

A Case Series of Serratia Marcescens Infectious Endocarditis in Persons Who Inject Drugs



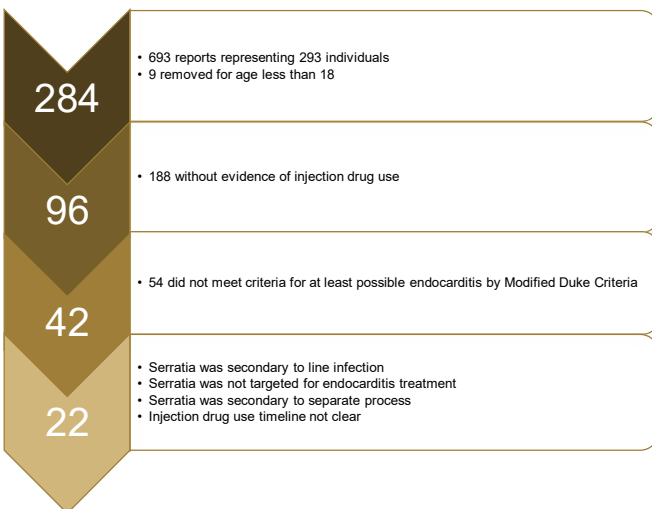
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Background

- Serratia marcescens is a gram-negative bacillus that is widespread in the environment
- Rare cases of endocarditis caused by this organism have been reported
- Atrium Health Wake Forest Baptist (AHWFB) in North Carolina has experienced an increasing number of severe infections with Serratia marcescens, particularly in persons who inject drugs

Methods

- EPIC used to identify all sterile culture sites which grew Serratia Marcescens or Liquifascens in our system
- Queried 8/1/2016 - 4/15/2022



Demographics

Age (years)	29.5
Race	N (%)
Black	2 (9)
White	20 (91)
Gender	
Male	6 (27)
Female	16 (82)
HCV exposed	19 (86)

Characteristics

Bacteremia Duration	xxxxx
Substances Used	N (%)
Opioid Injected	16 (73)
Stimulant Injected	3 (14)
Stimulant Without Route Stated	10 (45)
Blood Culture	
Serratia Only	16 (73)
Polymicrobial	6 (27)
Prior IE Episode	9 (41)
Prosthetic Valve Present	4 (18)

Results

Complications

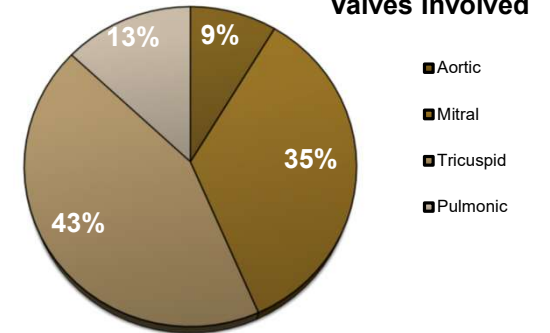
Emboli	N (%)
Lung	10 (45)
Cerebral	7 (32)
Major Arterial	5 (23)
Other	
Epidural abscess	1 (5)
Septic Arthritis or Osteomyelitis	4 (18)
Endophthalmitis	1 (5)

Surgery and Disposition

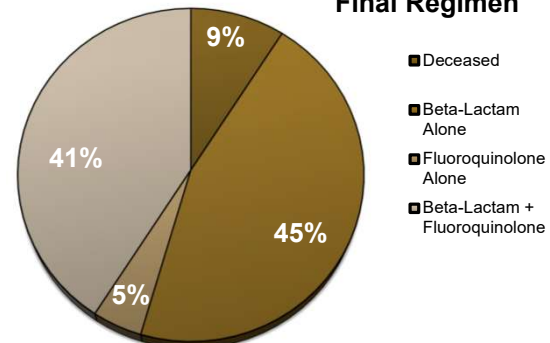
Surgery	N(%)
Aspiration	2 (9)
Valve Repair	16 (73)
Valve Replacement	3 (14)
Disposition	
Deceased	4 (18)
Left AMA	4 (18)
Remained in AHWFB Facility for Duration	16 (73)
Other†	2 (9)

†One was transferred to another facility and one was discharged for daily infusions administered in an infusion center through peripheral IVs placed each day

Valves Involved



Final Regimen



Discussion

- AHWFB has a large number of Serratia IE cases in PWID, the largest number reported in the US since a 1969-1974 series in the San Francisco Bay Area
- Likely sources include contaminated tap water used for drug mixing
- Further study to determine if this a regional or national trend is warranted as is study on the ideal treatment regimen

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Background

Serratia marcescens is a gram-negative bacillus that is widespread in the environment and has been recognized as a rare cause of infective endocarditis (IE), particularly in persons who inject drugs (PWID). The literature consists of a 19 person case series in the 1970s followed by just a handful of case reports and small case series. At AHWFB (Atrium Health Wake Forest Baptist), we have noticed an increasing number of severe infections, including IE, with *Serratia marcescens* in PWID. We aimed to gather data on the population that is getting this infection, the clinical characteristics of the infection, and its treatment at our facility.

Methods

We conducted a retrospective chart review of all cases of *Serratia* grown from sterile culture sites in the AHWFB system between 8/1/2016 -10/31/2021. Charts were reviewed to confirm status of injection drug use in the 3 months prior to admission, ≥18 years old, and possible or definite IE by Modified Duke's criteria.

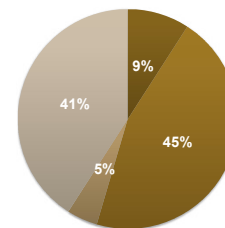
Results:

Twenty two participants were included in the study. The median age was 29.5 years. Eighteen (82%) were white and 16 (73%) were female. Sixteen (73%) had injection of opioids and 3 (14%) had injection of stimulants clearly indicated. Ten (45.5%) had stimulant use documented but the route was not clear. Nineteen (95%) had evidence of active or resolved HCV infection. The median duration of bacteremia was 2 days. Two cases of IE involved the aortic valve, 8 mitral, 3 pulmonic, and 10 tricuspid. Four (18%) of the participants had prosthetic valve IE. Nine (41%) of the participants had a history of previous IE episode. Eighteen participants had evidence of septic emboli: 10 pulmonary, 7 cerebral, and 5 major arterial. In terms of disposition, 4 (18%) patients died, 4 left against medical advice, 12 (54%) remained at a facility for the duration of their antibiotics. One patient was transferred to another facility and one was discharged to complete antibiotic therapy via peripheral IVs in an infusion center. Two patients expired before a final antibiotic regimen could be determined. Ten participants were treated with beta lactam monotherapy, 1 with fluoroquinolone monotherapy, and 9 with dual therapy with a beta lactam and fluoroquinolone.

SAMPLE CHARTS AND GRAPHS

Demographics	
Age (years)	29.5
Race	N (%)
Black	2 (9)
White	18 (82)
Unknown	2 (9)
Gender	
Male	6 (27)
Female	16 (82)
HCV exposed	19 (86)

Final Regimen



- Deceased
- Beta lactam monotherapy
- Fluoroquinolone monotherapy
- Dual beta lactam plus fluoroquinolone