Significance of Bacteremia in Left Ventricular Assist Device Infections due to *Pseudomonas aeruginosa*

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BACKGROUND

- Infection is one of the most common complications of Left Ventricular Assist Devices (LVADs).
- Pseudomonas aeruginosa (PA) LVAD infections in particular are challenging due to limited antibiotic options and tendency to form biofilm making eradication difficult.

OBJECTIVE

- In this study we examined the implications of PA bloodstream infection (PA-BSI) in patients with PA LVAD infections (PA-LVADI)

METHODS

- Single center retrospective review using electronic medical records.
- Inclusion criteria
  - ≥ 18 years old at time of LVAD placement.
  - LVAD placed from 7/1/2007 to 2/1/2021 at Cleveland Clinic, Ohio who developed proven or probable driveline infection (DLI), pump pocket, or pump/cannula infection due to PA according to International Society for Heart & Lung Transplantation criteria

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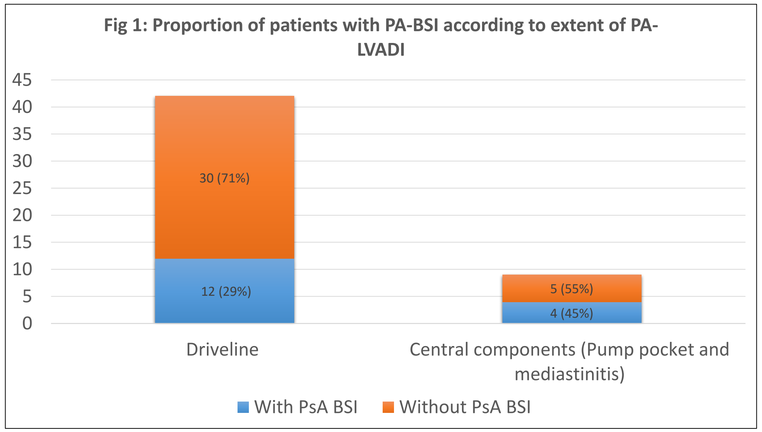
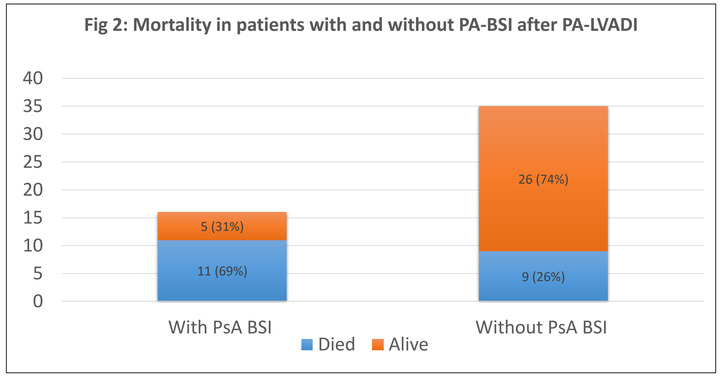
RESULTS

Characteristics and outcomes of PA-BSI after PA-LVADI (n = 16)

Proportion of patients with PA-BSI according to highest extent of PA-LVADI (Fig 1): • Driveline • Pump pocket • Mediastinitis	12 / 42 (29%) 2 / 5 (40%) 2 / 4 (50%)
Median no. of PA-BSI episodes per patient	3 (1 – 5)
No. of patients required surgical intervention after PA-BSI	15 / 16 (94%)
Mortality in patients (Fig 2) • Who developed PA-BSI • Who did not develop PA-BSI	 11 / 16 (69%) 9 / 35 (26%)

- There were 717 patients that received LVAD during our study period.
- 51 / 717 had proven or probable VAD-specific infection PA. 16/51 (31%) developed PA-BSI after PA-LVADI.





- Total 41 episodes of PA-BSI identified. 21/41 (51%) PA-BSI episodes were in patients already on antibiotics for PA with a median duration of 49 days (7-198) prior to onset of bacteremia.

CONCLUSION

- A significant number of patients with PA-LVADI develop bacteremia, especially in those with involvement of central LVAD components.
- The presence of bacteremia should prompt evaluation for ascending infection.
- Most of the patients who developed bacteremia died, even when infection appeared limited to driveline. It is possible that endoluminal infections were present in these cases.
- A substantial proportion of patients with bacteremia were on antibiotics at the time of bacteremia, which suggests that suppressive antibiotics alone may not be effective in controlling PA-LVADI.

Disclosure statement: No conflict of interest to disclose.