A Case of Embolic Stroke Due to Native Mitral Valve *Pasteurella multocida* Infective Endocarditis

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Introduction

Pasteurella is a commensal pathogen for many domestic and wild animals worldwide. It is zoonotic gram negative, aerobic, coccobacillus organism. For humans, *Pasteurella multocida* commonly arises as the culprit for local infection and cellulitis following animal bites or scratches. It has a rapid incubation period, typically less than 24 hours. Systemic, more invasive infections, such as infective endocarditis are quite rare and are often associated with a high degree of morbidity and mortality.

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Case Presentation

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Case Presentation

This is an 87 year old female with a past medical history of hypothyroidism, non-insulin dependent type 2 diabetes mellitus, hypertension, and hyperlipidemia who presented to the emergency department as a stroke alert via EMS after being found down at home. She was found to be dysarthric and have bilateral lower extremity weakness.

- Last Known Well: 17:30 the night before presentation per patient's niece
- NIHSS: 10

Of note, the niece also mentioned the patient had been complaining of right calf pain following a cat bite.

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Case Presentation

In the emergency department:

Vitals:

HR 93, RR 18, SaO2 93% RA, BP 105/63, T 98.4F

Physical Exam:

General: No acute distress, somnolent but arousable
CV: Regular rate, no murmurs
Respiratory: Clear to auscultation, no crackles or wheezes
Neurologic: Disoriented to place and time, dysarthric, right lower extremity 0/5 strength, right upper extremity 2/5 strength, intermittently follows commands

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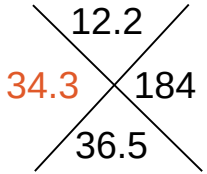
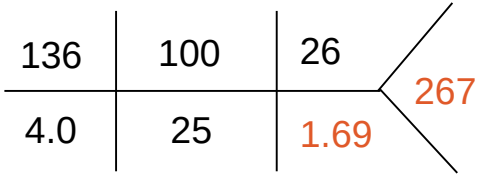
Case Presentation

In the emergency department:

Labs:





Lactic Acid: 3.8 mmol/L
Troponin: 1.34 ng/mL
Creatine Kinase: 2583 U/L

CT Head showed no acute abnormality and CTA was negative for LVO.

The patient was not a candidate for neither systemic thrombolytics nor mechanical thrombectomy. She given empiric ceftriaxone, a 30 ml/kg crystalloid bolus, and was admitted to medicine for stroke and severe sepsis work up.

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Case Presentation

Hospital Course:

Day 1:

- Persistent fevers, patient broadened to vancomycin and meropenem

Day 2:

- Blood cultures growing gram negative bacilli; vancomycin discontinued, and azithromycin started for concern of *Bartonella hensale* in the setting of recent cat bite
- Transthoracic echocardiogram negative for any vegetations

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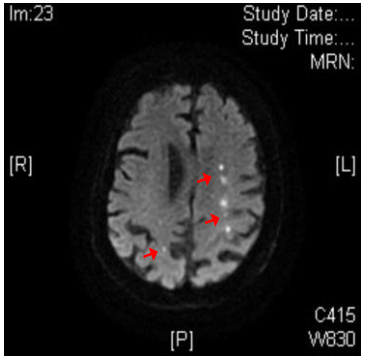
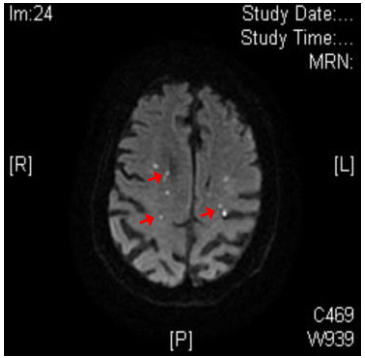
Case Presentation

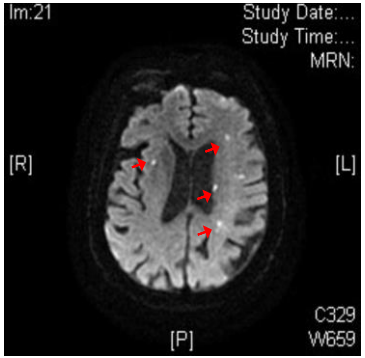
Hospital Course:

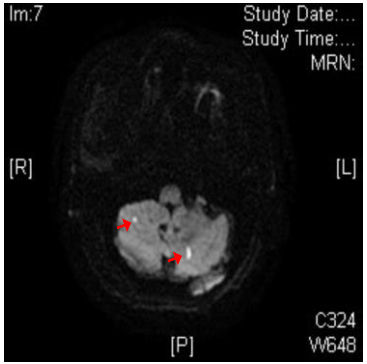
Day 3:

- MR Brain demonstrated multifocal, bilateral acute strokes primarily affecting the anterior and posterior circulation suspicious for embolic source
- Blood cultures result with *Pasteurella multocida*; culture sent for susceptibility testing and infectious disease consulted.
- Transesophageal echocardiogram ordered per infectious disease recommendations









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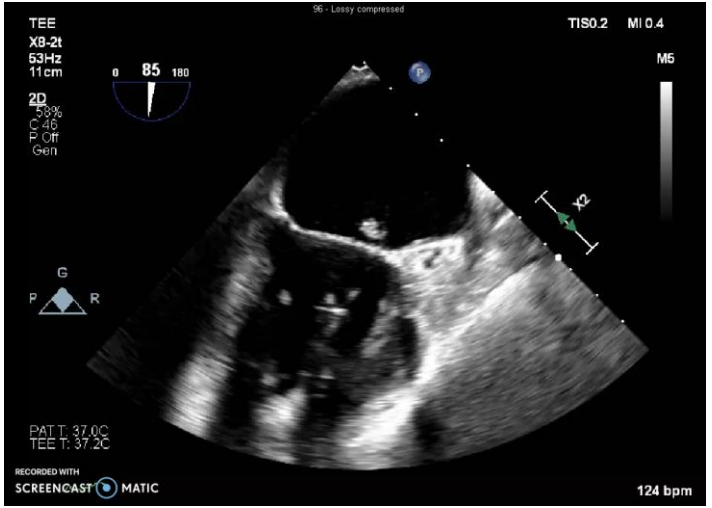
Case Presentation

Hospital Course:

Day 5:

- Transesophageal echocardiogram shows a vegetation on the posterior leaflet of the mitral valve
- Patient diagnosed with *P. multocida* infective endocarditis according to Modified Duke criteria
    - 1 major: evidence of endocardial involvement
    - 3 minor: fever, vascular phenomena, and microbiological evidence of infection



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Case Presentation

Hospital Course:

Day 6:

- Preliminary literature review suggested cardiothoracic surgery evaluation for valvular repair. Cardiothoracic surgery consulted; patient declined any surgical intervention.
- Patient started on high dose ceftriaxone (2g every 12 hours) for a planned duration of 4 weeks

Day 7-12:

- PICC line placed
- Patient continued to have waxing and waning mental status and significant functional impairment due to oropharyngeal dysphagia and right hemiparesis
- Palliative care consulted

Day 15:

- After discussion with patient and surrogate decision maker, patient decided against further interventions and was discharged to hospice house with levofloxacin for symptom management and comfort care medications in place.

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Discussion

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Discussion

Case Summary

- Multiple cat bites at home over an unknown period of time without seeking medical evaluation
- *P. multocida* bacteremia with subsequent infective endocarditis of the native mitral valve
- Multifocal septic embolic stroke causing right sided hemiparesis, oropharyngeal dysphagia, and dysarthria
- Patient discharged to hospice house due to significant deficits and poor overall long term prognosis

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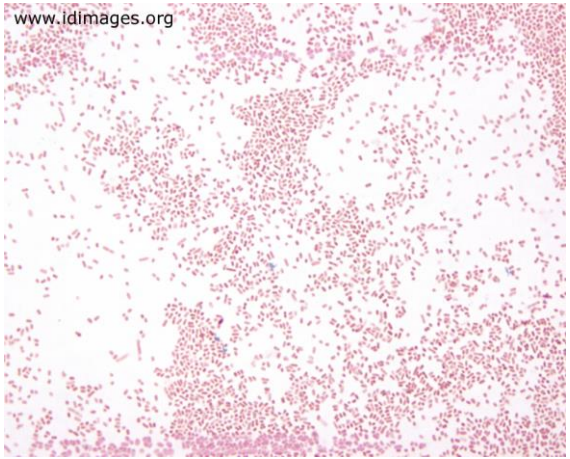
Discussion

Pasteurella multocida:

- Zoonotic, commensal gram-negative, aerobic coccobacillus
- Oral flora for domestic cats (75%) and dogs (50%)
- Typically encountered as superficial skin and soft tissue infection
- Risk factors for severe disease:
    - Advanced age
    - Prosthetic valves
    - History of infective endocarditis
    - Diabetes mellitus
    - Cirrhosis
    - Immunosuppression



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Discussion

Epidemiology

- Just over 40 cases documented worldwide (including this one)
- In one review, 69% of patients were greater than age 70
- 69% have exposure to a cat or dog
- Aortic valve most commonly affected
- Culture negative endocarditis – is it underreported?

Treatment

- Beta-lactams; alternatively, fluoroquinolone for anaphylaxis
- Duration? A little fuzzy. Anywhere from 2 to 15 weeks, with median 6 weeks of therapy
- Surgery? Maybe, though controversial. Reportedly 100% curative with surgical repair, however, no accounting for contraindication to surgery, severity of illness, and comorbidities.

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Conclusion

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Conclusion

- *P. multocida* invasive infections have the potential for severe morbidity and complications, including stroke and death
- Early treatment of animal bites can prevent severe infection
- Clearer guidelines needed for duration of antibiotic therapy and role of surgery for infective endocarditis due to *P. multocida*

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Questions?

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