

Title

Evaluating Resistance Patterns of LVAD-related Pseudomonas Infections

Authors:

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Abstract

Left ventricular assist devices (LVADs) provide a clear benefit to patients with end-stage heart failure. Despite this, device-related infections such as driveline infections, device pocket infections, and LVAD-related bloodstream infections occur in up to 39% of implanted patients. *Pseudomonas aeruginosa* is a common causative organism in LVAD-associated infections and frequently develops resistance, limiting treatment options. This study aims to analyze the (1) duration of antibiotic courses prior to acquired resistance (AR), (2) frequency of AR on single-agent antibiotic courses, and (3) the increased risk in developing AR between different antibiotic classes. This single-center retrospective cohort study analyzed all patients with LVAD-associated *P. aeruginosa* infections between 2011 and 2023. The incidence and cumulative proportion of AR were estimated using Poisson regression and Kaplan-Meier curve analysis, respectively. A marginal proportional hazards model was used to analyze time to AR between different antibiotic groups. The median time to developed resistance was calculated for each antibiotic type and compared between groups. In conclusion, this study showed that patients with LVAD-associated *P. aeruginosa* infections can remain on cefepime for longer durations prior to acquiring resistance. Cefepime had the lowest incidence rates of acquired resistance. The risk of developing resistance substantially increased with other antibiotics in comparison to cefepime.