. Prosthetic vascular grafts in particular have a long-term incidence between 1 and 6%. Infection risk varies with the location of the graft. The risk of infection for aortic grafts limited to the abdomen is 1% or less. There is no data on the incidence of thoracic aortic graft specifically.

Infection is thought to occur in the intraoperative or peri-operative setting in the majority of infections. Because of this, infection presentation within 2 months of prosthetic graft placement is commonplace. The virulence

of the infecting organism may also impact the timing of infection on presentation. In particular, bacteria, such as coagulase-negative Staph may contaminate the graft in the peri-operative period and may not cause symptoms of infection for six months or longer after graft placement. Several risk factors have been identified for vascular graft infection and include emergent surgery, multiple invasive interventions before and after graft placement as was the case with our patient, groin incisions and contiguous infection in the graft area. Disorders of the host are also considered risk factors for graft infection and include diabetes, chronic kidney disease, obesity and immunocompromised conditions.

Fig. 3 and 4. Dissecting aortic aneurysm (De Bakey/Stanford A) in the ascending Aorta with evidence of contrast leakage and slight progression in size of the previously noted density over the anterosuperior mediastinum.

The management of choice in vascular graft infection remains to be surgery. The optimal method of operative treatment of prosthetic aortic graft infection (PAGI) has been the subject of debate; incidence rates of PAGI are low. Bunt in Cardiovascular Surgery 2001 outlined four tenets that are central to surgical management of graft infections and include: 1.) excision of the graft as a that can potentiate infection, 2.) wide and complete debridement of devitalized, infected tissue, 3) maintain or establish vascular flow to distal bed and 4.) intensive and prolonged antibiotic coverage to prevent secondary graft infection.

Although various strategies have been advocated for mediastinitis following cardiac operations, surgical results for this complication remain a significant concern. The condition is more complicated with replacement of the ascending aorta using a prosthetic graft. Until recently, the role of omental flap transposition in mediastinal infection has been debated. Although no studies have proven its efficacy in ascending aortic graft infection, recent reports on its use in post-operative mediastinal infections have made it a promising approach in the treatment of mediastinitis following graft replacement of the ascending aorta. This case further adds weight to the growing evidence on the use of omental flap transposition in aortic graft infection.

Antimicrobial therapy is a vital adjunct to surgical management. Treatment should be directed against the identified pathogen and guided by the in vitro antimicrobial susceptibility testing results for the isolate. With late-onset infections, current guidelines recommend that antibiotic treatment be deferred until an infective etiology has been confirmed except in the very ill patient. If there is associated bacteremia, particularly if due to *S aureus*, then a minimum of 14 days antimicrobial treatment is necessary after removal of the device and the first negative blood culture.

In some cases however, no pathogen is recovered and empiric broad-spectrum therapy should be selected to treat many potential nosocomial and skin-colonizing organisms. A regimen including vancomycin is recommended as initial empiric therapy because staphylococci are frequently identified pathogens, and methicillin resistance is common among these strains. Alternative antimicrobial regimens are limited for patients who do not respond or who cannot tolerate vancomycin. Linezolid is a newer agent and offer treatment option for MRSAs and vancomycin-resistant enterococci. Long-term suppressive therapy is a useful treatment option for selected patients who are not candidates for surgery. After a course of parenteral antibiotics, a variety of classes of oral antimicrobials are used. These include beta-lactam antibiotics, Trimethoprim-sulfamethoxazole, fluoroquinolones, clindamycin and fluconazole. A 7% infection relapse was noted in one study.

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