Results. 11 consecutive patients with MSSA bacteremia (6 confirmed endocarditis) refractory to standard CZ or NAP rapidly cleared with CZ-ETP. 9 patients had daily positive blood cultures, and 8 cleared in ≤24 hr, including those with ≥2 cm vegetations. All 11 survived hospitalization. In MHB, 3/6 MSSA exhibited a CZ inoculum effect (CZ MIC >3 log, in 10⁻³ vs. 10⁻⁰ CFU/mL), but only 1 showed a significant CZ inoculum effect in RN. CZ-ETP was significantly more efficacious than CZ in 2, the primary model of MSSA endocarditis utilizing a strain displaying a CZ inoculum effect, despite only modest benefit observed in vitro for 6 MSSA isolates.

Conclusion. CZ-ETP combination therapy yielded profound clinical success in severe MSSA infections with high bacterial densities, as demonstrated by rapid bacteremia clearance. Enhanced efficacy was also observed in a rat endocarditis model. The anti-staphylococcal activity of CZ-ETP in vivo exceeded that observed in vitro, consistent with our prior observations of host innate immune cooperativity with the regimen. CZ-ETP warrants further study for the treatment of refractory MSSA bacteremia and endocarditis.

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218. Evaluation of Clinical Outcomes with Shorter Versus Longer Duration of Treatment for Common Inpatient Bacterial Infections Associated with Bacteremia Leila Hojat, MD;† Mary T. Bessesen, MD;† Margaret Reid, MS;© Bryan C. Knepper, MPH, MS;† Matthew A. Miller, PharmD;† Misha Huang, MD, MS;® Randolph V. Fugit, PharmD©; Katherine C. Shihadeh, PharmD© and Timothy C. Jenkins, MD;© 1University of Colorado, Denver, Colorado; 2University of Colorado-Denver, Aurora, Colorado; 3University of Colorado Denver, Colorado School of Public Health, Denver, Colorado; 4Denver Health Medical Center, Denver, Colorado; 5University of Colorado Hospital, Aurora, Colorado; 6University of Colorado Hospital, University of Colorado School of Medicine, Aurora, Colorado; 7Denver VA Medical Center, Aurora, Colorado; 8Denver Health Medical Center, University of Colorado School of Medicine, Denver, Colorado.

Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Pneumonia (PNA), urinary tract infection (UTI), and acute bacterial skin and skin structure infection (ABSSSI) are the most common infections treated in the inpatient setting and often are associated with bacteremia. Though short courses of treatment are advocated for these infections in general, no established guidelines exist for cases involving bacteremia. We evaluated the clinical outcomes of patients receiving short (5-9 days) vs. long (10-15 days) duration of antibiotic treatment.

Methods. A retrospective study was conducted at 3 area hospitals comprising a university-based tertiary care, a public safety net hospital, and a Veterans' Affairs hospital. We included hospitalized adult patients with transient bacteremia associated with endocarditis and antibiotic-related adverse effects leading to change in antibiotic treatment. A propensity score weighted logistic regression model was used to mitigate factors which could bias a patient toward receiving a shorter or longer treatment duration.

Results. Of 411 patients included in the study, 123 (29.9%) received a short duration of therapy and 288 (70.1%) received a long duration of therapy. The median duration of treatment was 8 days in the short group and 13 days in the long group. In the propensity-weighted analysis, the probability of meeting the composite primary outcome was not statistically different between the short and long groups (Table 1). However, receiving a short course was associated with a higher probability of restarting antibiotics and Clostridioides difficile infection. Shorter vs. longer courses of antibiotic treatment for bacteremia associated with PNA, UTI, or ABSSSI were not significantly different in a composite of readmission, restart of antibiotics, and mortality; however, further study is needed to evaluate the safety and effectiveness of short-course therapy.

Table 1

| Category | Short course (n=288) | Long course (n=411) | Odds ratio | P-value |
|----------|---------------------|---------------------|------------|---------|
| Primary outcomes | Frequency | Predicted n (%) | Probability | Predicted n (%) | Probability |
| Composite primary outcome | 35 (12.2) | 11.1% | 15 (12.2) | 15.9% | 1.51 | 0.4220 |
| Secondary outcomes | 20 (7.7%) | 5.9% | 12 (3.0%) | 2.5% | 0.04 | 0.7400 |

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220. Characteristics and Outcomes of Veterans with Invasive Group B Streptococcal Infection Vary with the Type of Syndrome Taisaa Zappernick, BS; Brigid Wilson, PhD; Richard Banks, BS; Daniel Baschile; Sunnah Somka; Matthew A. Miller, PharmD; Janet Briggs, RN, MSN, NP;† Robin L. Jump, MD, PhD and Federico Perez, MD, MSC; 1Louis Stokes VA Medical Center, Cleveland, Ohio; 2Case Western Reserve University, Cleveland, Ohio; 3Case Western Reserve University, Cleveland, Ohio; 4Case Western Reserve University, Cleveland, Ohio.

Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Surveillance from the US Center for Disease Control and Prevention (CDC) has detected an increase in the prevalence of invasive Group B streptococcus (GBS) infections between 2008 and 2016 among non-pregnant adults. Here, we use data from the US Veterans Health Administration (VHA) to assess the underlying clinical characteristics and outcomes associated with specific types of invasive GBS infection among veterans.

Methods. We used the VA Corporate Data Warehouse to identify patients with invasive GBS infection diagnosed between 2008–2017 using CDC's surveillance definitions. Data on the microbiological source of infection (e.g., GBS in cultures from blood, bone or sterile fluids) and associated International Classification of Disease (ICD) codes were used to classify the type of invasive infection. We determined associated co-morbid conditions and 30-day all-cause mortality for incident cases.

Results. Between 2008 and 2017, there were 4760 incident cases of invasive GBS infection in veterans with a mean age of 66.6 years (±11.7) and 30-day all-cause mortality of 8%. The most common syndrome was osteomyelitis (23%, N = 1078) with 30-day mortality of 1%. Other common infections, such as bacteremia (20%; N = 972), skin and soft-tissue infections (18%, 853), and pneumonia (14%; N = 664), had higher mortality (50% for osteomyelitis; Figure). In patients with GBS pneumonia, present in 3% (N = 138) incidence cases, 46% had chronic liver disease with a 30-day mortality of 28%. Diabetes mellitus (DM) occurred in 66% of patients with invasive GBS infection and in 86% of patients with GBS osteomyelitis. Chronic heart, kidney, or lung disease affected ≥2% of patients (Table).

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Conclusion. Invasive GBS infection is a burden for veterans with DM and other high-risk conditions, with some types of infections associated with substantial mortality. Osteomyelitis, the most common type of infection, was associated with lower mortality compared with other invasive GBS infections. DM and chronic lung, kidney and heart disease are common among veterans with invasive GBS infection.

Number of Invasive GBS Infections and 30-day Mortality, 2008-2017

| Year | Infections | Deaths | Recov. |
|------|------------|--------|--------|
| 2008 | 120        | 30     | 90     |
| 2009 | 130        | 35     | 95     |
| 2010 | 140        | 40     | 100    |
| 2011 | 150        | 45     | 105    |
| 2012 | 160        | 50     | 110    |
| 2013 | 170        | 55     | 115    |
| 2014 | 180        | 60     | 120    |
| 2015 | 190        | 65     | 125    |

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222. Bloodstream Infections by Gram(−) Bacteria in Kidney Transplant Patients: Risk Factors, Incidence and Outcome; Bloodstream Infections by Gram(−) Bacteria in Kidney Transplant Patients: Risk Factors, Incidence and Outcome

Thursday, October 3, 2019: 12:15 PM

Background. Kidney transplant recipients are at increased risk for infections. The aims of this study were: i) to estimate the incidence of bloodstream infections (BSI) caused by Gram(−) bacteria in kidney transplant recipients, ii) to identify risk factors for BSI by multidrug-resistant Gram(−) bacteria, and iii) to identify predictors for outcome (death/loss of transplanted kidney).

Methods. We conducted a retrospective cohort study at the renal transplant unit (RTU) of a tertiary care hospital located in Athens, Greece, between September 2008 and September 2018. Kidney transplant recipients with Gram(−) BSIs were identified from the microbiology laboratory electronic records. Patient-, infection-, and treatment-related factors were extracted from the medical records. Species identification and susceptibility testing were performed by MicroScan automated system. The statistical analysis was performed using IBM SPSS Statistics v20.

Results. During the study period, 1962 kidney transplant patients were followed at our RTU. A total of 195 BSI episodes were recorded in 182 patients (male/female=97/85), with median (25th, 75th) age 57.2 (44, 64.9) years. The incidence of BSI was 1.393/100 patient-years. Median (25th, 75th) time interval between transplantation date and onset of BSI was 67.67 (8.3, 148) months. E. coli was the most common cause (64.3%, 117/182), while the most common source of infection was urinary tract (70.9%, 129/182). 19.2% (53/182) of BSIs were caused by multidrug-resistant organisms (MDR). 6% (11/182) of patients died and 2.2% (4/182) were subjected to nephrectomy. Multivariate logistic regression showed that diabetes mellitus (odds ratio [OR] 7.714; 95% confidence interval [CI] 1.311–45.385), Pseudomonas aeruginosa BSI (OR 35.788; CI 3.3–388.182) and septic shock (OR 74.468; CI 3.513–1578.513) were predictors of an unfavorable outcome. Previous antibiotic use (OR 11.964; CI 2.686–53.293) and previous stay in Intensive Care Unit (OR 18.055; CI 1.046–311.536) were associated with MDR BSIs.

Conclusion. BSIs in kidney transplant recipients is a critical factor of morbidity and mortality. Recognizing the risk factors for unfavorable outcome and emergence of MDR bacteria could offer a significant advantage in early diagnosis and appropriate treatment.

Disclosures. All authors: No reported disclosures.

Table. Characteristics and outcome of patients from the US VA with Invasive Group A Streptococcal infections, 2008-2017

| Characteristic | Case | Control |
|---------------|------|---------|
| Age (yrs)     | 57   | 58      |
| Gender (M/F)  | 55/45| 54/46   |
| Race (C/NC)   | 70/30| 60/40   |
| Diabetes      | 20   | 10      |
| Chronic Lung  | 15   | 5       |
| Kidney        | 10   | 5       |
| Heart         | 5    | 2       |
| Mortality     | 3    | 1       |
| MDR BSI       | 15   | 5       |
| Multidrug BSI | 10   | 5       |

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