150. Urinary Tract-Associated Gram-Negative Bacteremia: Impact of Treatment Duration

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

Background. Gram-negative bloodstream infections are one of the leading causes of death in the United States. A select number of studies have been conducted evaluating various treatment durations; however, none have specifically focused on urinary sources. The purpose of this study was to compare the effect of short vs. long course of antimicrobial therapy on clinical and microbiological outcomes for urinary tract-associated gram-negative bacteremia (GNB).

Methods. This was a single-center, retrospective review from January 2016 to October 2018. Subjects were screened using a report of all positive GNB cultures. Hospitalized patients ≥18 years of age were included if they had a bacteremia from a urinary source and received an intravenous or a highly bioavailable oral agent for ≥7 days. Patients were excluded due to pregnancy, incarceration, inappropriate definitive therapy, polymicrobial bacteremia, unaddressed source control issues, or death during the treatment course. Short course (SC) was defined as 7–10 days, while long course (LC) was defined as >10 days. The primary composite outcome of treatment failure included both 30-day all-cause mortality and 90-day recurrence. Secondary outcomes included 30-day re-admission, 90-day mortality, resistance development, and *C. difficile* infection.

Results. A total of 207 patients were included: 45 patients received SC and 162 received LC. Both groups were similar at baseline in terms of comorbidities, intensive care unit (ICU) admission, and vasopressor initiation. No statistically significant difference in the primary composite endpoint was observed: 2/45 (4.4%) SC vs. LC 10/162 (6.2%), P = 0.66. There was also no difference in other secondary outcomes.

Conclusion. Consistent with prior studies, we were unable to find a significant difference in clinical failure rates between SC vs. LC for treatment of urinary tract-associated GNB. Generalizability to more complicated cases including those with inadequate source control may be limited; however, these data add to the body of literature supporting the use of shorter antibiotic durations.

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151. Comparing the Clinical Utility of Rapid Diagnostic Tests for Gram-Negative Bloodstream Infection Using a Desirability of Outcomes Ranking

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

Background. Rapid diagnostic testing (RDT) technology in bloodstream infections (BSI) has outpaced provider understanding of how to effectively use it. To optimize the use of RDT platforms and antibiotic therapy, decision makers must determine which RDTs to implement at their institutions. A thorough understanding of which platform to choose extends beyond simple analytic measures of sensitivities and specificities and should include a robust analysis of how these RDTs could impact clinical decisions.

Methods. Retrospective study of adult patients with Gram-negative (GN) BSI from at University of Maryland Medical Center. The clinical microbiology laboratory used Verigene® BC-GN in clinical practice. Discarded blood samples were run on BioFire® FilmArray BCID. Final organism identification/susceptibility, antibiotic exposures, and clinical outcomes were reviewed. DOOR was applied to theoretical therapy decisions based on both actual prescribing adherence to institutional algorithm recommendations; 1 being most and 6 being least desirable (Table 1). A partial credit scoring system was applied to DOOR from most (100) to least desirable (0) outcome. Comparisons were made in a paired manner.

Results. 77 patients met inclusion. The median age was 58 (IQR 47, 68), 44.2% were in the ICU, and 75.3% had ID consult within 24 hours of BSI. Organism identification included: *E. coli* (35.1%), *K. pneumoniae* (23.4%), *P. mirabilis* (10.4%), *S. marcescens* (10.4%), *Enterobacter* spp. (9.4%), *P. aeruginosa* (3.9%). The only resistance determinant was CTX-M (11.6%). An antibiotic change occurred in 26.2% of cases, divided between antibiotic escalation and de-escalation. Based on the actual utilization of RDT results, median DOOR was not different between BC-GN and BCID (3 [IQR 3.4] vs. 4 [IQR 3.4], *P* = 0.44). Using a partial credit scoring system, the mean score was not different between platforms (49.8 [SD 26.8] vs. 47.7 [SD 20.3], *P* = 0.44). Through pairwise comparisons, BC-GN would have resulted in an optimal outcome of 15.3% (95% CI 4.7% to 19.3%) more often than BCID.

Conclusion. Based on the actual use of RDTs for GN BSI there was no difference in potential clinical outcomes between platforms in this relatively small sample. DOOR is a novel mechanism to quantitate clinical utility and compare RDTs.

Rank	Outcome
1	Escalation to effective therapy
2	De-escalation to effective therapy
3	No change, empiric therapy optimal
4	No change, empiric therapy effective
5	Inappropriate escalation to effective therapy
6	Inappropriate de-escalation or change to ineffective therapy

Disclosures. **All authors:** No reported disclosures.

152. Brevibacterium species: Case Series and Literature Review of an Emerging Opportunistic Cause of Bloodstream Infections

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

Background. *Brevibacterium species* are non-motile, catalase-positive, obligate aerobic gram-positive bacilli. Colonies are yellow to gray-white, non-hemolytic, smooth, 6.5% sodium chloride tolerant. *B. fermentans* post neurosurgical meningitis was first described in 1969 in an infant. *B. casei* remains the most commonly isolated species (Table 4). The most commonly reported syndromes are bloodstream infections (BSIs) and endocarditis. Despite these reports, this organism continues to be listed on CDC's NHSN commensal database.

Methods. Isolates of *Brevibacterium* from clinical samples at Mayo Clinic, Rochester from January 1, 2014 to December 31, 2018 were identified. Charts were reviewed to determine patient demographics, immune status, source of culture, comorbidities, antibiotic susceptibility test (AST), length of stay (LOS) in hospital and intensive care unit (ICU), and mortality. Likelihood ratio (L-R) and Pearson correlation coefficient (PCC) of nominal data were calculated using the Chi-square test and Fischer exact test (FET). We defined statistical significance as $P \leq 0.05$.

Results. We identified 48 isolates from 45 unique patients, 46% were females. Distribution of age, hospital and ICU LOS, and time to culture growth, and AST data are shown in Table 1. 15.5% patients received allogeneic or autologous stem cell (SCT), or solid-organ transplant (SOT) recipients. 89% cultures were from sterile sources and 68.75% were blood cultures. Of these, 63.64% were monomicrobial. 62% of isolates identified to species level were *B. casei.* 5 patients were treated; an additional 10 received active antibiotics for other indications. Statistically significant variables are reported in Tables 2 and 3. Thirty-day mortality was 13%. This was higher in patients with bacteremia (L-R: 5.3 [P = 0.02]) but FET was not statistically significance (P = 0.15).

Conclusion. Accurate diagnosis of *Brevibacterium* may require molecular techniques. At our center, SCT or SOT recipient status and recent chemotherapy were associated with bacteremia. In these patients, this organism could represent an opportunistic cause of BSI. AST data suggest that Vancomycin offers a reasonable empiric treatment option. Additional data are needed to further define host populations in whom this organism presents pathogenicity.

Table 1: Secondary Variables and Antimicrobial Susceptibility Test Results

Parameter	Unit	Median	Interquartile Range
Age	Years	59	51 – 72
Hospital Length of Stay (LOS)	Days	6	4 – 17
Intensive Care Unit LOS	Days	1	0 – 2.5
Time to Growth	Hours	57	46.25 – 85.5
Antibiotic	**Susceptible (%)**	**Intermediate (%)**	**Resistant (%)**
Vancomycin	7/7 (100)	0	0
Penicillin	2/7 (28.5)	4/7 (57)	1/7 (14)
Ceftriaxone	2/7 (28.5)	2/7 (28.5)	3/7 (43)
Meropenem	6/7 (86)	1/7 (14)	0
Antibiotic susceptibility test was performed only on 7/48 (14%) isolates Minimum Inhibitory Concentration calculated and interpreted according to current CLSI Breakpoints			

Table 2: Likelihood of Bacteremia by Transplant Status

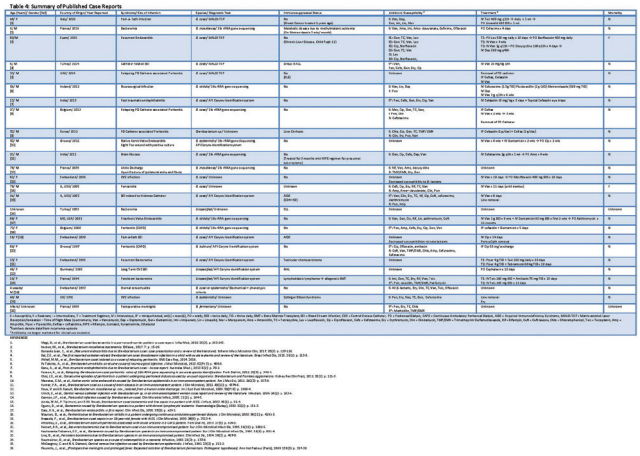
Count Total % Col % Row %	Other Source of Positive Culture	Blood Culture	Total
No Transplant	15 33.33 100.00 39.47	23 51.11 76.67 60.53	38 84.44
Transplant	0 0.00 0.00 0.00	7 15.56 23.33 100.00	7 15.56
Total	15 33.33	30 66.67	45

Test	Chi Square	P - value
Likelihood Ratio	6.304	0.0120
Pearson	4.145	0.0418

Table 3: Likelihood of Bacteremia by Recent Chemotherapy

Count Total % Col % Row %	Other Source of Positive Culture	Blood Culture	Total
No Recent Chemotherapy	15 33.33 100.00 41.67	21 46.67 70.00 58.33	36 80.00
Recent Chemotherapy	0 0.00 0.00 0.00	9 20.00 30.00 100.00	9 20.00
Total	15 33.33	30 66.67	45

Test	Chi Square	P - value
Likelihood Ratio	8.384	0.0038*
Pearson	5.625	0.0177*



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153. A Review of Ten Cases of Pulmonic Valve Infective Endocarditis

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

Background. Pulmonic valve (PV) infective endocarditis (IE) is a rare entity, accounting for ~1.5–2% of all cases of IE. As a result, published literature describing the diagnosis and management of patients with PVIE is limited.

Methods. A retrospective review of patients ≥18 years old admitted to Wake Forest Baptist Medical Center from 2012 to 2017 with a diagnosis of PVIE based on the modified Duke criteria was performed.

Results. Ten patients were identified as having PVIE, 9 of whom had isolated PV involvement and 1 of whom had concurrent aortic valve involvement. The diagnosis of IE was definite per the modified Duke criteria in 8 patients. The median age was 41 years and 30% were female. Two patients had pacemakers, 1 had a prosthetic PV, and 1 had congenital heart disease. Six patients were identified as persons who inject drugs (PWID). On admission, 5 patients manifested fever and 5 had a documented murmur. Seven patients had septic pulmonary emboli with 4 of 7 patients manifesting pulmonary hypertension. Transthoracic echocardiography (TTE) revealed vegetations in 4 of 10 patients whereas PV vegetations were demonstrated in all 8 patients undergoing transesophageal echocardiography (TEE). *S. aureus* was the most common causative organism, accounting for 5 of the cases of PVIE with four of the five isolates being methicillin-resistant. Bacteremia persisted for a median of 3 days. One patient underwent PV replacement. The planned median duration of antimicrobial therapy was 6 weeks. The median length of stay was 18 days. Three patients died during the index hospitalization, 1 of whom was a PWID. No episodes of repeat PVIE occurred within 1 year.

Conclusion. PVIE is a rare disease. Only 40% of our patients had vegetations on TTE in contrast to a reported diagnostic yield of >90% in the literature. As such, PVIE may be underdiagnosed. *S aureus* was the most common organism isolated, which is in keeping with prior reports. PWID appear to be at high risk for PVIE. In view of the worsening opioid epidemic, more research on PVIE is warranted.

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154. Do I Really Need a Transesophageal Echo? Comparing Echocardiographic Modalities in Native Valve Infective Endocarditis due to Methicillin-Resistant Staphylococcus aureus

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Thursday, October 3, 2019: 12:15 PM

Background. Methicillin-resistant *Staphylococcus aureus* (MRSA) infective endocarditis (IE) is associated with high morbidity and mortality. Management commonly includes six-weeks of antibiotics and surgical intervention, if the patient has complications. Current guidelines recommend obtaining an echocardiogram. Transesophageal echocardiogram (TEE) is preferred over transthoracic echocardiogram (TTE). We wanted to evaluate the role of a TEE in changing management of MRSA IE.

Methods. A retrospective cohort of patients with MRSA IE was analyzed between January 2013 and July 2017 at a tertiary care facility in East Tennessee. Patients with prosthetic valves or cardiac devices were excluded. Demographic, echocardiographic, antibiotic, blood culture, mortality, and intravenous drug use data were collected (Figure 1).

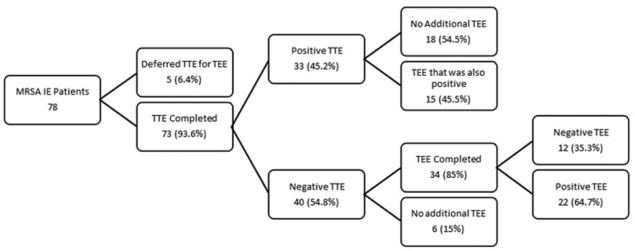
Results. Seventy-eight patients met the inclusion criteria. TTE was performed on 73 patients while five patients proceeded directly to TEE. Of the 73 patients that had a TTE, 33 (45.2%) detected the presence of vegetation and 40 (54.8%) did not. Of the 33 patients with a positive TTE, 15 subsequently underwent TEE, confirming IE. Out of the 40 patients with a negative TTE, 34 underwent TEE, of which 22 (64.7%) showed a vegetation. (Figure 2). A total of ten patients (12.8%) from the study underwent surgery. Of these ten, three (30%) had a positive TTE only, with no subsequent TEE. Five (50%) had both a positive TTE and TEE, and two (20%) had a negative TTE but positive TEE.

Conclusion. Transthoracic echocardiogram was adequate to visualize vegetations in 45.2% of patients. Completing a TEE increased the sensitivity of visualizing a vegetation, but management was most often not altered. Only two patients (5%) with a negative TTE, but positive TEE proceeded to surgery because of the findings. This causes us to question whether a subsequent TEE needs to be pursued when a TTE is negative in the setting of definite or possible IE by the modified Duke criteria. Even if a vegetation is seen on TEE the patient would most likely receive the same treatment, 6 weeks of intravenous antibiotics, as if no vegetation was seen. Forgoing a TEE reduces risk to the patient of undergoing a procedure, and reduces costs to the healthcare system.

Figure 1. Demographic Data

Age	Mean= 38 years	Range= 20-74 years	
Race	White= 72 (92.3%)	Black= 3 (3.9%)	Unable to Determine= 3 (3.9%)
Intravenous Drug Use	Yes= 63 (80.8%)	No= 15 (19.2%)	
Hepatitis C Infection	Yes= 39 (50%)	No= 39 (50%)	
Disposition	Discharged= 58 (74.4%)	Left Against Medical Advice= 10 (12.8%)	Expired in Hospital= 10 (12.8%)
Gender	Male= 40 (51.3%)	Female= 38 (48.7%)	

Figure 2. Imaging modality and results.



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155. A Case Series of Patients with Gemella Endocarditis

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