SOHO ANNUAL MEETING 2024

Infectious complications in patients with hematologic malignancies receiving CD19 vs. BCMA–targeted CAR-T therapy

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INTRODUCTION

- Infections result in significant morbidity and mortality among CAR-T recipients.
- While there are limited data on infections in patients with relapsed/refractory B-cell HMs undergoing CAR-T, there is no evidence comparing infection rates between BCMA-targeted CAR-T for R/R multiple myeloma (MM) vs. CD19+CAR-T for other HMs.
- We examined and compared infection patterns and related mortality in patients receiving CAR-T therapy in a tumor-associated antigen–specific manner.

METHODS

- Single-center retrospective study in adults ≥18 years old with R/R B-cell HMs receiving CAR-T cells targeting CD19 and BCMA between September 2018 and March 2022.
- Primary outcome was non-relapse mortality (NRM) for CD19 vs. BCMA.
- Secondary outcomes included infection density and cumulative incidence of overall, bacterial, viral, and fungal infections, stratified by TAAs.

Table 1: Overall infection density

	Events, N	Person-days at risk	Events/100 person-days (95% CI)	Risk ratio (95% CI)	p-value
Overall	105	35,414	0.30 (0.22-0.39)		
BCMA	39	13,932	0.28 (0.18-0.44)	reference	
CD19	66	21,482	0.31 (0.21-0.44)	1.10 (0.62-1.95)	0.7505
D0-D30	50	3,127	1.60 (1.12-2.29)	Reference	
D31-D100	18	6,427	0.28 (0.17-0.47)	0.18 (0.09-0.32)	<0.0001
D100-D365	29	15,356	0.19 (0.12-0.29)	0.12 (0.07-0.20)	<0.0001
D366-D730	8	10,504	0.08 (0.03-0.17)	0.05 (0.02-0.12)	<0.0001

NON-RELAPSE MORTALITY

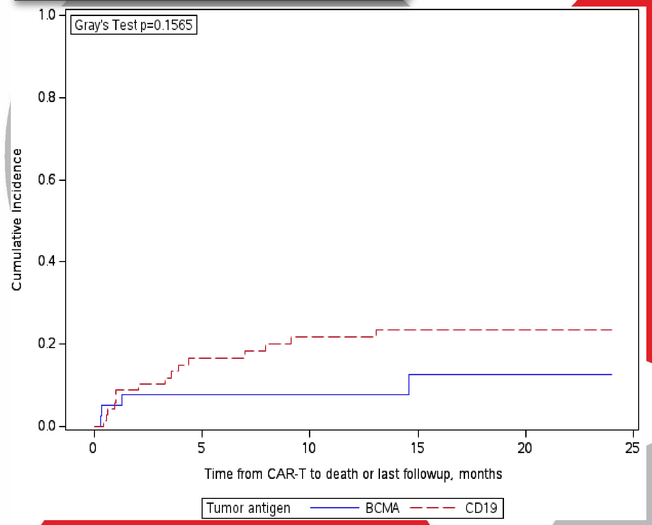


Table 2: Multivariable Cox regression for cause-specific hazard for overall infections

	HR	95% CI	p-value
CD19 vs BCMA	1.14	0.76-1.71	0.52
Antibiotics within 30 days	1.25	0.80-1.98	0.33
Hypogammaglobulinemia	1.04	0.65-1.65	0.87
Prior infection	0.82	0.62-1.08	0.15
ICANS	1.01	0.54-1.91	0.97
CRS	2.45	1.05-5.74	0.04

CONCLUSIONS

Anti-CD19 CAR-T therapy is possibly associated with an overall heightened infection risk, resulting in increased NRM compared to BCMA-directed CAR-T therapy.

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