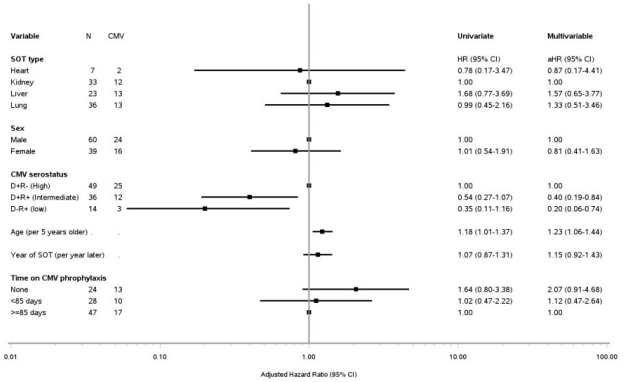
Figure 4 Factors associated with recurrent CMV infection within 6 months of stopping treatment for the first CMV infection



Conclusion. Recurrent CMV infection remains a significant complication among SOT recipients, especially in those with high risk CMV IgG serostatus. These findings highlight the necessity to successfully treat and monitor this subgroup following their first infection. Novel medical interventions and strategies to prevent CMV infection are of particular importance to this high risk group.

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1080. Changing Epidemiology and Long-Term Outcome of Bloodstream Infection Due to Enterococcus for Patients with Acute Leukemia: Impacts and Limitations on Strategy of Restricting Antibiotics

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Session: P-49. Infections in Immunocompromised Individuals

Background. Gastrointestinal dysbiosis due to antibiotics and mucosal injury by intensive chemotherapy are important risk factors for Enterococcal infection in patients with acute leukemia. However, there is still disagreement about trends of incidence and outcome of bloodstream infection (BSI) due to *Enterococcus* species. This study aimed to identify the changes in the epidemiology of Enterococcal BSI and to estimate the long-term impact of Enterococcal BSI on outcome in an acute leukemia cohort.

Methods. All adult acute leukemia patients diagnosed with Enterococcal BSI (N = 512) between 2014 to 2018 at the Catholic Hematology Hospital were retrospectively reviewed. The incidence rate was compared with antibiotics use and multivariable models were used to estimate the impact of Enterococcal BSI on the outcome.

Results. Of 433 patients, 512 episodes of Enterococcal BSI occurred: 172 (33.6%) of 512 were vancomycin-resistant *Enterococcus* (VRE) and baseline characteristics were similar in comparison with vancomycin-susceptible *Enterococcus* (VSE) BSI. The incidence rate of VRE seemed to decrease for 6 months after a change in the strategy of restricting prophylactic use of fluoroquinolone and empirical use of carbapenem (39.2% vs 12.2%, Odds ratio [OR]=0.312, 95% confidence interval [CI], 0.116-0.843, p=0.018). However, overall Enterococcal BSI continued to increase with the rapidly increased use of unrestricted antibiotics. VRE BSI was associated with higher 100-day mortality than VSE BSI after adjusting for covariates (hazard ratio [HR]=1.477; 95% CI, 1.027-2.125, p=0.035), but there was no difference in long-term outcome at one year. In multivariable models, high-risk groups such as old age, advanced stage of disease, polymicrobial infection, high Pitt bacteremia score, and BSI complications after hematopoietic cell transplantation (HSCT) were strongly associated with worse long-term outcome (p< 0.05 for all variables).

Table 1. Baseline characteristics of Enterococcal bloodstream infection (BSI)

Table 1. Baseline characteristics of Enterococcal bloodstream infection (BSI)

	Total[a] (N=511)	VSE BSI (N=339)	VRE BSI (N=172)	
Variables	N (%)	N (%)	N (%)	*P*-value
Age group, ≥60 years	184 (36.0%)	119 (35.1%)	65 (37.8%)	0.617
Sex, female	243 (47.6%)	156 (46.0%)	87 (50.6%)	0.378
Diagnosis				0.598
AML	372 (72.8%)	242 (71.4%)	130 (75.6%)	
ALL	136 (26.6%)	95 (28.0%)	41 (23.8%)	
MPAL	3 (0.6%)	2 (0.6%)	1 (0.6%)	
Disease stage at BSI				0.158
Naïve	135 (26.5%)	96 (28.4%)	39 (22.8%)	
CR	182 (35.8%)	124 (36.7%)	58 (33.9%)	
Advanced[b]	192 (37.7%)	118 (34.9%)	74 (43.3%)	
Treatment at BSI				0.230
Chemotherapy	418 (82.9%)	271 (80.9%)	147 (87.0%)	
HSCT	47 (9.3%)	35 (10.4%)	12 (7.1%)	
Post-HSCT	39 (7.7%)	29 (8.7%)	10 (5.9%)	
Time of BSI after treatment, median, IQR	15.0 [12.0;19.0]	15.0 [11.0;18.0]	16.0 [13.0;20.0]	**0.025**
Pitt bacteremia score, median, IQR	0.0 [0.0; 1.0]	0.0 [0.0; 1.0]	0.0 [0.0; 1.0]	0.055
Prior use of glycopeptide	122 (23.9%)	49 (14.5%)	73 (42.4%)	**<0.001**
Time of appropriate antibiotics therapy after BSI, median, IQR	1.0 [1.0; 2.0]	1.0 [0.0; 1.0]	3.0 [2.0; 3.0]	**<0.001**
Fluoroquinolone prophylaxis	314 (61.4%)	210 (61.9%)	104 (60.5%)	0.819
Antibiotics				**<0.001**
Glycopeptide	354 (69.8%)	334 (99.1%)	20 (11.8%)	
Oxazolidinone	152 (30.0%)	2 (0.6%)	150 (88.2%)	
Mortality				
In-hospital mortality	135 (26.4%)	83 (24.5%)	52 (30.2%)	0.198
100-Day mortality	178 (34.8%)	109 (32.2%)	69 (40.1%)	**0.092**
365-Day mortality	307 (60.1%)	200 (59.0%)	107 (62.2%)	0.545

Abbreviations: VSE, vancomycin-susceptible *Enterococcus*; VRE, vancomycin-resistant *Enterococcus*; AML, acute myelogenous leukemia; ALL, acute lymphocytic leukemia; MPAL, mixed phenotype acute leukemia; CR, complete remission; HSCT, hematopoietic stem cell transplantation; CRP, C-reactive protein; IQR, interquartile range

[a]Antibiotic susceptibility of 1 isolate out of 512 Enterococcal BSI was not reported

[b]Advanced stage includes refractory and relapsed leukemic state

[c]Other includes *E. gallinarum, E. casseliflavus, E. avium*

Figure 1. Incidence rate of Enterococcal BSI with changes of aggregated antibiotics utilization in acute leukemia cohort. Vertical black dash line is the time of new institutional strategy of restricting fluoroquinolone prophylaxis and use of carbapenem. Abbreviations: DDDs, defined daily doses; Q, quarter

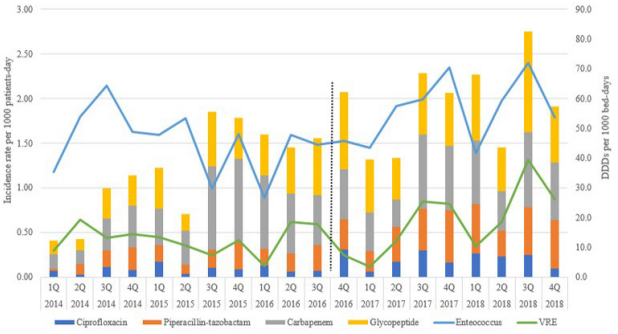
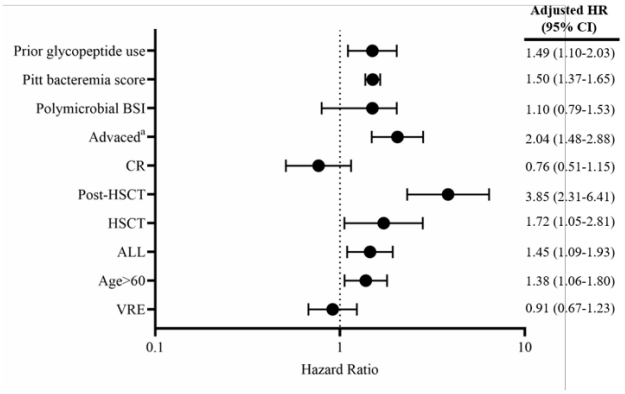


Figure 2. Multivariable analysis of risk factors for overall survival at one year. Abbreviations: HR, hazard ratio; CI, confidence interval; BSI, bloodstream infection; CR, complete remission; HSCT, hematopoietic stem cell transplantation; ALL, acute lymphocytic leukemia; VRE, vancomycin-resistant Enterococcus



Conclusion. The effort to restrict the use of fluoroquinolone and carbapenem alone is insufficient to reduce Enterococcal BSI. To improve long-term outcomes, especially in high-risk patients, multidisciplinary interventions to reduce the overall use of antibiotics along with the total incidence of Enterococcal BSI are needed.

Disclosures. **Sung-Yeon Cho, MD**, **Gilead** (Grant/Research Support, Speaker's Bureau)**Merck Sharp & Dohme** (Grant/Research Support, Speaker's Bureau)**Pfizer** (Grant/Research Support, Speaker's Bureau)

1081. Characteristics and Outcomes of Nocardiosis in a Solid Organ Transplant Cohort

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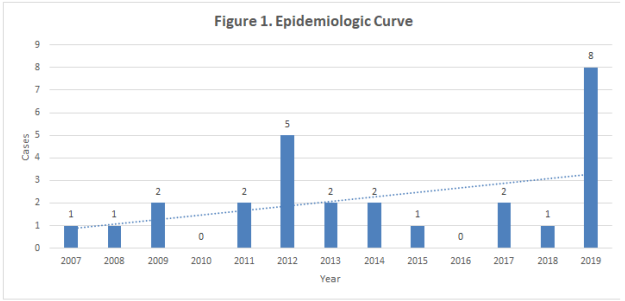
Session: P-49. Infections in Immunocompromised Individuals

Background. Solid organ transplant (SOT) recipients are at increased risk for nocardiosis, an infection associated with high risk of relapse and/or mortality. Novel antimicrobial regimens may be associated with improved outcomes. Here we describe a cohort of SOT recipients with *Nocardia* infection, to address knowledge gaps regarding the epidemiology of, risk factors for, and outcomes of nocardiosis in SOT.

Methods. This is a single center retrospective study performed at a 700 bed academic transplant center. Cases of nocardiosis were identified via review of microbiology laboratory records; transplant status was ascertained via the electronic medical record. All SOT recipients with a culture growing *Nocardia* species between 1/1/2007 and 12/31/2019 were included.

Figure 1. Epidemiologic curve



Results. We identified 27 SOT recipients with nocardiosis. The incidence of nocardiosis increased over the study period (Figure 1). Demographic data are shown in Table 1. Induction immunosuppression varied; 37% received an interleukin-2 receptor antagonist, 30% received anti-thymocyte globulin, and 18% received steroids alone. The majority of positive cultures were from respiratory specimens (63%) and the most common species identified were *N. nova* complex and *N. farcinica* (Table 2). The majority of patients were lymphocytopenic and received treatment for rejection. 92% of subjects received a sulfonamide agent as part of their treatment regimen and 73% received an oxazolidinone (Table 3). 73% of subjects had resolution of infection without relapse; 15% expired.

Table 1. Cohort demographics	
Gender, n (%)	
Male	14 (52)
Female	13 (48)
Age at transplant, years, median (range)	56 (21-76)
Organ transplanted, n (%)	
Kidney	13 (48)
Heart	4 (15)
Liver	3 (11)
SPK	3 (11)
Lung	2 (7)
SLK	1 (4)
SHK	1 (4)
LOS transplant hospitalization, days, median (range)	4 (2-25)*
Induction immunosuppression, n (%)	
Interleukin-2 receptor antagonist	10 (37)
Anti-thymocyte globulin	8 (30)
Methylprednisolone	5 (18)
Not available	4 (15)
Comorbid conditions, n (%)	
Diabetes mellitus	15 (56)
Structural lung disease	6 (22)

* length of stay data not available for 4 subjects

SPK=simultaneous pancreas-kidney; SLK=simultaneous liver-kidney; SHK=simultaneous heart-kidney; LOS=length of stay

Table 2. Infection characteristics	
Site of positive culture, n (%)	
Lung	17 (63)
Brain	2 (7)
Skin	4 (15)
Other	4 (15)
Nocardia species, n (%)	
N. abscessus complex	1 (4)
N. araoensis	2 (7)
N. beijingensis	3 (11)
N. cyriacigeorgica	3 (11)
N. farcinica	6 (22)
N. nova complex	6 (22)
N. pseudobrasiliensis	4 (15)
N. veterana	1 (4)
Unable to identify to species level	1 (4)
Days from transplant to diagnosis, median (range)	397 (80-6440)
Presence of risk factors	
Absolute neutrophil count (ANC), median (range)*	6.04 (1.98-9.00)
ANC <500, n (%)*	0 (0)
Absolute lymphocyte count (ALC), median (range)*	0.63 (0.24-1.81)
ALC <1000, n (%)*	20 (80)
CMV infection prior to diagnosis, n (%)**	7 (32)
Biopsy-proven rejection prior to diagnosis, n (%)***	14 (54)
Treatment of rejection, n (%)****	
Anti-thymocyte globulin	6 (43)
Corticosteroids	11 (79)
Rituximab	1 (7)
Not documented	1 (7)

* data not available for 2 subjects
** data not available for 5 subjects
*** data not available for 1 subject
**** totals >100% as subjects often received more than one agent for treatment of rejection