00664 Evaluating the impact of the Accelerate PhenoTest® BC Kit on patients with bloodstream infections receiving ineffective empirical antibiotic treatment: IOAS study experience of 4 hospitals

02. Bacterial infection & disease

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Background

Bloodstream infections (BSI) are a leading cause of morbidity and mortality in hospitalized patients. Ineffective empirical antibiotic treatment (IET) is associated with higher mortality and is one of the only potentially modifiable risk factors. The objective of this arm of the Improving Outcomes and Antibiotic Stewardship (IOAS) study was to measure the effect of AXDX on antibiotic modifications and 30-day all-cause mortality among patients with BSI who did not receive appropriate empirical treatment.

Methods

This multicenter, quasi-experimental study compares clinical and antimicrobial stewardship metrics, prior to and after implementation of AXDX, to evaluate the impact this technology has on patients with BSI. Laboratory and clinical data from hospitalized patients with BSI (excluding contaminants) were compared between two groups, one that underwent testing on AXDX and one that underwent alternative organism identification and susceptibility testing (SOC). An interim analysis of patients who received IET (defined as ≥1 pathogen isolated from the index positive blood culture that was not susceptible to all antibiotics administered prior to blood culture positivity) from 4 centers was performed.

Results

Of 750 patients with BSI, 182 (24.3%) received IET [SOC: 82/377 (21.8%) vs. AXDX: 100/373 (26.8%); P=0.11]. Patient demographics, comorbidities, and Pitt bacteremia score (PBS) were similar between SOC and AXDX patients who received IET, as were the distributions of gram-negative (71%) and gram-positive (20%) BSI. Median time (hours) to effective therapy [SOC: 12.6 (2.7-37.1) vs. AXDX: 5.9 (2.9-13.6); P=0.027] was faster for patients in the AXDX group. The percentage receiving effective antibiotic treatment at 24 hours following blood culture positivity was significantly higher in AXDX (83.0%) than in SOC (64.6%; P=0.005). Among patients who received IET, 30-day mortality was lower in AXDX (6.0%; 6/100) than in SOC (15.9%; 13/82; P=0.03). A PBS ≥4 (adjusted odds ratio [aOR], 14.33; 95% CI, 4.67-44.03) and use of SOC (aOR, 4.29; 1.36-13.46) were independent risk factors for 30-day mortality.

Conclusions

In patients who receive IET for BSI, use of AXDX was associated with decreased time to effective therapy and 30-day mortality. These findings underscore the effect of rapid organism identification and phenotypic antimicrobial susceptibility testing on optimizing antibiotic therapy and improving patient care.