

OUTCOMES OF PSEUDOMONAS AERUGINOSA VENTRICULAR ASSIST DEVICE INFECTION

Lalitha Thirunavukarasu Murugan¹, Nabin Shrestha¹, Jona Banzon¹
¹ Department of Infectious Diseases, Cleveland Clinic Foundation, Cleveland, OH

Contact Info:
 Lalitha Thirunavukarasu Murugan, MD
 thirunl2@ccf.org
 9500 Euclid Ave., G21
 Cleveland, OH 44195

BACKGROUND

- Ventricular assist device (VAD) infections caused *Pseudomonas aeruginosa* (PA) are difficult to treat given limited antibiotic options, development of resistance and biofilm formation in the presence of retained hardware.

OBJECTIVE

- To study outcomes of patients with *Pseudomonas aeruginosa* LVAD infection (PA-LVADI).

METHODS

- Single center retrospective review using electronic medical records
- Following PA infection, cumulative incidences of death, transplant, and LVAD explant were evaluated as competing outcomes.
- Inclusion criteria:
 - ≥ 18 years old who received LVAD placement from 7/1/2007 to 2/1/2021 at Cleveland Clinic, Ohio and subsequently developed PA-LVADI.
 - Patients with proven or probable VAD-specific infections. According to International Society of Heart & Lung Transplantation criteria: driveline infection (DLI), pump pocket, and pump/cannula infections.

CONCLUSION

- This is the largest study on PA-LVADI to date.
- We noted significant morbidity and mortality, with 90% of patients requiring prolonged IV antibiotics and over half requiring surgical treatment. Drug resistance emerged in a significant proportion of patients.
- Survival after transplant was excellent, but by 2 years of infection over half of the patients have been transplanted, explanted, or died.

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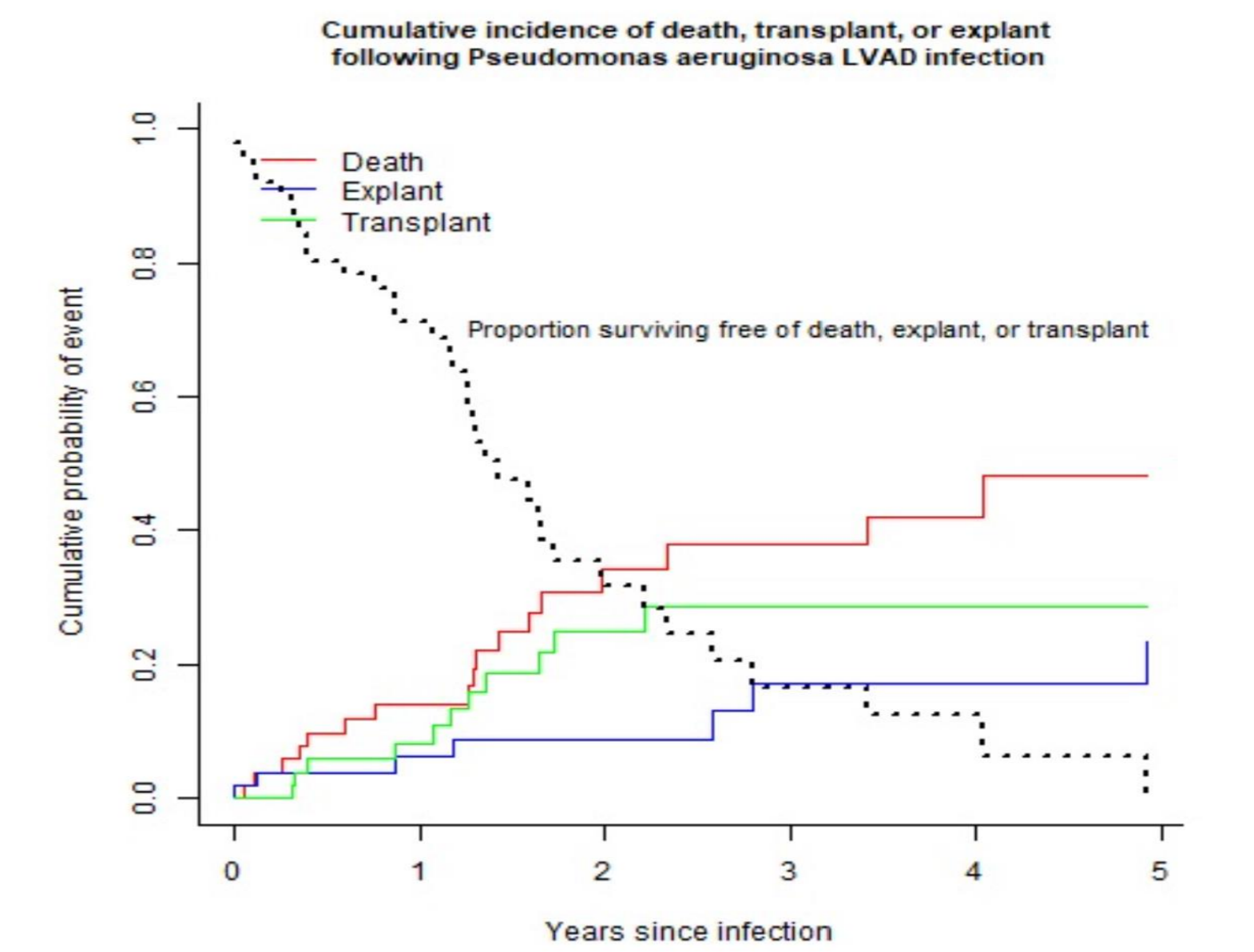
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RESULTS

Baseline characteristics during LVAD placement, n=51	
Age in years, median (range)	55 (23 - 74)
Male sex, n (%)	38 / 51 (75%)
LVAD type, n (%)	
• HeartMate 2	18 / 51 (35%)
• HeartMate 3	28 / 51 (55%)
• HeartWare	5 / 51 (10%)
Heart failure etiology, n (%)	
• Ischemic heart disease	19 / 51 (37%)
• Non-ischemic heart disease	32 / 51 (63%)
Chronic kidney disease, n (%)	16 / 51 (31%)
Cardiac Implantable Electronic Device, n (%)	38 / 51 (75%)
Goal of initial LVAD placement	
• Bridge-to-transplant (BTT)	26 / 51 (51%)
• Destination therapy (DT)*	25 / 51 (49%)
(*2 of the 25 DTs were listed for transplant later)	

Outcomes of PA-LVADI, n=51	
Median no. of days from LVAD to first PA-LVADI	587 (54-3389)
PA as first causative organism	30 / 51 (59%)
Extent of first PA-LVADI	
• Superficial DLI	43 / 51 (84%)
• Deep DLI	5 / 51 (10%)
• Pump pocket	2 / 51 (4%)
• Pump / cannula	1 / 51 (2%)
Patient received IV therapy	46 / 51 (90%)
Median duration of total IV therapy	84 (2 – 525)
Antibiotic resistance emerged	25 / 51 (49%)
Surgical intervention	30 / 51 (58%)
Ever listed for transplant	28 / 51 (55%)
• Received heart transplant	13 / 28 (46%)
• Delisted	8 / 28 (29%)
• Alive, listed for transplant	7 / 28 (25%)



- 12/13 who received heart transplants were followed for at least 1 year post-transplant and all were alive.
- 5 of the remaining 38 patients underwent pump exchange or explant. 20/38 (53%) of patients, who were not transplanted, died.

