Adverse Outcomes Associated with Potentially Inappropriate Antibiotic Use in Heart Failure Admissions: A Retrospective Cohort Analysis.

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Goals:
- Compare length of stay, readmission rates, and furosemide equivalents in patients who received antibiotics admitted heart failure exacerbations compared to patients who did not receive antibiotics.

Background:
Hospital admissions due to acute decompensated heart failure (ADHF) are common, and the clinical presentation can be confused with other conditions such as pneumonia. Hospitalized ADHF patients often receive antibiotic therapy even when the clinical suspicion for pneumonia is low. In such patients, intravenous (IV) antibiotics are commonly used. We hypothesized the additional fluid and sodium content of potentially unnecessary antibiotic therapy could worsen outcomes and complicate management of ADHF patients.

Methods:
We conducted a retrospective cohort analysis of adult patients with a diagnosis of ADHF. Patients were excluded if chest radiography suggested pneumonia, if they were continuing a prior antibiotic regimen, if they were diagnosed with a proven infection during admission, or if serum BNP level was not elevated. Patients who received antibiotics were compared with those who did not with respect to diuretic requirements, length of stay, sodium and fluid load attributable to antibiotic treatment, and readmission rate.

Results:
- 337 patients were screened for inclusion of which 153 were enrolled, 89 in the non-antibiotic arm compared to 64 in the antibiotic arm. Median length of stay in the antibiotic arm was 6.5 days as opposed to 3.25 days in the non-antibiotic arm (p<0.001). The antibiotic group received a median dosage of 1000mg of furosemide compared to 400mg in the non-antibiotic arm (p<0.001). Patients who received antibiotics were 2.51 times more likely to be readmitted compared to patients who did not receive antibiotics (p=0.04). On average, each patient in the antibiotic arm received approximately 970 mg of sodium daily and 1.6L of volume attributed to antibiotic infusions.

Conclusion:
Patients who received IV antibiotics during treatment for ADHF without evidence of infection had significantly longer lengths of stay, received significantly higher doses of furosemide, and were more likely to be readmitted compared to patients with the same diagnosis who were not exposed to intravenous antibiotics. Additional studies are needed to determine factors contributing to potential overprescribing in this population, and ADHF patients are a promising target of antibiotic stewardship interventions.

References:
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