1579. Reduction of Antimicrobial Resistance among Gram-Negative Pathogens after Antimicrobial Stewardship in Three Tertiary Egyptian Hospitals
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Background. Antimicrobial resistance is an urgent healthcare threat. Monitoring and interventions to reduce antimicrobial resistance among Gram-negative rods (GNR) are essential.
Methods. The study was conducted over three years in three tertiary care hospitals in Egypt during 2014−2016. It included 578 isolates from intra-abdominal infections (IAI), urinary tract infections (UTI) and respiratory tract infections (RTI). Identification of isolates was done by VITEK-2, and confirmed by MALDI-TOF at a central laborator. The study is a part of Study for Monitoring Antimicrobial Resistance Trends (SMART). Susceptibility testing and molecular studies of resistance were conducted in the hospital laboratories. Starting from 2015, an antimicrobial stewardship (AMS) program was implemented in the 3 hospitals for fluoroquinolone restriction in empirical therapy, and early de-escalation of antimicrobial therapy.
Results. In Phase 1 (before AMS), 578 isolates of Gram-negative bacilli (GNB) were studied. Enterobacteriaceae comprised 66% of the total isolates. K. pneumoniae and E.coli were the most common (29.8% and 29.4%), followed by Acinetobacter baumanii (21.1%) and Pseudomonas (9.9%). K. pneumoniae and E.coli were the predominant organisms in IAI (30.5% and 30.1% respectively) and UTI (38.9% and 48.6% respectively), while Acinetobacter baumanii was the most prevalent in RTI (40.2%). ESBL producers were phenotypically detected in 53% of K. pneumoniae, 68% of E.coli and 64% of Proteus mirabilis. Amikacin, imipenem, ertapenem and piperacillin/tazobactam were the highest level of resistance (60.7%, 38%, 49.3% and 46.5% respectively).
In Phase 2 (after AMS), 492 Gram-negative bacilli (GNB) were studied, showing similar distribution except for marked reduction in Acinetobacter baumanii (5.3% in IAI, 11.4% in RTI and 1% in UTI). ESBL continued to be high. Susceptibility to carbapenams improved to 88% for E.coli and 77.7% for all Enterobacteriaceae. PCR showed predominance of OXA-48 like (more than 50%) and NDM (more than 40%), with low susceptibility to carbapenams, ESBL continued to be high. Susceptibility to carbapenams improved. In complicated bacteremia, TGA (36% vs. 48%; P = 0.01) and adequate duration of therapy (54% vs. 77%; P = 0.01) were noted while duration of bacteremia decreased (3.6 days vs. 2.8 days; P = 0.02) in the post-implementation period. In uncomplicated bacteremia, TGA (15% vs. 38%; P = 0.02) and adequate duration of therapy (54% vs. 77%; P = 0.02) significantly improved. In complicated bacteremia, TGA vs. 48%; P = 0.14) and targeting of agents utilized (92% vs. 100%; P < 0.01) increased post-implementation. Additionally achieving TGA significantly reduced all cause 30-day mortality in complicated (33% vs. 1.5%; P = 0.01) and uncomplicated (26% vs. 5.6%; P = 0.01) bacteremia for the entire sample.
Conclusion. The Antimicrobial Stewardship initiative significantly improved adherence to evidence-based guidelines for S. aureus bacteremia management. Though no impact on all-cause mortality was observed, a significant effect was noted when TGA was achieved.
Disclosures. All authors: No reported disclosures.

1581. The Value of Antimicrobial Stewardship Team (AST) in Conjunction with Infectious Diseases Consult in Reducing the 30-day Mortality of Patients with Staphylococcus aureus Bacteremia in a Single Academic Medical Center
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Background. Staphylococcus aureus bacteremia (SAB) is a common bloodstream infection with significant mortality. Infectious Disease consultation (IDC) has been shown to improve outcomes and adherence to standards of care (SOC). In our institution, we retrospectively performed a controlled retrospective study to measure the impact of IDC on patient outcomes and adherence to SOC.
Methods. A retrospective, observational study of all SAB cases in adults ≥18 years old at a 1541-bed academic medical center from January 1 to December 31, 2015 was performed. Those meeting inclusion criteria underwent chart review for demographics, co-morbidities, presence of IDC or antimicrobial stewardship team (AST) input, management including follow up blood culture, echocardiography, antibiotic choice and duration, and outcomes including relapse and 30-day mortality.
Results. CNA patients met the predefined criteria and 179/474 (38%) had SAB. IDC. Patient characteristics were balanced in IDC and no IDC (NIDC) groups including age, sex, co-morbidities, methicillin-resistant SAB rates except for more immunosuppressed hosts, bone and joint infections,and endocarditis (P = 0.05) in the IDC group. SOC including performance of echocardiogram, appropriate antibiotic choice and treatment duration were adhered to more frequently in the IDC group (P < 0.005). Relapse rates were similar in IDC and NIDC groups (3% vs. 5%, P = 0.44 respectively). Lower 30-day mortality was observed with IDC but did not reach statistical significance (11% vs. 15%; P = 0.07). Patients with malignancy who had IDC had lower 30-day mortality compared with their counterpart in the NIDC group (6% vs. 35%, P = 0.01).
In the NIDC group, 9/62 (15%) had an AST input that provided recommendations on antibiotic management. When these cases were combined with those with IDC, mortality was significantly improved compared with those without either IDC or AST input (11% vs. 23%, P = 0.04). Multivariable analysis revealed bacteremia clearance within 3 days and presence of AST input or IDC were predictors of survival while age>60 and ICU stay were predictors of mortality (P < 0.005).
Conclusion. Similar to prior studies, IDC was associated with increased adherence to standard management practices. Our study suggests that a pharmacy-driven AST can be an adjunct to IDC in improving outcomes of SAB.
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1582. Impact of an Unsolicited, Simple Standardized Form Based Antimicrobial Stewardship Intervention to Improve Guideline Adherence in the Management of Staphylococcus aureus Bacteremia
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Background. Staphylococcus aureus bacteremia (SAB) is associated with poor outcomes. The objective was to assess the impact of a pharmacist driven antimicrobial stewardship program on SAB management.
Methods. A multicenter, pre-post quasi-experimental design was used to compare pre-intervention (Oct 2014 – Sep 2015) and intervention (Oct 2015 – Sep 2016) periods in hospitalized patients. The antimicrobial stewardship program (ASP) developed an evidence based SAB management bundle that included: Infectious Diseases (ID) consult, blood culture clearance, appropriate empiric and definitive antibiotic therapy, and early de-escalation of antimicrobial therapy. Within the ASP, an evidence-based, standardized form after review with the ASP medical director. The primary outcome was bundle component adherence. Secondary outcomes were length of stay, 30 day mortality, and 30 day mortality.
Results. 236 patients met the inclusion criteria and 174 (74%) had IDC. Patient characteristics were balanced in IDC and no IDC (NIDC) groups including age, sex, co-morbidities, methicillin-resistant SAB rates except for more immunosuppressed hosts, bone and joint infections and endocarditis (P = 0.05) in the IDC group. SOC including performance of echocardiogram, appropriate antibiotic choice and treatment duration were adhered to more frequently in the IDC group (P < 0.005). Relapse rates were similar in IDC and NIDC groups (3% vs. 5%, P = 0.44 respectively). Lower 30-day mortality was observed with IDC but did not reach statistical significance (11% vs. 15%; P = 0.07). Patients with malignancy who had IDC had lower 30-day mortality compared with their counterpart in the NIDC group (6% vs. 35%, P = 0.01).
In the NIDC group, 9/62 (15%) had an AST input that provided recommendations on antibiotic management. When these cases were combined with those with IDC, mortality was significantly improved compared with those without either IDC or AST input (11% vs. 23%, P = 0.04). Multivariable analysis revealed bacteremia clearance within 3 days and presence of AST input or IDC were predictors of survival while age>60 and ICU stay were predictors of mortality (P < 0.005).
Conclusion. Similar to prior studies, IDC was associated with increased adherence to standard management practices. Our study suggests that a pharmacy-driven AST can be an adjunct to IDC in improving outcomes of SAB.
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