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

**2684. The Prospective Pilot Study of Infectious Complication Surveillance in Active Systemic Lupus Erythematosus Patients with Intense Immunosuppressive Therapy: Cellular Response and Clinical Outcomes**

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***Background:*** Despite a common complication, the real interplays between the infectious sequelae and systemic lupus erythematosus (SLE) with intense immunosuppressive therapy (IT) are not fully understood.

***Objective:*** To identify the cellular biomarkers that justify the risk for overall infection in active SLE patients with intense IT.

***Methods:*** An observational, prospective cohort pilot study was conducted in active SLE patients with intense IT aged >15 years from November 2017 March 2019 at Ramathibodi Hospital, Bangkok, Thailand. Clinical data and T-cell subpopulation analyses, at weeks 0 (at enrollment), 2, 4, 8, and 16 were obtained. Every patient was monitored over a 24-week period. The infections of interest were any emerging infections other than cytomegalovirus infection (CMV). Intense IT was defined as an induction therapy of active SLE disease with either the National Institute of Health or Euro-Lupus Nephritis Trial protocol regimens.

***Results:*** A total of 23 active SLE patients were enrolled, 91.3% were female with the median age (interquartile range, IQR) of 27.7 (23.0–42.1) years old. The median SLE disease activity index (IQR) was 16 (10–20) and 73.9% had renal abnormality. At week 12, the prevalence of infection was 39.1% being bacterial infection in 77.8% and viral infection in 22.2%. There was no mortality in this study. Non-infection group had higher proportions of absolute lymphocyte count (ALC), CD3+ T cell, and CD3+CD56+ natural killer T (NKT) cell numbers compared with the infection group; [median of 1169.8 (694.4–1921.4) vs 716.1 (429.0–882.0) cells/μL; $P = 0.044$, 585.1 (245.1–669.2) vs. 204.9 (73.9–286.5) cells/μL; $P = 0.017$, and 50.5 (13.7–152.2) vs. 4.35 (2.44–52.9) cells/μL, $P = 0.040$, respectively]. Patients with NKT cells >9.31 cells/μL had longer median infection-free day of 25.3 days (19.7–25.3) vs. 2.0 days (1.7–4.0) in patients with lower NKT cell count (log rank $P < 0.001$). The Cox-proportional hazard ratio was 0.03, $P = 0.003$ (95% confidence interval 0.004–0.300).

***Conclusion:*** Bacterial infections are common in active SLE patients with intense IT. Monitoring of ALC, CD3+ T-cell, and NKT-cell counts can potentially be used as the infectious risk prognosticators. However, a study in a larger scale is encouraged to verify these findings.

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

**2685. Oral Third-Generation Cephalosporins vs. Levofloxacin for Antibacterial Prophylaxis in Neutropenic Patients with Hematologic Malignancies**

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***Background:*** Fluoroquinolone (FQ) prophylaxis for high-risk neutropenic patients has been shown to reduce rates of febrile neutropenia and is standard at many centers. For patients who cannot receive a FQ, oral third-generation cephalosporins (OTGCs) are often used as an alternative; however, this strategy is not well studied. We sought to compare clinically-relevant outcomes in patients receiving FQ vs. OTGC prophylaxis.

***Methods:*** This was a retrospective cohort study of adults who were admitted to the Malignant Hematology service at the University of California, San Francisco between December 2012 and June 2018 and received >48 hours of an OTGC (cefdinir or cefpodoxime) or an FQ (levofloxacin) for neutropenic prophylaxis. For each OTGC patient, an FQ patient was randomly selected from the same admission year. Exclusion criteria were fever on admission, receipt of systemic antibiotics prior to or during the prophylaxis period, diagnosis of acute promyelocytic leukemia, and crossover. A multivariable logistic regression analysis adjusting for age, QTc, Charlson Comorbidity Index, underlying diagnosis, receipt of stem cell transplant (SCT), and duration of neutropenia was used to compare the groups with respect to a primary composite outcome of 30-day in-hospital mortality, intensive care unit (ICU) admission, and bacteremia.

***Results:*** Of 520 patients screened, 173 (33.3%) were included in the study; 76 of these received an OTGC and 97 received an FQ. Hematologic diagnoses included multiple myeloma (38.2%), acute myeloid leukemia (29.5%), acute lymphoblastic leukemia (8.7%), B-cell lymphoma (12.7%), aplastic anemia (2.9%), and others (3.5%). During admission, 9.2% underwent allogeneic SCT and 28.3% underwent autologous SCT. Outcomes are shown in Table 1.

***Conclusion:*** Prophylaxis with an OTGC rather than a FQ was not associated with worse outcomes in this pragmatic evaluation of a heterogeneous group of patients with hematologic malignancies. In this multivariable model, neutropenia lasting more than 7 days was the only consistent predictor of failure across outcomes, suggesting that degree of immunosuppression is a much more significant driver of poor outcomes in this population than is prophylaxis choice. Further evaluation of the role of prophylaxis is needed.

**Table 1.** Frequency of outcomes and logistic regression analyses for patients receiving OTGC vs. FQ prophylaxis

| | Outcome | Primary outcome | 30-day mortality | 30-day ICU admission | Bacteremia | Neutropenic Fever |
|---|---|---|---|---|---|---|
| | **Frequency** | 29 (16.8%) | 5 (2.9%) | 9 (5.2%) | 24 (15.3%) | 73 (42.2%) |
| **aOR (95% CI)** | OTGC (vs. FQ) | 0.91 (0.36-2.3) | 0.05 (0.00-3.0) | 0.44 (0.07-2.7) | 0.99 (0.37-2.7) | 1.2 (0.46-0.68) |
| | Age, per year | 1.0 (0.97-1.0) | 1.4 (0.98-1.9) | 10.5 (1.0-1.2) | 0.99 (0.96-1.0) | 0.96 (0.93-0.99) |
| | Neutropenia >7 days | 9.1 (2.5-34) | - | 27 (1.4-540) | 5.4 (1.5-20) | 16 (5.6-49) |
| | QTc >500 | 2.0 (0.67-5.8) | 2.4 (0.10-54) | 2.9 (0.50-17) | 1.6 (0.47-5.4) | 1.0 (0.41-2.5) |
| | CCI >2 | 0.53 (0.20-1.4) | 0.10 (0.01-1.7) | 0.37 (0.06-2.4) | 0.42 (0.14-1.2) | 1.7 (0.78-3.9) |
| | Allo SCT | 2.1 (0.55-8.4) | - | 10 (1.0-105) | 1.8 (0.41-8.0) | 6.7 (1.4-33) |
| | Auto SCT | 0.34 (0.08- 1.5) | - | 0.29 (0.02-4.9) | 0.21 (0.04-1.1) | 3.7 (1.3-11) |
| | AML | 0.68 (0.14-3.4) | - | 1.2 (0.08-19) | 0.37 (0.07-2.1) | 1.1 (0.22-5.1) |
| | ALL | 0.57 (0.08-4.2) | - | - | 0.44 (0.05-3.6) | 0.40 (0.06-2.8) |
| | Multiple Myeloma | 1.3 (0.18-10.1) | - | 3.9 (0.07-220) | 0.76 (0.10-6.1) | 1.9 (0.36-10) |
| | B-cell Lymphoma | 1.2 (0.16-8.4) | - | 13 (0.42-418) | 0.93 (0.12-7.2) | 2.6 (0.45-49) |
| | Aplastic Anemia | 0.35 (0.02-5.7) | - | 1.6 (0.04-64) | - | 0.38 (0.02-7.3) |

*aOR = odds ratio; SE = standard error; CI = confidence interval; CCI = Charlson Comorbidity Index; allo SCT = allogeneic SCT; auto SCT = autologous SCT; AML = acute myeloid leukemia; ALL = acute lymphoblastic leukemia

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**2686. strong>Bloodstream Infection Survey in High-Risk Oncology Patients (BISHOP) with Fever and Neutropenia (FN): Viridans Group Streptococcus Emerges as an Important Pathogen**

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***Background:*** In this prospective nation-wide survey of bloodstream isolates associated with first episode of FN in high-risk cancer patients from 14 US cancer centers (December 2016 and June 2018), viridans group Streptococci (VGS) were the most common Gram-positive isolate. We sought to clinically and microbiologically characterize VGS bloodstream infections (BSI).

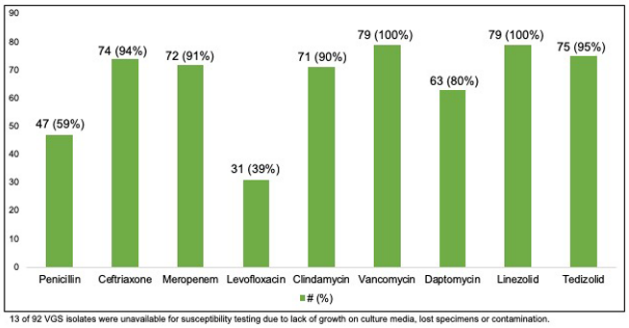
***Methods:*** Among 343 patients,we compared 90 with VGS vs 253 with non-VGS BSI. Minimum inhibitory concentrations for blood culture isolates were determined by broth dilution for selected agents at our reference microbiology laboratory (UNMC). Clinical data were electronically captured in RedCap, including local site isolate identification and confirmatory reference lab identification via MALDI. Categorical and continuous variables were assessed via chi-square and Mann–Whitney U tests, respectively.

***Results:*** Ninety-two VGS isolates were identified among 90 FN patients, representing 27% of all BSI isolates. *S. mitis* or *oralis* comprised 64 (70%) of VGS. There were no differences between age, sex, and primary diagnosis (50% with AML) among the 2 groups; 1/3 were HSCT recipients. Fluoroquinolone prophylaxis was used in 64 (71%) vs. 139 (55%), $P < 0.01$, in VGS vs non-VGS groups. Critical illness composite (new need for pressor(s), mechanical ventilation or death within 30 days) was 6 (7%) vs. 44 (17%), $P = 0.01$, in the VGS vs non-VGS groups. Figure 1 displays an overview of

antibiotic susceptibilities for 79 testable isolates. VGS susceptibilities to levofloxacin, penicillin, and ceftriaxone were 39%, 47%, and 94%, respectively.

***Conclusion:*** VGS are common pathogens in FN patients. Prior fluoroquinolone prophylaxis use may be a risk factor. VGS BSI was not associated with increased critical illness compared with non-VGS. Finally, assuming ceftriaxone susceptibility confers that of cefepime, >90% of VGS are susceptible to empiric FN cefepime regimens.

**Figure 1: Susceptible VGS Isolates Among 79 Tested**




13 of 92 VGS isolates were unavailable for susceptibility testing due to lack of growth on culture media, lost specimens or contamination.

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**2687. Extended Infusions of Piperacillin/Tazobactam vs. Cefepime for Empiric Treatment of Neutropenic Fever**

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***Background:*** In neutropenic patients, a fever may be the only indication of a severe underlying infection. According to the National Comprehensive Cancer Network (NCCN) guidelines, for high-risk patients, monotherapy with an anti-pseudomonal β-lactam agent should be initiated. NCCN states emerging data may support extended or continuous infusions of β-lactam therapies; however, preference is not given for cefepime or piperacillin/tazobactam. The objective of this study was to compare the outcomes of extended infusions of piperacillin/tazobactam vs. cefepime for the empiric treatment of neutropenic fever.

***Methods:*** This retrospective, single-center cohort study included patients ≥18 years with an absolute neutrophil count (ANC) less than 500 cells/mm$^3$, single oral temperature measurement ≥38.3°C or ≥38°C sustained over 1 hour period and admitted to a bone marrow transplant unit. Patients received extended infusion piperacillin/tazobactam or cefepime as initial antibiotic therapy for at least 48 hours between January 1, 2015 and September 1, 2018. The primary outcome was time to defervescence in hours. Secondary outcomes included time to defervescence and no acetaminophen use within 8 hours, defervescence by 72 hours, hospital length of stay, clinical failure, in-hospital mortality, and acute kidney injury.

***Results:*** 73 patients were included in this study (36 received piperacillin/tazobactam and 37 received cefepime). The primary outcome of median time to defervescence was 31.8 hours in the piperacillin/tazobactam group and 25 hours in the cefepime group ($P$ = 0.26). Secondary outcomes in the piperacillin/tazobactam group compared with cefepime, respectively included median time to defervescence and no acetaminophen use: 43 vs. 35 hours ($P$ = 0.16), defervescence by 72 hours: 66.7% vs. 91.9% ($P$ = 0.01), median hospital length of stay 28 vs. 22 days ($P$ = 0.04), clinical failure 22.2% vs. 24.3% ($P$ = 0.83), in-hospital mortality 8.3% vs. 2.8% ($P$ = 0.36), rate of acute kidney injury: 50% vs. 24.3% ($P$ = 0.02).

***Conclusion:*** These findings suggest there is no difference in time to defervescence between extended infusions of piperacillin/tazobactam compared with extended infusions of cefepime for the empiric treatment of neutropenic fever.

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**2688. The Clinical Impact of Early De-escalation of Broad-Spectrum Antibiotics in Acute Myeloid Leukemia Patients with Febrile Neutropenia**

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***Background:*** In patients with febrile neutropenia (FN) the initiation of broad-spectrum antibiotics (BSA), an anti-pseudomonal agent +/− vancomycin, is recommended by national guidelines. BSA should be continued until absolute neutrophil count (ANC) recovery (ANC > 500 cells/mm$^3$). With increasing antimicrobial resistance, clinicians are reassessing the need to continue BSA until count recovery; new data are emerging that patients may be able to have their BSA de-escalated if stable and afebrile. At our institution, some patients are de-escalated from BSA to a fluoroquinolone before ANC recovery and others are continued on BSA. The purpose of this study was to evaluate the efficacy and safety of early de-escalation compared with the standard of care.

***Methods:*** We retrospectively reviewed acute myeloid leukemia patients receiving induction chemotherapy who developed FN while at Yale New Haven Hospital from March 2013 to August 2018. Patients were excluded if they developed a culture documented infection, received incomplete or multiple induction chemotherapy treatments, or died from underlying disease during hospitalization. The primary outcome was recurrent fever during admission and secondary outcomes included incidence of breakthrough infections (BI), duration of hospital stay, early discharge (discharge before ANC recovery), duration of BSA, and readmission within 7 days of discharge.

***Results:*** A total of 210 patients were evaluated and 91 patients were included (de-escalation, $n$ = 45; BSA, $n$ = 46). Baseline characteristics are noted in Table 1. There was no statistical difference in rate of recurrent fever in patients who were de-escalated from BSA compared with those that were continued ($P$ = 0.05). De-escalated patients had a shorter duration of BSA therapy ($P$ < 0.05), earlier discharge ($P$ = 0.05) and no difference in readmission rates ($P$ = 0.39) (Table 2). There was no difference in rate of BI between both groups and all BI were bacteremias. (Table 3) No patients who experienced a BI died from infection.

***Conclusion:*** The results of this study revealed no difference in the primary outcome of recurrent fever between the BSA and de-escalation groups. De-escalation led to a reduced duration of BSA and facilitated earlier discharge without increasing readmission rates and BI.

Table 1

| Baseline Characteristics | De-escalation (n=45) | BSA (n=46) |
|---|---|---|
| Age median (range) | 59 (18-82) | 61 (21-77) |
| Male n, (%) | 23 (49) | 24 (52) |
| History of MDS n, (%) | 10 (22) | 12 (26) |
| **Induction therapy** | | |
| 7+3 n, (%) | 31 (69) | 36 (78) |
| Vyxeos n, (%) | 5 (11) | 5 (11) |
| Other n, (%) | 9 (20) | 5 (11) |

Table 2

| Pertinent Outcomes | De-escalation (n=45) | BSA (n=46) | p value |
|---|---|---|---|
| Recurrent fever (n) | 12 | 21 | 0.05 |
| Early discharge (n) | 26 | 6 | <0.05 |
| Breakthrough Infection (n) | 5 | 4 | 0.7 |
| Median Duration of BSA (days) | 13 | 21 | <0.05 |
| Median Duration of hospitalization (days) | 34 | 33 | 0.93 |
| Readmission (n) | 4 | 2 | 0.39 |
| Fever (n) | 2 | 0 | |
| Chemotherapy (n) | 1 | 1 | |
| Other (n) | 1 | 1 | |

Table 3

| Breakthrough Organisms | De-escalation (n=5) | BSA (n=4) |
|---|---|---|
| *P. aeruginosa* | 2 | 0 |
| *Enterobacteriaceae* | 1 | 1 |
| *S. viridans* | 2 | 0 |
| *E. faecium* (VRE) | 0 | 3 |

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**2689. *Stenotrphomonas maltophilia*, The Hidden Threat Among Pediatric Cancer Patients**

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***Background:*** Stenotrophomonas maltophilia is an emerging nosocomial pathogen in immunocompromised patients. Although *S. maltophilia* exhibits limited pathogenicity in immunocompetent hosts, it has been shown to cause fatal infections in patients with malignancies. The objective of this study to analyze the clinical characteristics, susceptibility pattern, and treatment outcome of *S. maltophilia* among pediatric cancer patients.

***Methods:*** Retrospective analysis including all pediatric cancer patients treated at children cancer hospital Egypt (CCHE) with *S. maltophilia* bloodstream infection from June 2013 till June 2018.

***Results:*** 281 isolates among 135 pediatric cancer patients. Most are hematological malignancies 67(50%), solid tumors 55 (40%) and post-transplant 13(10%). Most common hematological malignancies were acute lymphoblastic leukemia 34 patients (25%) while brain tumor was the most common solid tumors 20 patients (15%). The spectrum of infections includes bacteremia in 61 patients (45%) catheter-related in 34 (25%), pneumonia in 22 (16%), skin and soft-tissue infection in 11(8%) meningitis in 5 (3%) and disseminated infections with multiorgan involvement in 4(3%) patients. 46 patients (34%) was admitted in intensive care unit (ICU), 67 inpatient (50%), 11 (8%) stem cell transplant unit and 11 patient (8%) from emergency and outpatient department. The isolates revealed 80% susceptibility to Trimethoprim-Sulfamethoxazole (TMP-SMX), 77% to ciprofloxacin, 50% to cefepime and ceftazidime, 63% to amikacin, 48% to piperacillin–tazobactam, 93% to colistin, 97% to tigecycline. Day 30 mortality (Crude mortality rate) 33 patients (25%) while *S. maltophilia* attributable mortality (died within 7 days of culture isolation) was 17 patients (13%). Patients with pneumonia, (TMP-SMX) resistance and ICU admission were associated with a significant risk of mortality.