Table 1: Patient characteristics (N=9)

Demographics	Values
Age, median (range) (y)	49(13-69)
Male sex, n(%)	5(55)
Caucasian, n(%)	6(67)
Hispanic, n(%)	3(33)
Type of malignancy, n(%)	
Diffuse Large B cell Lymphoma	3(33)
Follicular Lymphoma	1(11)
B cell Acute Lymphoblastic Leukemia	2(22)
T cell Acute Lymphoblastic Leukemia	1(11)
Chronic Lymphocytic Leukemia	1(11)
Metastatic sarcoma	1(11)
Clinical characteristics, n(%)	
Chemotherapy within 3mo of CAR-T.	6(67)
Prior hematopoietic stem cell transplant	6(67)
Lab findings, n(%)	
Lymphopenia <1000/mm^3	6(67)
ANC<500/mm^3	4(44)
Albumin, median(range, mg/dl)	3.5(2.7-4.1)
IgG <400mg/dl,receiving IVIG	8(89)*

*IgG levels not documented for the 9th patient

Table 2: CAR-T related factors

CAR-T related factors,n(%)	Values
Cyclophosphamide/Fludarabine conditioning	8(89)
Type of car T	
Anti-CD19 (CD4,CD8)	6(67)
CD8+ cytotoxic T cells	1(11)
Cord blood Natural Killer cells	2(22)
CAR-T toxicities	
Cytokine release syndrome	5(55)
Car T related encephalopathy syndrome	1(11)
Immune related colitis	1(11)

Table 3: NoV Genotypes

NoV Genotypes	Number of patients (n)
GII.2(P16)	2
GII.4(P31)	2
GII.6(P7)	1
GII.12(P16)	1

Conclusion. NoV belonging to various genotypes is an important cause of acute and chronic diarrhea in patients receiving CAR-T cell therapy.

Disclosures. **Adilene Olvera, MPH MLS (ASCP)**, **MERK** (Grant/Research Support, Scientific Research Study Investigator) **Robert L. Atmar, MD**, **Takeda Vaccines, Inc.** (Grant/Research Support) **Mary K. Estes, PhD**, **Takeda Vaccines** (Consultant, Grant/Research Support)

1099. Opportunistic Infections Among Long Term Survivors of Kidney Transplantation: Defining Risk Factors

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Session: P-49. Infections in Immunocompromised Individuals

Background. Opportunistic infections (OIs) in kidney transplant recipients (KTR) most commonly occur in the early post-transplant period or with increased immunosuppression, largely as a result of impaired T-cell function. Additionally, age confers susceptibility to infection independent of time post-transplant. The combined impact of cumulative immunosuppression and immunosenescence on infection risk of long-term KT survivors has not been well described.

Methods. We performed a retrospective chart review of patients age ≥ 18 years who underwent KT between 2003 to 2009 and who survived ≥ 10 years post-KT, in order to evaluate the risk factors for OIs. Demographics, comorbidities, immunosuppression, and clinical data for OIs occurring ≥ 10 years of KT were collected. AST ID Working Group on Infectious Disease Monitoring definitions for OIs was used. Risk factors for OIs were assessed by simple logistic regression.

Results. Of 332 KTR, 16 (4.8%) had an OI with 18 total episodes. Of 16 KTR, half were white, 10 (62.5%) were male, median age at time of transplant was 43 (range 25-72) and the median post-transplant follow-up was 14.2 years (range 10.3-37.6). The mean Charlson Comorbidity Index (CCI) at diagnosis was 5.6 (S.D. 3.6). Ten patients (62.5%) were on mycophenolate-based regimens. The mean absolute lymphocyte count (ALC) at the time of OI was 0.78 x $10^3/\mu L$ (S.D. 0.43). Two (12.5%) had acute rejection within 1 year of OI. Of 18 OI episodes, there were 6 PJP, 2 candida esophagitis, 3 CMV (2 viremia, 1 colitis), 2 cryptococcal infections (1 meningitis, 1 myositis/disseminated), 2 adenovirus (pneumonia, colitis), 2 VZV (herpes zoster) and 1 HSV (esophagitis). Two patients had 2 concurrent OIs (1 had PJP and cryptococcus and 1 had HSV and candida esophagitis). Three died within 30-days of OI diagnosis. OI incidence was associated with years from date of transplant [OR 1.3, p=0.002], cerebrovascular disease [OR 4.45, p=0.02], and lower ALC [OR 5.9, $p < 0.05$]. CCI also trended towards association [OR 1.24, p=0.09].

Table 1: Demographics, comorbidities, immunosuppression, and clinical data for patients with OIs

Variable	Very-Late Onset Opportunistic Infections (n = 16)
Median age at time of transplant (range)	43 (25-72)
Age at time of transplant	
18-29	2 (12.5%)
30-39	4 (25%)
40-49	5 (31.3%)
50-59	1 (6.2%)
60-69	2 (12.5%)
70-79	2 (12.5%)
Living (vs. deceased)	11 (68.8%)
Living donor (vs. deceased/unknown)	7 (43.8%)
Retransplantation	1 (6.2%)
Median Years From Transplant to Last Follow Up (range)	14.2 (10-37)
Mean Charlson Comorbitiy Index of Living Patients (SD)	5.6 (3.6)
Male sex (versus female)	10 (62.5%)
Race	
Asian	2 (12.5%)
Black	3 (18.8%)
Hispanic	3 (18.8%)
White	8 (50%)
Induction Methods	
Basiliximab	3 (18.8%)
Daclizumab	1 (6.2%)
Methylprednisone	7 (43.8%)
Thymoglobulin	3 (18.8%)
Unknown/Unspecified	2 (12.5%)
Maintenance Regimens	
Belatacept and prednisone	1 (6.2%)
Belatacept, mycophenolate, and prednisone	4 (25%)
Cyclosporine, mycophenolate, and prednisone	1 (6.2%)
Tacrolimus and prednisone	2 (12.5%)
Tacrolimus, mycophenolate, and prednisone	4 (25%)
Other	4 (25%)
Comorbidities at Time of Review	
Hepatitis C positive	2 (12.5%)
History of Diabetes	6 (37.5%)
Currently on Dialysis	2 (12.5%)
History of Cardiovascular Disease	5 (31.3%)
History of Lung Disease	0
History of Chronic Liver Disease	0
History of Cerebrovascular Injury	4 (25%)
History of Malignancy	4 (25%)
Number of Infections	
1	6 (37.5%)
2	5 (31.3%)
3	2 (12.5%)
4+	3 (18.8%)
Serologic Data	
CMV D+/R-	2 (14.3%)
CMV D-/R-	0
CMV D?/R-	4 (25%)
CMV D+/R+	0
CMV D-/R+	1 (6.2%)
CMV D?/R+	8 (50%)
Mean Absolute Lymphocyte Counts (10^3/µL)	0.78

Table 2: Detailed characteristics of each patient with opportunistic infections

Patient	Age at Time of Transplant	Diagnosis For Kidney Transplant	CCI	H/x DM (1 = Yes; 2 = No)	On Dialysis at Time of Infection (1 = Yes; 2 = No)	CMV Status	Maintenance Immunosuppression	Total Number of Late Onset Infection Episodes	Treatment for Rejection Within 1 Year of Opportunistic Infection? (1 = Yes; 2 = No)	Opportunistic Infection Timing (years s/p tx)	Age at Time of Opportunistic Infection	Type of Opportunistic Infection	Pathogen	Absolute Lymphocyte Count at time of Infection (10^3/µL)	30-Day outcome
1	25	Analgesic Nephropathy	3	2	1	D+/R-	Tacrolimus + Mycophenolate + Prednisone	2	1	10 Years	35 Years Old	Pneumonia	Adenovirus	0.5	Alive
2	63	DM 2	7	1	2	D+/R+	Tacrolimus + Mycophenolate + Prednisone	2	2	11 Years	73 Years Old	Viremia	CMV	1.1	Alive
3	47	Hypertensive Nephropathy	4	2	2	D?/R-	Cyclosporine + Mycophenolate + Prednisone	1	2	15 Years	62 Years Old	Esophagitis	HSV + Candida	0.6	Alive
4	50	DM 1	7	1	2	D+/R+	Belatacept + Prednisone	3	2	12 Years	63 Years Old	Esophagitis	Candida	0.7	Alive
5	72	MPGN	N/A	2	2	D+/R+	Tacrolimus + Prednisone	5	2	15 Years	87 Years Old	Meningitis	Cryptococcus	0.2	Deceased
6	45	DM 1	15	1	2	D+/R+	Tacrolimus + Mycophenolate + Prednisone	10	1	13 Years	59 Years Old	Colitis	CMV	0.6	Alive
7	70	DM 2	8	1	2	D+/R+	Belatacept + Prednisone + Mycophenolate	3	2	11 Years	81 Years Old	Pneumonia	PJP	0.2	Alive
8	43	Glomerulonephritis	3	2	1	D+/R+	Belatacept + Prednisone + Mycophenolate	1	2	11 Years	54 Years Old	Pneumonia	PJP	0.6	Alive
9	31	DM 1	N/A	1	1	D?/R-	Tacrolimus + Prednisone	6	2	29 Years	59 Years Old	Pneumonia	PJP	0.2	Alive
10	33	Hypertensive Nephropathy	N/A	1	2	D?/R-	Belatacept + Prednisone + Mycophenolate	1	2	10 Years	43 Years Old	Pneumonia + Fungemia	PJP and Cryptococcus	0.2	Deceased
11	26	Hypertensive Nephropathy	N/A	2	2	D+/R+	Sirolimus + Prednisone	2	2	33 Years	59 Years Old	Colitis	Adenovirus	1.1	Alive
12	67	Hypertensive Nephropathy	N/A	2	2	D+/R+	Everolimus + Prednisone	1	2	12 Years	79 Years Old	Viremia	CMV	0.2	Deceased
13	41	Obstructive Nephropathy due to Neurogenic Bladder	4	2	2	D+/R-	Belatacept + Prednisone + Mycophenolate	1	2	10 Years	51 Years Old	Pneumonia	PJP	0.6	Alive
14	32	Polycystic Kidney Disease	2	2	2	R+	Tacrolimus + Mycophenolate + Prednisone	2	2	15 Years	46 Years Old	Pneumonia	PJP	0.6	Alive
15	43	HTN	4	2	2	R+	Sirolimus + mycophenolate + prednisone	1	2	10 Years	53 Years Old	Skin	VZV	1.4	Alive
16	34	Polycystic Kidney Disease	3	2	2	D?/R-	Sirolimus + prednisone	1	2	15 Years	50	Skin	VZV	1.4	Alive

Conclusion. OIs were infrequently observed beyond 10 years of transplant among long-term survivors of KT. However, OI incidence was associated with poor outcome. Low ALC and a higher burden of comorbidities were risk factors for very late occurrence of OIs in this population.

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

1100. Outcomes of HIV-Associated Lymphoma Treatments: A Contemporary Single Center Cohort Study.

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Session: P-49. Infections in Immunocompromised Individuals

Background. There is a paucity of outcome studies on HIV-associated lymphoma treated with chemotherapy with or without autologous hematopoietic stem cell transplantation (autoHSCT) in comparison to HIV-uninfected individuals with similar histology.

Methods. In our retrospective matched cohort study, we enrolled adult HIV-positive patients with lymphoma treated with chemotherapy with (group 2) or without autoHSCT (group 1) between January 1, 2007 to December 31, 2018 at the University of Kansas Medical Center and followed until May 1, 2020. Group 1 were matched 1:1 to HIV-negative patients based on age, gender, lymphoma histology, stage at diagnosis, year of lymphoma diagnosis, and Group 2 were matched 1:2 to HIV-negative patients based on age at autoHSCT, gender, lymphoma histology, stage at diagnosis and year of transplantation. Overall survival (OS) and progression-free survival (PFS) at 2 years were calculated using Kaplan-Meier (KM) analysis, and adjustment for ECOG and IPI/IPS scores was done using multivariate Cox model.

Results. We had 37 HIV+ patients with lymphoma in our cohort: 9 Hodgkin's disease (HD), 28 Non Hodgkin's Lymphoma (NHL). Eleven underwent autoHSCT (3 HD, 8 NHL). The majority were white (76.2%), non-hispanic (92.9%), males (90.5%) and mean age was 46 years. Median CD4 was 172.5, HIV viral load was < 50 copies/mL in 43..2%, and 76.2% were on antiretroviral therapy (ART) at diagnosis. ART was interrupted in 14.6% and adjusted in 40.5% of patients. After excluding rare histological types, 22 in group 1 and 9 in group 2 were included in the matched analysis. On KM survival at 2-years, group 1 had worse OS (75% vs 95%, p=0.02), and a trend for worse PFS (75% vs 90%, p=0.07) than the matched referent group, while group 2 had similar OS (100% vs 94%, p= 0.47) and better PFS (100% vs 70%, p=0.02) than the matched referent group. On Cox models adjusting for ECOG and IPI/IPS, HIV status was no longer independently associated with OS in group 1 or PFS in group 2.

Group 1 HIV lymphoma cases and controls characteristics

Group 1 HIV with lymphoma cases and controls characteristics			
Variable		case	control
Number		22	22
Age at diagnosis	Mean(sd)	46.3 (10.4)	47.9 (10.4)
Sex	Male, n (%)	21 (95.5%)	21 (95.5%)
Ethnicity	Non-Hispanic	20 (90.9%)	20 (90.9%)
Race	Black, n (%) White, n (%) Other, n (%)	3 (13.6%) 16 (72.7%) 3 (13.6)	3 (13.6%) 17 (77.3%) 2 (9.1%)
ECOG status	Mean(sd)	1.2 (1.4)	0.7(0.6)
Type of lymphoma	NHL-DLBCL, n (%) NHL-primary CNS, n (%) NHL-Burkitt's, n (%) HL-mixed cellularity, n (%) HL-nodular sclerosis, n (%) HL-lymphocytic rich, n (%)	12 (54.5%) 1 (4.5%) 4 (18.2%) 2 (9.1%) 2 (9.1%) 1 (4.5%)	12 (54.5%) 1 (4.5%) 4 (18.2%) 2 (9.1%) 2 (9.1%) 1 (4.5%)
Stage of lymphoma at diagnosis	Stage II, n (%) Stage III, n (%) Stage IV, n (%)	2 (9.1%) 4 (18.2%) 16 (72.7%)	2 (9.1%) 5 (22.7%) 15 (68.2%)
IPI	IPI-high, n (%) IPI-low, n (%) IPI-mid, n (%) IPI-n/a, n (%)	5 (22.7%) 4 (18.2%) 3 (13.6%) 10 (45.5)	1 (4.5%) 4 (18.2%) 6 (27.3%) 11 (50%)
IPS	IPS-high, n (%) IPIS-low, n (%) IPS-mid, n (%) IPS-n/a, n (%)	3 (13.6%) 1 (4.5%) 1 (4.5%) 17 (77.3%)	1 (4.5%) 2 (9.1%) 2 (9.1%) 17 (77.3%)
Number of relapse	0, n (%) 1, n (%)	22 (100%) 0 (0%)	21 (95.5%) 1 (9.1%)

Sd= standard deviation, n/a= not applicable, ECOG= Eastern Cooperation Oncology Group, NHL= Non Hodgkin's lymphoma, DLBCL = Diffuse large B-cell lymphoma, CNS= Central nervous system, HL= Hodgkin's lymphoma, IPI= International Prognostic Index, IPS= International prognoctic score