CASE REPORT

Pasturella multicoda infection of an abdominal aortic endograft

Desarom Teso, Sally Williams, Riyad Karmy-Jones

Abstract

Both surgical and endovascular grafts have the rare risk of late secondary infection. Treatment varies based on the clinical setting, but in general the recommendations are that infected endografts be removed and reconstruction performed. In the abdominal aorta this may vary from homograft or other impregnated grafts to excision and extra-anatomic bypass. We discuss an unusual case which we believe serves as a useful review of this still debated area. A 58-year-old male presented with abdominal and back pain. One week prior he had sustained several scratches from his cat. His past history was notable for positive human immunodeficiency virus status, an endovascular repair of a saccular aneurysm of the infra-renal aorta two years prior, as well as subsequent pulmonary embolism for which he received a filter and was on warfarin (Figure 1). Blood cultures were positive for Pasturella multicaoda and he was transferred to our institution. Work up including magnetic resonance imaging was negative for osteomyelitis but computer tomographic angiography identified new fluid and phlegmon surrounding the graft (Figure 2). A tagged white cell study showed peri-aortic...
activity which was felt to be consistent with aortitis and endograft infection. At operation murky abdominal fluid was encountered. There was a dense phlegmon adherent to the second and third portions of the duodenum. Proximal control was obtained just below the level of the renal arteries which were dissected out with difficulty (Figure 3A). The phlegmon and retroperitoneal space was opened and again murky fluid drained. The endograft was removed and as much of the phlegmon and aortic wall that could be safely excised without injuring the duodenum was resected. A homograft was used to reconstruct the aorta and the area covered with omentum (Figure 3B). Cultures taken from the area were negative. The patient made an uneventful recovery, complicated only by a bout of *Clostridium difficile* colitis, and at one year is doing well (Figure 4).

**DISCUSSION**

Cat-scratch disease refers to *Bartonella henselae* infection, which can lead to systemic complications such as endocarditis. *Pasturella multocida* infection has been documented to occur after bites from cats, dogs, rabbits and other animals [3-8]. Pasturella has been linked to the development of primary aortic infection [3,4,7], as well as infection of operatively placed grafts and endografts [5,6,8]. As our case suggests, ceftriaxone can lead to suppression of the infection, although what literature is available suggests that ongoing aneurysmal formation may occur necessitating operative repair [9].

Primary endograft infection (i.e., when not done for a known infection or fistula) is uncommon. Černohorsky and colleagues [2] described 11 cases out of 1431 thoracic and abdominal endovascular repairs (0.77%) with an overall mortality of 25%. They did not see a difference in outcome between those who underwent operative repair or those managed conservatively, although they suggest the small sample size may have impacted the results. Setacci et al. [1] reviewed 102 cases of infected abdominal aortic endografts reported in the literature. In some very fragile cases percutaneous drainage and antibiotics were used, but in general most authors feel that if the patient can tolerate surgery, endograft explantation is preferred. There was a slight bias towards improved outcomes with *in situ* reconstruction as opposed to extra-anatomic bypass, but the authors conclude that there can be no definitive conclusions regarding which of the options is optimal. When in situ replacement is performed, a variety of grafts are available, including homografts [10,11] and prosthetic grafts impregnated with silver or rifampin [12]. Homografts appear to have a higher rate of aneurysmal degeneration and a lower rate of recurrent graft infec-

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**Figure 1** An endovascular repair of a saccular aneurysm of the infra-renal aorta. A: Original Saccular aneurysm. Etiology was never defined; B: Post endovascular repair.

**Figure 2** Fluid and phlegmon surrounding the graft. A: Coronal view when patient presented demonstrating residual sac and new left sided fluid; B: Axial view demonstrating peri-graft fluid and phlegmon.

**Figure 3** Operative pictures. A: Operative picture demonstrating the dense phlegmon with proximal clamp below renal arteries; B: Operative picture with proximal anastomosis complete and after debridement of the phlegmon and aortic wall.

**Figure 4** Computer tomographic angiography at one year follow up.
tion compared to prosthetic grafts, although the overall survival appears, at mid-term follow up, is the same\textsuperscript{[10,11]}. Omental pedicle coverage appears to be very helpful in reducing late complications\textsuperscript{[12]}.

Pasturella endograft infection is clearly a rare event, with little data to guide therapy, but in general it should be managed as other endograft infections. Unique features include a propensity for osteomyelitis which should be ruled out, and that intravenous antibiotics may suppress the infection, but the natural history suggests ongoing aneurysmal development. \textit{In situ} replacement with wide debridement and omental coverage seems to be the most satisfactory method of reconstruction.

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