Primary Brucella Aortitis Presenting with Rupture

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Financial Disclosures

I have no financial relationships to disclose
History and Physical

• 68 year old male
  – hypertension, coronary artery disease, tobacco use

• Abdominal pain for 1 month, severe back pain for 3 days.

• Review of systems: no fevers or chills, no weight loss.

• Physical exam unremarkable
  • Hemodynamically stable, afebrile
  • Leukocytes: 7,400 / mm³
  • Blood cultures: no growth
Initial presentation of contained aortic rupture demonstrated by outside hospital CTA scan.
Initial Hospital Course

- Endovascular repair with Gore Excluder stent graft
- Afebrile, no leukocytosis
- Discharged post-operative day 3
Second Hospital Course

- Presented with acute limb ischemia
  - CTA: occluded right limb of stent graft
  - Thickening of aneurysmal sac
- Left to Right Femoral-Femoral bypass graft
- Discharged post-operative day 4 on Bactrim per infectious disease recommendations, despite negative infectious workup
Follow Up

• Clinical and radiologic follow up at 1 and 3 months
  – Stable aneurysm size
  – Denied fevers, chills, weight loss
One Year Later

- Presented to emergency department complaining of 6 weeks constant abdominal pain
  - 2 months low grade fevers, chills, sweating, 10-12 lb weight loss
- Exam: diffuse abdominal tenderness, fever of 38.5, tachycardia
- Lab: leukocytes 2,700/mm³, CRP 3.33 mg/dL
Presentation post-endovascular repair demonstrating multiple abscess formation extending to the bilateral common iliac arteries.
Third Hospital Course

- Antibiotics: Vancomycin, Ceftriaxone, Doxycycline
  - Symptoms improved
- Blood cultures: Still no growth
- Tests for acid-fast bacilli: negative
- **In depth social history obtained by ID: butchered wild hogs for hunting club**
- ID recommended fungal assay and blood culture, quantiferon, urine legionella IgA, Bartonella serology, Brucella serology
- Immunoglobulin assay positive for *Brucella* 1:640
- Started on Rifampin and Doxycycline
Hospital course, continued

- Leukocytes 22,400 / mm³
- CTA: pseudoaneurysm, increased enhancement, increase in size of periaortic inflammatory masses
- Tagged white blood cell scan: increased uptake at proximal aspect of endograft
- Extra-anatomic right axillary to femoral artery bypass graft, 8 mm ringed PTFE
- Explant of infected aortic stent graft, aortic and iliac stump closure
  - Extensive debridement and irrigation with Rifampin solution
- Recovery uneventful, discharged post-operative day 5
Follow Up

• One month follow up: normal leukocyte count and sedimentation rate, CRP < 2 mg/dL, resolution of symptoms

• Tissue cultures positive for *Brucella* sensitive to azithromycin and doxycycline.
Images courtesy of Dr William Bates III, Medical College of Georgia, Department of Radiology
Pathogenesis

• Initial infectious workup was negative, but we believe the patient initially presented with contained rupture of infected aneurysm from primary Brucella Aortitis.

• Microbial arteritis with aneurysm formation

• Bacterial seeding in arteries with preexisting wall abnormalities or contiguous spread from local infection.

Brucella Aortitis

• Analysis of 26 published cases, infrarenal abdominal aorta was most often affected – 65% of cases

• Professional exposure (farming, animal breeding, butchery), travel in endemic areas, or history of Brucellosis were reported in the majority of cases.

• Constitutional symptoms of Brucellosis: back pain, bone pain, low grade fever, chills, rigors.

• No specific symptomatology of Brucella Aortitis.

Testing

• Enzyme linked immunosorbent assay for Brucella IgG has a sensitivity of 92-94%

• Tissue cultures also have a high sensitivity and can guide choice of antibiotic therapy

Treatment

- Mortality is 33% in combined medical and surgical therapy, versus 7% in medical therapy alone.

- Source control via removal of infected aneurysmal segment, debridement

- Revascularization with extra-anatomic bypass or in-situ aortic reconstruction

Revascularization

- Neo-Aortoiliac system is preferred, with creation using autogenous femoral vein, cryopreserved vein, or antibiotic treated prosthetic graft.

- Staged procedure as in this case is also possible, avoids sewing on friable, infected aorta.

- EVAR is less ideal, bridge to definitive therapy.

Precautions

- 12 weeks of antibiotic therapy is standard

- Our patient received 5 months of antibiotics per ID recommendations

- Hospital staff who come in contact with infected material or are in the OR must take airborne precautions

- Contact hospital epidemiology and the CDC

- *Brucella* has the potential to be aerosolized, and thus a potential bioterrorism agent.

Conclusion

• With this report we hope to present effective management of an aneurysm infected with *Brucella*, its presentation, and treatment approaches, and serious adverse effects of this infection.

• We hope to bring to mind blood testing for fastidious organisms when dealing with infected aneurysms in the future, as well as highlight the importance of a thorough exposure history, and the help of our colleagues in Infectious Disease.