CHARACTERISTICS OF PATIENTS ADMITTED TO THE ICU WITH KSHV-ASSOCIATED DISEASES

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BACKGROUND

Kaposi sarcoma-associated herpesvirus (KSHV or HHV-8) is primary etiologic agent for Kaposi sarcoma (KS), primary effusion lymphoma (PEL), multicentric Castleman disease (MCD), KSHV-associated inflammatory cytokine syndrome (KICS).

These KSHV-associated diseases (KAD) can occur alone or concurrently in people living with HIV (PLWH). They can lead to multiorgan dysfunction requiring admission to the ICU. However, little is known about ICU management of these conditions.

METHODS

- Retrospective review of initial ICU admission for patients with KAD from the HIV and AIDS Malignancy Branch at the NCI (2010-2021)
- Reviewed: KAD (at admission and discharge), ICU characteristics (reason for ICU admission, interventions, SOFA scores), HIV and KSHV characteristics, cytokine profiles
- Primary outcome: 60-day survival and median overall survival, evaluated using Kaplan-Meier curves and 2-sided log-rank tests
- Cytokine differences evaluated with Wilcoxon sign rank tests
- Univariate analyses of selected prognostic factors were conducted using Cox proportional hazard models.

RESULTS

Age at Presentation, years (median, IQR)	38 years (31 – 51)
Gender, n (%)	
Male	44 (94)
Female	3 (6)
Race, n (%)	
Black	26 (55)
White	16 (34)
Hispanic	3 (6)
Other/multiple races	2 (4)
HIV characteristics	
Median HIV duration (mo.)	66.5
Median CD4 count (IQR), cells/μL	88 (38.5 – 222.5)
Median HIV VL (IQR), copies/mL	23 (20 – 95)
On ART, n (%)	44 (94)
KSHV VL (median, IQR), copies/million PBMCs	885 (0 – 247,728)

Table 1: Demographic characteristics of patients admitted to the ICU with KSHV-associated diseases. N=47 (44 cisgender male, 3 cisgender female)

The majority of patients admitted to the ICU with KSHV-associated diseases had well controlled HIV and were on ART

45% received chemotherapy in the ICU

KICS or PEL was associated with worse survival

Median admission SOFA score (0-24) (IQR)	6 (1-9)
Reason for ICU admission, n (%)	
Respiratory	24 (51)
Hypotension	16 (34)
Fever	12 (26)
Cardiac conditions	7 (15)
Altered mental status	6 (13)
Hemorrhage	4 (9)
s/p procedure	3 (6)
> 1 reason for ICU admission	23 (49)
ICU interventions, n (%)	
Vasopressors	24 (51)
Intubation	16 (34)
CRRT/dialysis/CVVH	13 (28)
> 1 intervention	19 (40)
KAD therapy in the ICU, n (%)	
Total	21 (45)
Chemotherapy	18 (38)
Monoclonal antibodies	7 (15)
Immunomodulators	1 (2)
>1 therapy	8 (17)
Survival	
60-day (%)	83
Overall (median, months)	9

Table 2: ICU admission characteristics, interventions, and survival. N=47.

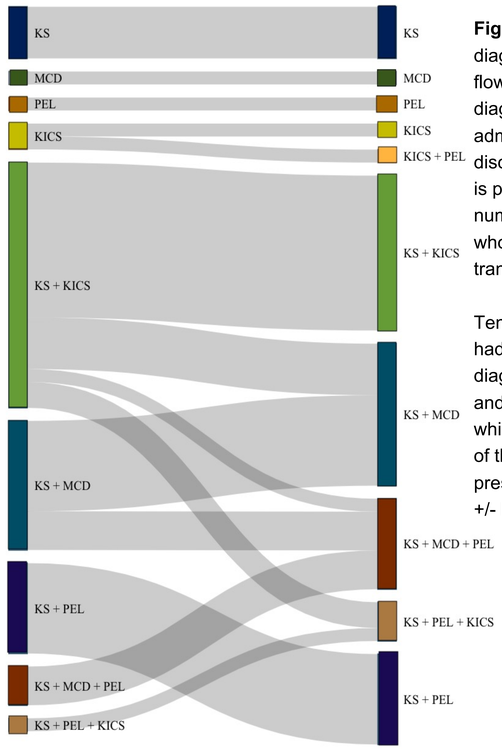


Figure 1: Sankey diagram depicting flow of KAD diagnoses between admission and discharge. Each line is proportional to the number of patients who made that transition.

Ten patients (21%) had an additional diagnosis of PEL and/or MCD made while in the ICU; 8/10 of these initially presented with KICS +/- KS.

CONCLUSIONS

- HIV characteristics did not impact mortality
- KICS or PEL at any time from ICU admission was associated with worse outcomes
- Critical illness did not preclude receiving chemotherapy

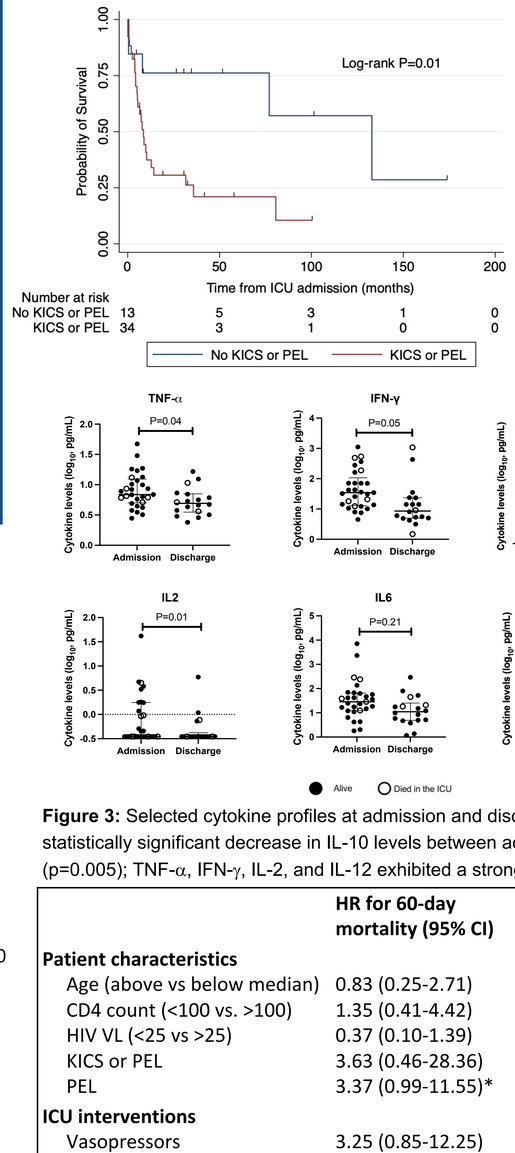


Figure 2: Kaplan-Meier curve depicting survival for patients with KICS or PEL at any point from ICU admission.

KICS or PEL at any point from ICU admission associated with worse survival.

Figure 3: Selected cytokine profiles at admission and discharge. There is a statistically significant decrease in IL-10 levels between admission and discharge (p=0.005); TNF-α, IFN-γ, IL-2, and IL-12 exhibited a strong trend.

	HR for 60-day mortality (95% CI)	HR for overall mortality (95% CI)
Patient characteristics		
Age (above vs below median)	0.83 (0.25-2.71)	0.89 (0.42-1.89)
CD4 count (<100 vs. >100)	1.35 (0.41-4.42)	0.77 (0.34-1.72)
HIV VL (<25 vs >25)	0.37 (0.10-1.39)	1.00 (0.47-2.15)
KICS or PEL	3.63 (0.46-28.36)	5.04 (1.47-17.22)*
PEL	3.37 (0.99-11.55)*	2.03 (0.95-4.35)
ICU interventions		
Vasopressors	3.25 (0.85-12.25)	2.23 (1.02-4.88)*
Mechanical ventilation	4.95 (1.44-16.96)*	2.99 (1.29-6.97)*
KAD therapy	3.20 (0.85-12.10)	1.54 (0.71-3.32)

Table 3: Hazard ratios (HR) and 95% confidence intervals (CI) for selected variables (* = statistically significant, p ≤ 0.05); KAD therapy = chemo, monoclonal antibodies, and/or immunomodulators

Funding: This study was supported by the Intramural Research Program of the National Institutes of Health, National Cancer Institute
Acknowledgements: We would like to thank our patients, their families and members of the Clinical Center Critical Care Team for their contributions to this project