ELSEVIER

Blood 142 (2023) 5102–5103

The 65th ASH Annual Meeting Abstracts

POSTER ABSTRACTS

903.HEALTH SERVICES AND QUALITY IMPROVEMENT -MYELOID MALIGNANCIES

Yield of Repeat Blood Cultures in Acute Myeloid Leukemia Patients Following Allogeneic Hematopoietic Stem Cell Transplantation

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Introduction: Unnecessary repeat blood culture collection has been demonstrated to increase health care costs, length of stay, duration of antimicrobial exposure, and risk of anemia and result in unnecessary removal of vascular catheters. The aim of this study was to characterize the yield of new pathogen identification in acute myeloid leukemia (AML) patients with known bacteremia in the post-allogeneic hematopoietic stem cell transplant (HSCT) period.
Methods: This was a retrospective study of AML patients who underwent allogeneic HSCT at Taussig Cancer Center from January 1 st 2019 to December 31 st 2022. Patients who experienced an occurrence of febrile neutropenia (FN) within 35 days of date of HSCT and had positive initial blood cultures within 24 hours of diagnosis of FN were included in the study. Patients who had at least 1 additional set of repeat cultures drawn following initial blood cultures were included in the study. Blood cultures were collected through a peripheral site via venipuncture or through a central line. The study was approved by the Institutional Review Board.
Data were collected on baseline patient characteristics, AML disease characteristics, HSCT characteristics, and infection characteristics. Febrile neutropenia was defined as recorded temperature $\geq$ 100.4°F with concurrent ANC <1500 cells/uL. Each patient day with a recorded temperature $\geq$100.4°F and ANC <1500 cells/μL was considered as a day of FN. An episode of FN was considered to be resolved following 72 hours of defervescence. Cultures drawn within 24 hours of onset of FN were considered the initial blood cultures. All subsequent sets of blood cultures were considered repeat blood cultures. A positive set of blood culture was defined as >50% of all blood cultures in that set growing an organism. Cultures drawn from all peripheral and central sites on the same day of FN were considered as one set of blood cultures. All patients received post-HSCT anti-bacterial prophylaxis with bactrim or ciprofloxacin.
Results: A total of 154 AML patients who underwent HSCT at Taussig Cancer Center were screened for the study. 50/154 (32.5%) of those patients met inclusion criteria and were included in the study. Among the 50 patients included in the study, there were 50 episodes of FN with positive initial blood cultures that were diagnosed within 35 days of HSCT. There were 120 total days of FN among the 50 episodes of FN with an average of 2.4 days per episode. 50 initial sets of blood cultures and 96 sets of repeat blood cultures were drawn between the 50 episodes of FN with an average of 2.9 total sets of blood cultures per episode. 12/96 (12.5%) of repeat blood cultures sets were positive for a pathogen. 3/96 (3.1%) of repeat blood cultures sets grew a pathogen that differed from the pathogen which grew in the preceding positive blood culture. The median duration of febrile neutropenia at time of repeat positive culture was 3.5 days. 30-day mortality rate from infection was 6.0% (3/50).
Conclusion: Even amongst bacteremic AML patients in the post-HSCT period, the yield of repeat blood cultures was low for detecting new pathogen identification. Repeat blood cultures should be guided by thorough evaluation of emerging clinical signs and symptoms.

Disclosures Hamilton: *Equilium:* Other: ad hoc advisory board; *Therakos:* Honoraria; *Angiocrine:* Other: DSMB; *NKARTA:* Other: ad hoc advisory board; *Kadmon/Sanofi:* Other: advisory board; *Incyte:* Other: ad hoc consultancy; *Rigel:* Other: Ad hoc advisory board; *CSL Behring:* Other: Adjudication committee.

Table 1: Patient and Infection Characteristics

Patients	N = 50
Median age, (interquartile range)	62.9
Gender	
• Male	22 (44.0%)
• Female	28 (56.0%)
Median lines of therapy prior to HSCT	
Conditioning regimen	
• Fludarabine	43 (86.0%)
• Busulfan	34 (68.0%)
• Cyclophosphamide	18 (36.0%)
• Total body irradiation	15 (30.0%)
• Anti-Thymocyte Globulin	2 (4.0%)
HSCT protocol	
• Reduced intensity	39 (78.0%)
• Myeloablative	11 (22.0%)
Donor relation	
• *Child*	10 (20.0%)
• Sibling	11 (22.0%)
• Unrelated	29 (58.0%)
Graft source	
• Peripheral blood stem cell	42 (84.0%)
• Bone marrow	6 (12.0%)
• Cord	2 (4.0%)
Episodes of Febrile Neutropenia	N = 50 (%)
Drawn Initial Culture Type	
• Central only	14 (28.0%)
• Peripheral only	15 (30.0%)
• Both	21 (42.0%)
Resulted Initial Culture Type	
• Central only	22 (44.0%)
• Peripheral only	15 (30.0%)
• Both	13 (26.0%)
Initial Organism	
• Pseudomonas aeruginosa	1 (2.0%)
• Stenotrophomonas species	1
• Klebsiella variicola	1
• Stomatococcus mucilaginosus	1
• Enterococcus faecium	2 (4.0%)
• Rothia mucilaginosa	2
• Klebsiella oxytoca	5 (10.0%)
• Streptococcus mitis	5
• Escherichia coli	6 (12.0%)
• Coagulase negative staphylococci	6
• Enterobacter cloacae	9 (18.0%)
• Klebsiella pneumoniae	11 (22.0%)
Initial antimicrobial	
• Daptomycin	2 (4.0%)
• Cefepime	8 (16.0%)
• Meropenem	11 (22.0%)
• Vancomycin	19 (38.0%)
• Zosyn	38 (76.0%)
• Umbilical cord	2 (4.2%)

Table 2: Infection Characteristics of Episodes with Repeat Positive Culture with Change in Organism

Patient	Initial culture organism	Source of culture/ Positive culture	Positive repeat culture #1 Organism	Source of culture/ Positive culture	Day of positive repeat culture #1	Abx at time of positive repeat culture #1	Positive repeat culture #2 Organism	Source of culture/ Positive culture	Day of positive repeat culture #2	Abx at time of positive repeat culture #2
1	Coagulase negative staphylococci	Central/Central	Coagulase negative staphylococci	Central/Central	2	Meropenem Vancomycin Zosyn	Vancomycin-resistant E. faecium	Central/Central	4	Meropenem Vancomycin Zosyn
2	K. pneumoniae	Central/Central	Vancomycin-resistant E. faecium	Peripheral + Central/Peripheral + Central	2	Zosyn	N/A	N/A	N/A	N/A
3	Rothia mucilaginosa	Peripheral + Central/Peripheral + Central	Vancomycin-resistant E. faecium	Central/Central	3	Zosyn	Vancomycin-resistant E. faecium	Peripheral + Central/Central	4	Zosyn

Figure 1

https://doi.org/10.1182/blood-2023-184778