

***Pasturella multocoda* infection of an abdominal aortic endograft**

Desarom Teso, Sally Williams, Riyad Karmy-Jones

Desarom Teso, Riyad Karmy-Jones, the Divisions of Vascular Surgery, Peace Health Southwest Washington Medical Center, Vancouver, WA 98664, United States

Sally Williams, Infectious Disease, Peace Health Southwest Washington Medical Center, Vancouver, WA 98664, United States

Author contributions: Teso D contributed to critical editing, review of the literature and re-writing; Williams S contributed to review of the literature and critical editing; Karmy-Jones R contributed to write the initial draft, critical review of the literature and re-write based on reviewer comments

Correspondence to: Riyad Karmy-Jones, MD, the Divisions of Vascular Surgery, Peace Health Southwest Washington Medical Center, 505 87th AVE Suite 301, Bldg B, Vancouver, WA 98664, United States. rkarmyjo@swmedicalcenter.org
Telephone: +1-360-5141854 Fax: +1-360-5146063

Received: July 28, 2012 Revised: September 1, 2012

Accepted: January 5, 2013

Published online: January 28, 2013

Key words: *Pasturella multocoda*; Aortic endograft; Infection; Homograft; Aneurysm

Teso D, Williams S, Karmy-Jones R. *Pasturella multocoda* infection of an abdominal aortic endograft. *World J Radiol* 2013; 5(1): 17-19 Available from: URL: <http://www.wjgnet.com/1949-8470/full/v5/i1/17.htm> DOI: <http://dx.doi.org/10.4329/wjr.v5.i1.17>

INTRODUCTION

Primary aortic endograft infection is rare, with an incidence less than 1%, although associated mortality is described as being as high as 25%^[1,2]. Common organisms include *Staphylococcus* and *Streptococcus* species^[2]. *Pasturella multocoda*, an organism that lives in the mouth of domestic animals, has been rarely associated with both primary mycotic aneurysms as well as endograft or bypass graft infection^[3-8]. In the few cases reported, successful management has included a course of antibiotics followed by explant and revascularization.

CASE REPORT

A 58-year-old male presented with acute onset of abdominal and back pain accompanied by chills and rigors. 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 multocoda* and he was treated with intravenous ceftriaxone. His fevers resolved, and repeat blood cultures were negative after one week, but he had persistent back and abdominal pain. 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

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. Prior history was notable for human immunodeficiency virus positive status, pulmonary embolism (currently on Coumadin) and two years previously repair of a saccular infra-renal aneurysm with tube graft. The week prior to the onset of symptoms he suffered a noticeable scratch from his cat. Blood cultures were positive for *Pasturella multocoda*. He was transferred to our institution and underwent resection and explantation, with homograft reconstruction. At one year he is alive and well.

© 2013 Baishideng. All rights reserved.

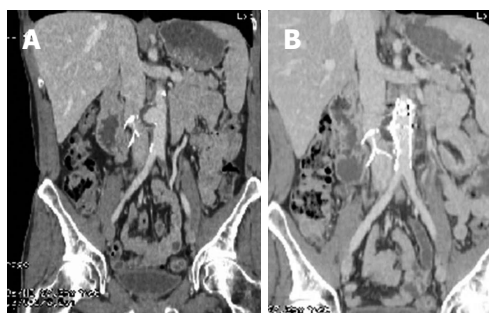


Figure 1 An endovascular repair of a saccular aneurysm of the infra-renal aorta. A: Original Saccular aneurysm. Etiology was never defined; B: Post endovascular repair.

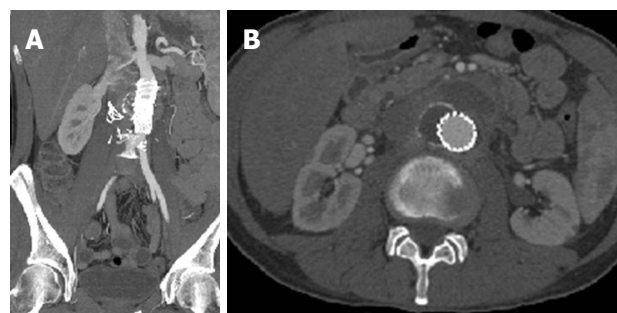


Figure 2 Fluid and phlegmon surrounding the graft. A: Coronal view when patient presented demonstrating residual sac and new left sided fluid; B: Axial view demonstrating peri-graft fluid and phlegmon.

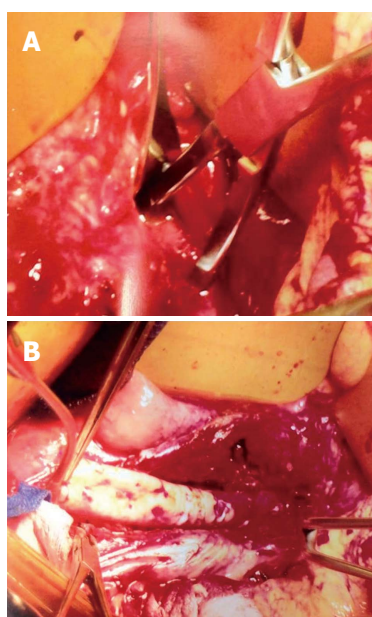


Figure 3 Operative pictures. A: Operative picture demonstrating the dense phlegmon with proximal clamp below renal arteries; B: Operative picture with proximal anastomosis complete and after debridement of the phlegmon and aortic wall.

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 as 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,



Figure 4 Computer tomographic angiography at one year follow up.

which can lead to systemic complications such as endocarditis^[9]. *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^[3].

Primary endograft infection (*i.e.*, when not done for a known infection or fistula) is uncommon. Cernohorsky 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-

tion compared to prosthetic grafts, although the overall survival appears, at mid-term follow up, is the same^[10,11]. Omental pedicle coverage appears to be very helpful in reducing late complications^[12].

Pasteurella 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. *In situ* replacement with wide debridement and omental coverage seems to be the most satisfactory method of reconstruction.

REFERENCES

- 1 **Setacci C**, De Donato G, Setacci F, Chisci E, Perulli A, Galzerano G, Siringano P. Management of abdominal endograft infection. *J Cardiovasc Surg (Torino)* 2010; **51**: 33-41 [PMID: 20081760]
- 2 **Cernohorsky P**, Reijnen MM, Tiellu IF, van Sterkenburg SM, van den Dungen JJ, Zeebregts CJ. The relevance of aortic endograft prosthetic infection. *J Vasc Surg* 2011; **54**: 327-333 [PMID: 21397443 DOI: 10.1016/j.jvs.2010.12.067]
- 3 **Balestra B**. Mycotic aneurysms of the aorta caused by infection with *Pasteurella multocida*. *Clin Infect Dis* 2000; **31**: E1-E2 [PMID: 11017856 DOI: 10.1086/314039]
- 4 **Koelemay MJ**. *Pasteurella multocida* infection, a rare cause of mycotic abdominal aortic aneurysm. *J Vasc Surg* 2009; **50**: 1496-1498 [PMID: 19703750 DOI: 10.1016/j.jvs.2009.06.052]
- 5 **Sannella NA**, Tavano P, McGoldrick DM, LoConte MA, Fawcett PA, Lethbridge JA. Aortic graft sepsis caused by *Pasteurella multocida*. *J Vasc Surg* 1987; **5**: 887-888 [PMID: 3586188 DOI: 10.1067/mva.1987.avs0050887]
- 6 **Silberfein EJ**, Lin PH, Bush RL, Zhou W, Lumsden AB. Aortic endograft infection due to *Pasteurella multocida* following a rabbit bite. *J Vasc Surg* 2006; **43**: 393-395 [PMID: 16476621 DOI: 10.1016/j.jvs.2005.10.067]
- 7 **Pestana OA**. Mycotic aneurysm and osteomyelitis secondary to infection with *Pasteurella multocida*. *Am J Clin Pathol* 1974; **62**: 355-360 [PMID: 4479248]
- 8 **Kalish SB**, Sands ML. *Pasteurella multocida* infection of a prosthetic vascular graft. *JAMA* 1983; **249**: 514-515 [PMID: 6848854]
- 9 **Hajj-Chahine J**, Houmida H, Plouzeau C, Tomasi J, Corbi P. Bartonella as a cause of mechanical prosthetic aortic root endocarditis. *Ann Thorac Surg* 2012; **93**: e93-e95 [PMID: 22450112 DOI: 10.1016/j.athoracsurg.2011.11.051]
- 10 **Bisdas T**, Bredt M, Pichlmaier M, Aper T, Wilhelmi M, Bisdas S, Haverich A, Teebken OE. Eight-year experience with cryopreserved arterial homografts for the in situ reconstruction of abdominal aortic infections. *J Vasc Surg* 2010; **52**: 323-330 [PMID: 20570473 DOI: 10.1016/j.jvs.2010.02.277]
- 11 **Bisdas T**, Wilhelmi M, Haverich A, Teebken OE. Cryopreserved arterial homografts vs silver-coated Dacron grafts for abdominal aortic infections with intraoperative evidence of microorganisms. *J Vasc Surg* 2011; **53**: 1274-1281.e4 [PMID: 21292430 DOI: 10.1055/5-0030-1268978]
- 12 **Uchida N**, Katayama A, Tamura K, Miwa S, Masatsugu K, Sueda T. In situ replacement for mycotic aneurysms on the thoracic and abdominal aorta using rifampicin-bonded grafting and omental pedicle grafting. *Ann Thorac Surg* 2012; **93**: 438-442 [PMID: 22054654 DOI: 10.1016/j.athoracsurg.2011.07.050]

P- Reviewers Cademartiri F, Hara AK

S- Editor Song XX **L- Editor** A **E- Editor** Xiong L

