Impact of Antibiotic Selection for Prophylaxis of Left Ventricular Assist Device Surgical Infections

Peter Nguyen[1], Peter Colley[1], Teena Sam[1], Johanna Van Zyl[2], Joost Felius[2], Mezgebe Berhe[1], and Dan Meyer[1]

[1]Baylor University Medical Center at Dallas
[2]Baylor Scott & White Research Institute

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Abstract

Surgical site infections (SSI) after left ventricular assist device (LVAD) implantation are associated with high mortality, while surgical prophylaxis is variable. This retrospective study included adult patients who underwent LVAD implantation at a single center. We compared outcomes in patients who received narrow antimicrobial prophylaxis (cefazolin, vancomycin or both) to those who received broad antimicrobial prophylaxis (any antimicrobial combination targeting gram-positive and gram-negative organisms not included in the narrow group) at 30 days and 1 year post-implantation. Cox-proportional hazards models and log-rank tests were used for survival analysis. Among the 39 and 65 patients comprising narrow and broad groups respectively, there was no difference in rate of SSI at 30 days (6.2% vs 12.8%, p = 0.290) and 1 year (16.9% vs 25.6%, p = 0.435). Comparing narrow to broad prophylaxis, the risk of mortality [HR (95% CI): 0.44 (0.15. 1.35), logrank P = 0.14], and composite of mortality and infection was reduced [HR (95% CI): 0.92 (0.45, 1.88), logrank P = 0.83], but did not reach statistical significance. Most culture positive infections were due to gram-positive bacteria (70%) and the most common organisms were the Staphylococcus spp (47%). There were no significant differences in the rate of SSI at 1-year (p=1.00) and mortality (p=0.33) by device type. The rates of infection and all-cause mortality were not different between patients who received narrow or broad prophylaxis. This highlights an opportunity for institutions to narrow their surgical infection prophylaxis protocols to primarily cover gram-positive organisms.

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