

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

Background. *Candida* is the most common cause of invasive fungal infection in healthcare settings and is associated with significant increases in healthcare resource utilization and attributable mortality.

Methods. This study was conducted in a pediatric tertiary care hospital from Turkey. We conducted a retrospective analysis in children ≤ 18 years with blood culture-proven candidemia identified between December 2013 and November 2017. Sociodemographic variables, underlying condition, mortality, additional risk factors, origin of specimens were all recorded.

Results. A total of 236 episodes of candidemia were identified over the study period. The median age of the patients was 600 days (4-6482). 106 specimens (44.9%) were cultured from patients under 1 year of age and 15 of 106 specimens were cultured from neonates. The most frequently isolated *Candida* spp. were *C. albicans* (42%), followed by *C. parapsilosis* (30.5%), *C. glabrata* (7.6%), *C. tropicalis* (6.4%), *C. krusei* (2.5%), *C. lusitanae* (2.5%), *C. dubliniensis* (2.1%), *C. kefyr* (0.8%), and *C. pelliculosa* (0.4%). In 11 of the 236 episodes (4.5%), two *Candida* spp were cultured at the same time. The most common coinfection was *C. albicans* and *C. parapsilosis*. 112 of the 236 episodes (47.5%) was due to central venous catheter-related blood stream infection. 47.5% of these patients were receiving total parenteral nutrition at the time of candidemia. Concomitant coagulase negative staphylococcus bacteremia was present in 50 of 236 candidemia episodes (21.2%). Of 236 isolates, 74 (31.4%) was cultured from peripheral blood culture only, 95 (40.3%) from central venous catheter only, 67 (28.4%) from both peripheral and central catheter blood culture. Thrombocytopenia was noted in 117 episodes (49.6%) and neutropenia in 45 episodes (19.1). Of the 112 central venous catheter-related candidemia, 35 (31.3%) resulted in death within 30 days from the onset of candidemia (Figure 1). In 49 (45%) episodes of central venous catheter-related candidemia, catheter was not removed and 40% of these episodes resulted as death. Catheter removal, thrombocytopenia, total parenteral nutrition were found to be associated with increased mortality in children under 1 year of age ($P < 0.001$).

Conclusion. Clinicians must be aware of candidemia in children due to high risk of mortality.

Figure 1. *Candida* spp and mortality change according to age in central venous catheter-related candidemia

Cultured <i>Candida</i> spp	≤ 1 year of age	>1 year of age
	n (%)	n (%)
<i>C. albicans</i>	32 (26.9)	19 (16)
<i>C. parapsilosis</i>	24 (20.2)	19 (16)
<i>C. krusei</i>	0 (0)	3 (2.5)
<i>C. tropicalis</i>	0 (0)	3 (2.5)
<i>C. dubliniensis</i>	0 (0)	2 (1.7)
<i>C. kefyr</i>	0 (0)	1 (0.8)
<i>C. pelliculosa</i>	0 (0)	1 (0.8)
<i>C. lusitanae</i>	1 (0.8)	0 (0)
<i>C. albicans</i> and <i>parapsilosis</i>	3 (2.5)	0 (0)
<i>C. tropicalis</i> and <i>dubliniensis</i>	2 (1.7)	0 (0)
<i>C. tropicalis</i> and <i>guilliermondii</i>	1 (0.8)	0 (0)
<i>C. albicans</i> and <i>tropicalis</i>	0 (0)	1 (0.8)
<i>C. albicans</i> and <i>dubliniensis</i>	0 (0)	1 (0.8)
Overall mortality	31 (73.8 %)	11 (26.2 %)

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184. Channeling Alexander Fleming: Efficacy of Penicillin (PCN) to Treat *Staphylococcus aureus* (SA) Bacteremia

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Background. Up to 20% of SA isolates in the United States are penicillin-susceptible (PSSA); however, treatment with penicillin has been discouraged because of concern that routine testing may miss strains that have the capacity to produce clinically significant β -lactamase *in vivo*. We performed a retrospective analysis to determine whether PCN therapy for the treatment of PSSA bacteremia was of comparable efficacy and safety to standard therapies.

Methods. We identified all episodes of SA bacteremia (March 18, 2010–July 23, 2018). SA penicillin susceptibility testing in our lab was performed by broth microdilution followed by nitrocefin β -lactamase testing per CLSI guidelines on these isolates. A retrospective chart review was performed and our primary outcome was a composite endpoint of clinical success (no change in PSSA therapy due to persistent or worsening signs and symptoms, no PSSA bacteremia recurrence or persistence, and no infection-related mortality). Microbiologic failure was defined as either failure to clear bacteremia/infection or recurrence after completion of therapy. Patients were followed until last contact with our medical system, the only tertiary center in the region. We

compared our rates of success, mortality, and adverse drug reaction to historical SA bacteremia controls from the literature.

Results. PSSA accounted for 13% (130/971) of SA bloodstream episodes. Nineteen patients with PSSA (15%) were treated with PCN and 79% (15/19) achieved the primary endpoint of clinical success. Of the 4 patients who did not achieve the endpoint, 2 developed rash and were switched to a different antibiotic and 2 died from complications of sepsis. One of the patients died after clearing blood cultures but had DIC and a catastrophic intracranial hemorrhage, the other died of overwhelming sepsis after 4 days (2 days nafcillin, 2 days PCN) with continued bacteremia. Thus, our only microbiologic failure was due to early death from sepsis. Rates of success, mortality and drug reaction were similar to prior reports of alternative standard therapies (Table 1).

Conclusion. PCN is a viable treatment option for PSSA bacteremia as identified by routine laboratory testing. Further study will include characterizing the presence of β -lactamase in these patient's isolates.

Table 1: Comparison of PCN treatment of PSSA to Historical SA Controls

Antibiotic	Success	Infection-related Mortality	Drug reaction
Penicillin – our population	79%	11%	11%
Historical Controls			
Cefazolin	71-93%	10-20%	8%-12%
Nafcillin	74-92%	15-25%	17-29%
Ceftriaxone	45-77%	9-23%	7-15%

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185. Clinical Characterization of *Staphylococcus aureus* Bacteremia in Children at an Inner-City Community Hospital

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Background. *Staphylococcus aureus* bacteremia (SAB) is associated with high morbidity and mortality rates. Data on epidemiology and outcomes of SAB in children is not as well described as in adults. The primary objective of this study was to describe clinical and microbiological cure rates of SAB in hospitalized children. Secondary objectives included time to clinical and microbiological cure, mortality, proportions of methicillin-sensitive and resistant SA (MSSA, MRSA) bacteremia, and antibiotic usage pattern.

Methods. This was an electronic chart abstraction conducted at a community hospital in the South Bronx, NY, of all pediatric cases of SAB (<21 years of age) from January 1, 2010 to March 30, 2017. Demographic, clinical and microbiological data along with risk factors for bacteremia were collected. Clinical cure was defined as resolution of acute symptoms and signs of SAB and microbiological cure was defined as documentation of first negative blood culture after initiation of treatment. Standard definitions were used for hospital-acquired (HA) and community-acquired (CA) isolates of SA.

Results. Of 41 patients, neonates comprised 12%, 1- to 23-month-old infants 56% and 2- to 17-year-olds 31%. Overall, 76% of patients had bacteremia due to MSSA, and 24% MRSA. MRSA was isolated in 37% of HA SAB compared with 14% of CA SAB ($P = 0.15$). The two highest risk factors identified for SAB were peripherally inserted central catheters lines (PICC, 29%) and skin and soft-tissue infections (22%). SAB in the neonatal period was associated with PICC lines when compared with children outside the neonatal period (80% vs. 22%, $P = 0.02$). Using available data, clinical and microbiological cure rates were similar at 73%. The median time to clinical cure was 5 days (interquartile range [IQR] 2–10) and to microbiological cure, 2 days (IQR 1–4). A 2-month-old infant died (mortality 2.4%). Initial antibiotic selection was vancomycin (39%), clindamycin (39%), and nafcillin (7%). The proportion of SA resistant to clindamycin was 22%.

Conclusion. Pediatric SAB was uncommon in this community hospital experience over 7 years and is associated with PICC lines in neonates. MSSA was more prevalent than MRSA. Initial antibiotic selection had anti-staphylococcal coverage in 85% of cases, while clindamycin resistance occurred in 22% of SA isolates.

Disclosures. All authors: No reported disclosures.

186. Risk Factors for Extended Spectrum β -Lactamase Bacteremia and External Application of a Clinical Prediction Tool

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Background. Extended spectrum β -lactamase (ESBL) bacteria are resistant to many antibiotics, which increases the risk of inadequate early antibiotic therapy.