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An Unusual Case of Urban Actinomyces Pyogenes Infective Endocarditis

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Introduction

- *Actinomyces pyogenes*, also known as *Acranobacterium pyogenes*, is a gram positive pleomorphic bacillus that is commensal to the oral flora of sheep, swine, and cattle, and is a common cause of pyogenic infections in animals⁴
- There are very few reports of infections in humans, with most related to animal contact in rural areas¹
- We present an extremely rare case of infective endocarditis (IE) by *Actinomyces pyogenes* in an urban setting

Case Presentation

- Our patient is a 52-year-old Caucasian male with a history of intravenous drug use, who presented to the emergency department with right-sided weakness, expressive aphasia, and altered mental status, with features of sepsis
- The patient was admitted two weeks prior for bilateral pneumonia and blood cultures were found to be positive for *Actinomyces pyogenes*
- Infectious Disease was not consulted during that admission
- On current admission, CT head showed a large left MCA ischemic stroke
- Further CT imaging was concerning for septic emboli to the lungs and kidney
- Blood cultures grew *Actinomyces pyogenes*
- TEE showed severe mitral valve regurgitation with numerous vegetations
- Mandible X-ray were unremarkable except for dental caries
- HIV was non-reactive and the patient denied licking his needles before drug use or any animal contacts

Case Presentation

- Antibiotic management was guided by treatment of other *Actinomyces* infections that included gentamicin and ampicillin
- Patient was deemed to be a poor surgical candidate due to his altered mental status and recent stroke
- Treatment was ultimately switched to IV penicillin G for a total duration of 12 weeks, followed by PO amoxicillin twice daily for 3 months
- On outpatient follow-up, his focal deficits had significantly improved, his aphasia resolved and he was able to ambulate

Clinical Images

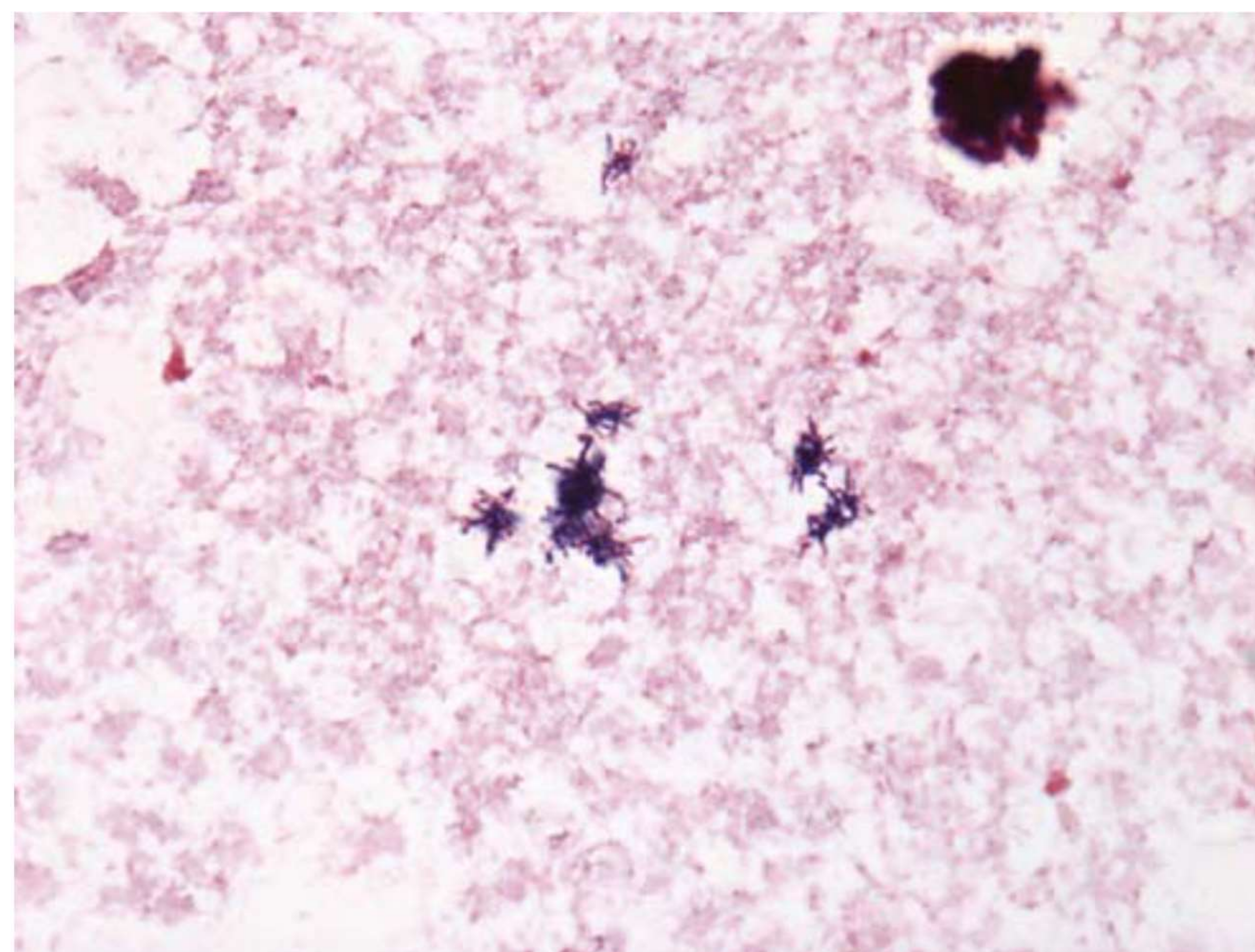


Figure 1: Gram stain of *Actinomyces pyogenes* in blood culture, depicting gram positive, filamentous branching rods⁶

Discussion

- *A. pyogenes* has rarely been reported to cause of infections in humans, with most related to rural settings¹
- Challenge in diagnosis have been related to limited microbiological data and misidentification of the organism⁶
- There are only two case reports of *A. pyogenes* infective endocarditis (IE) in the literature. One includes a patient with no reported animal exposure with multiple embolic complications who eventually succumbed to the infection⁶
- Underlying conditions have been present in most reported cases of systemic *A. pyogenes* infection⁶
- Most isolates have shown sensitivity to β -lactams
- Prompt initiation of adequate therapy are of ultimate importance
- Treatment is prolonged and challenging

Conclusion

- *A. Pyogenes* is an atypical cause of IE, and can present acutely with multiple embolic complications
- It is important to consider this pathogen in urban settings even without history of typical exposures to farm animals

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