

Pasteurella Multiocida Infection Resulting in a Descending Thoracic Aorta Mycotic Pseudoaneurysm

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Abstract

Title: Pasteurella Multiocida Infection Resulting in a Descending Thoracic Aorta Mycotic Pseudoaneurysm **Objective:** Highlight our management of a P. Multiocida infected descending thoracic aorta mycotic pseudoaneurysm **Methods:** Report a case of canine bite resulting in a P. Multiocida descending thoracic aorta mycotic pseudoaneurysm **Results:** We present a 61-year-old gentleman who was initially seen in an Emergency Department after a canine bite. He was admitted and treated with a course of IV antibiotics for P. Multiocida bacteremia and discharged. Three weeks post discharge, he continued to feel generalized malaise and work-up was significant for a descending thoracic aorta mycotic pseudoaneurysm. The patient underwent a low left posterior lateral thoracotomy and femoral-femoral cardiopulmonary bypass for complete resection and replacement with a 24 mm Gelweave™ graft (Terumo Cardiovascular Group, Ann Arbor, Michigan). Given purulence and gross infection we planned for a staged approach, with a secondary washout and omental flap for biologic coverage of the graft. The patient did well clinically and was discharged at 14 days to rehabilitation with six-week intravenous course of antibiotics. **Conclusions:** The patient's clinical course with subsequent follow-up suggest that complete resection of the mycotic pseudoaneurysm, followed by omental flap coverage is a viable strategy to manage mycotic aortic infections with virulent organisms.

Introduction: *Pasteurella Multiocida* is a gram-negative coccobacillus that is part of the normal oral flora in many animals, and thus also the etiologic agent in various infectious syndromes after animal bites (1). While most of the infections caused by *P. Multiocida* are superficial wounds and localized abscesses, instances of aortitis, bacteremia, meningitis, respiratory complications, septic arthritis, and spontaneous bacterial peritonitis have also been reported (2). Herein we describe our management in a case of a canine bite resulting in a *P. Multiocida* descending thoracic aorta mycotic pseudoaneurysm.

Case Report: Our patient is a 61-year-old gentleman who was initially seen in an Emergency Department after a canine bite. He was admitted and treated with a course of IV antibiotics for *P. Multiocida* bacteremia and discharged. Three weeks post discharge, he continued to feel generalized malaise. Work-up with echocardiogram showed no intracardiac valvular pathology, but CTA was significant for a descending thoracic aorta mycotic pseudoaneurysm (Figure 1). After a discussion with the patient, and a multidisciplinary case review, we elected to intervene surgically. The patient underwent a left posterior lateral thoracotomy with femoral-femoral cardiopulmonary bypass for complete pseudoaneurysm resection, replacement with a 24 mm Gelweave™ graft (Terumo Cardiovascular Group, Ann Arbor, Michigan) (Figure 2), and local continuous antibiotic irrigation. Given purulence and gross infection we planned for a staged approach, with a secondary washout and omental flap for biologic graft coverage seven days after the index operation. Intraoperative cultures of the aortic pseudoaneurysm were consistent with *P. Multiocida*. The patient progressed well clinically and was discharged at 14 days to rehabilitation with a six-week intravenous course of antibiotics. At one year postoperatively, the patient continues to do well and has no issues.

Comment: Without intervention, the natural progression of mycotic pseudoaneurysms is uncontrolled sepsis

and/or catastrophic rupture and hemorrhage (3). Ballestra described the survival of a patient that was treated with antibiotics for medical sterilization, followed by endovascular exclusion for the pseudoaneurysm (2). While there may be an argument to utilize that strategy as compassionate use therapy, in our practice, patients that are viable surgical candidates undergo open surgery as we believe that the removal of the infectious source is vital to long-term survival. In our case, we utilized a staged approach prior to definitive closure. This strategy allowed for interval sterilization of the infected cavity via two mechanisms, locally with antibiotic irrigation, and systemically with intravenous antibiotics after the source infection has been removed. The subsequent evacuation of the remnant blood in the thorax can help decrease the microorganism bio-burden as the stagnant blood can act as a robust medium growth. Additionally, the pedicled omental flap is a safe adjunct in the management thoracic aortic graft infections (4), providing a vascularized biologic barrier to combat anastomotic breakdown and reduce reinfection risk. Thoracic aortic pseudoaneurysms caused by *P. Multiocida* are a rare clinical condition. The patient's clinical course with subsequent follow-up suggest that complete resection of the mycotic pseudoaneurysm, followed by omental flap coverage is a viable strategy to manage mycotic aortic infections with virulent organisms.

Ethics Statement: All of the authors are in agreement with the content in the manuscript. Each author has contributed to the drafting and editing of the manuscript. There are no sources of financial support in the form of grants, equipment, and/or pharmaceutical items for this research. There are no potential conflicts of interest. The publication falls under an encompassing IRB that allows review of institution specific postoperative cardiovascular patients whereby no formal patient consent is required.

Figure Legend:

Figure 1: Axial, Coronal, and Sagittal CT scan images depicting descending thoracic aortic pseudoaneurysm

Figure 2: In-vivo descending thoracic aortic pseudoaneurysm. Excised descending thoracic aortic pseudoaneurysm. Interposition descending thoracic aortic replacement with Gelweave graft.

References

1. Weber DJ, Wolfson JS, Swartz MN, Hooper DC. Pasteurella multocida infections. Report of 34 cases and review of the literature. *Medicine (Baltimore)* . 1984;63(3):133–154.
2. Brenno Balestra, Mycotic Aneurysms of the Aorta Caused by Infection with *Pasteurella multocida* , *Clinical Infectious Diseases* , Volume 31, Issue 3, September 2000, Pages e1–e2.
3. Gomes MN, Choyke PL, Wallace RB. Infected aortic aneurysms. A changing entity. *Ann Surg* . 1992;215(5):435–442. doi:10.1097/00000658-199205000-00005
4. Hernandez JA, Stranix JT, Piwnica-Worms W, et al. Omental Flap Coverage for Management of Thoracic Aortic Graft Infection [published online ahead of print, 2019 Nov 4]. *Ann Thorac Surg* . 2019;S0003-4975(19)31611-X. doi:10.1016/j.athoracsur.2019.09.041



