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Impact of Chronic Kidney Disease on Outcomes Following CAR-T Therapy: A Propensity-Matched Real-World Analysis

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INTRODUCTION

CAR-T therapy has improved outcomes in relapsed/refractory hematologic malignancies. Patients with chronic kidney disease (CKD) are often considered high-risk due to immune dysfunction, reduced physiologic reserve, and comorbidity burden. Real-world data on long-term CAR-T outcomes in CKD remain limited.

AIM & OBJECTIVE

To assess the impact of CKD on survival outcomes following CAR-T therapy using a large multicenter database.

METHODS

Retrospective cohort study using the TriNetX Global Collaborative Network including adults 18-89 years who underwent CAR-T therapy from January 2015. CKD was identified by ICD-10 code N18; patients without CKD served as controls. 1:1 nearest-neighbor propensity-score matching balanced age, sex, race, hypertension, diabetes, and chronic respiratory disease. Primary outcomes were all-cause mortality at 3 and 5 years. Kaplan-Meier analysis and hazard ratios with 95% CIs were calculated.

CONCLUSIONS

Preexisting CKD was not associated with significantly worse short- or long-term mortality following CAR-T therapy after matching. Carefully selected patients with CKD may achieve outcomes comparable to those without CKD and should not be excluded from CAR-T consideration on the basis of renal dysfunction alone.

RESULTS

Before matching, 172 patients with CKD and 767 without CKD were identified; after matching, 92 remained per cohort. At 3 years, mortality was similar (42.4% CKD vs 44.6% non-CKD; RR 0.95; OR 0.91; P=0.766), with comparable survival (54.6% vs 50.5%; HR 0.82, 95% CI 0.53-1.28; log-rank P=0.382). At 5 years, mortality remained comparable (50.0% vs 46.7%; RR 1.07; P=0.658); median survival was 1,455 days (CKD) vs 1,272 days (non-CKD); long-term survival 44.3% vs 47.1% (HR 0.91; P=0.664).

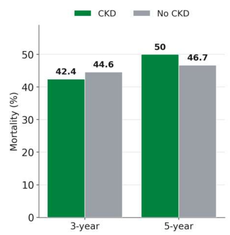

Figure. All-cause mortality by CKD status after CAR-T therapy. No significant difference was observed at 3 or 5 years.

Outcome	CKD	No CKD	Effect	P
3-yr mortality	42.4%	44.6%	HR 0.82	0.382
5-yr mortality	50.0%	46.7%	RR 1.07	0.658
Median survival	1455 d	1272 d	—	—

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REFERENCES

1. Data source: TriNetX Global Collaborative Network.
2. Analyses performed on de-identified, aggregated records; this study did not constitute human-subjects research.