1056. Predicting Central Nervous System Complications in *Staphylococcus aureus* Bacteremia Using Clinical Scoring System

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Background. Central nervous system (CNS) complications occurring in patients with *Staphylococcus aureus* bacteremia (SAB) are the most severe complications. In this study, we compared clinical data of SAB patients between cases with and without CNS complication and analyzed the risk factor of CNS complications.

Methods. Data from cases with SAB occurred during 5 years at four hospitals were collected. The presence of CNS complications was confirmed by brain MRI, CT, or lumbar puncture. We excluded the cases who already had CNS lesions such as trauma, brain tumor, or cerebrovascular accident. We also excluded the cases who were died or transfer out <7 days of bacteremia onset. Cases were divided into complication group or noncomplication group according to the presence of CNS complication. We compared the clinical profiles between the groups, and analyzed the risk factor of CNS complications by multivariate logistic regression analysis.

Results. A total of 1,085 cases of SAB patients were included. Among these, 43 (4%) cases were complication group (embolic infarct [n = 23], brain hemorrhage [n = 8], infarct with hemorrhage [n = 8], and brain abscess or meningitis [n = 4]), while 810 (74%) cases were noncomplication group. Two hundred and forty-one cases were excluded. The results of multivariate analysis were shown in table. When selecting by having less than three factors among SOFA > 5, methicillin-susceptible, endovascular infection (weight 2), presence of metastatic infection and community onset, it helps to exclude CNS complications (AUC of ROC curve = 0.77, P < 0.01, sensitivity; 67.5%, specificity: 75.5%, positive predictive value: 12.9%, negative predictive value 97.7%).

Conclusion. CNS complication could be excluded by using clinical variables

Variables	Complication Group (n = 43)	Non-Complication Group (n = 801)	*P*-Value	Adjusted Odds Ratio	*P*-Value
Sex (m)	23 (54%)	499 (62%)	0.25	1.4 (0.8–2.8)	0.28
Age (mean)	66 (¡¾17)	64 (¡¾16)	0.38		
Community onset	30 (70%)	450 (56%)	0.08	1.3 (0.7–2.7)	0.44
Methicillin-susceptible isolates	27 (63%)	380 (47%)	0.05	1.9 (0.9–3.9)	0.07
SOFA score (median)	6 (3–9)	3.5 (1–6)	0.01	1.1 (1.1–1.2)	0.01
Duration of bacteremia (median)	4 (1–6)	2 (0–5)	0.01		
Endovascular involvement of infection	18 (42%)	106 (13%)	<0.01	3.1 (1.5–6.3)	0.01
Presence of any metastatic infection	20 (47%)	155 (19%)	<0.01	2.3 (1.2–4.7)	0.02
90 day-mortality	11 (34%)	121 (19%)	0.03		

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1057. Treatment Efficacy of Ceftriaxone vs. Cefazolin for Methicillin-Susceptible *Staphylococcus aureus* Infections

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Background. Methicillin-susceptible *Staphylococcus aureus* (MSSA) infections are traditionally treated with intravenous (IV) nafcillin, oxacillin, or cefazolin, all antibiotics that require multiple doses per day. Despite theoretical limitations of using ceftriaxone in MSSA infections, some clinical studies suggest noninferiority of ceftriaxone compared with standard of care. At Parkland Memorial Hospital, many patients diagnosed with MSSA infections receive self-administered Outpatient Parenteral Antimicrobial Therapy (S-OPAT). Daily-dosed ceftriaxone is often used for convenience and feasibility of medication adherence.

Methods. We conducted a retrospective cohort study among S-OPAT patients receiving cefazolin and ceftriaxone for treatment of MSSA infections. We compared infection type and planned duration of therapy as baseline differences between the treatment cohorts. Our clinical outcomes of interest were 30-day readmission rates and treatment failure as defined by repeat positive blood culture within 6 months.

Results. We identified 184 patients treated with cefazolin and 74 patients treated with ceftriaxone. Characteristics of treatment plan are shown in Table 1. There were no statistically significant differences in infection type or mean duration of therapy between the two treatment cohorts. Outcomes are shown in Table 2. There were no statistically significant differences in readmission rates and rate of treatment failure.

Conclusion. Our retrospective review suggests patients treated with ceftriaxone for MSSA bacteremia had similar clinical outcomes as those treated with cefazolin. While this study is limited in its retrospective nature, the findings suggest that ceftriaxone may be a safe and more convenient antibiotic option in certain MSSA infections.

	Cefazolin (n = 184)	Ceftriaxone (n = 74)	*P*-Value
Infection type			0.87
Bacteremia	106	29	
Osteomyelitis	23	30	
Skin and soft-tissue infection	14	6	
Endocarditis	14	2	
Line-related	11	1	
Pulmonary	9	2	
GU	5	2	
Other	2	2	
Mean duration of therapy	30 days	32 days	0.26

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1058. Prognostic Biomarkers for Persistent Bacteremia and Mortality in Complicated *S. aureus* Bloodstream Infection

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Background. *Staphylococcus aureus* is a leading cause of bacteremia, yet there remains a significant knowledge gap in the identification of relevant biomarkers that predict clinical outcomes in patients with *S. aureus* bacteremia. Heterogeneity in the host response to invasive *S. aureus* infection suggests that specific biomarker signatures could be utilized to differentiate patients prone to severe disease, thereby facilitating earlier implementation of more aggressive therapies. To further elucidate the inflammatory correlates of poor clinical outcomes in patients with *S. aureus* bacteremia, we evaluated the association between a panel of blood proteins at initial presentation of bacteremia and disease severity outcomes.

Methods. We conducted an observational study (n = 32) to evaluate the prognostic value of circulating protein biomarkers for mortality and persistent bacteremia in patients with *S. aureus* bloodstream infections. A case–control study of 124 patients with complicated confirmed *S. aureus* bloodstream infections was used to validate our findings in the observational study.

Results. We identified 13 candidate proteins that were correlated with mortality and persistent bacteremia by multiple comparisons. Further statistical modeling identified IL-8 and CCL2 as the strongest individual predictors of mortality, with the combination of these biomarkers having the best power to classify fatal outcome. Baseline IL-17A levels were elevated in patients with persistent bacteremia, endovascular and metastatic tissue infections.

Conclusion. The results demonstrate the potential utility of selected biomarkers to distinguish patients with the highest risk for treatment failure and bacteremia-related complications, providing a valuable tool for clinicians in the management of *S. aureus* bacteremia. Additionally, these biomarkers could identify patients with the greatest potential to benefit from novel therapies in clinical trials.

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1059. *Staphylococcus aureus* Bacteremia Treatment: Results From Pilot Surveillance in Four US States

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