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.

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

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