

Conference Abstracts

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Clinical Impact of Acute Kidney Failure in Multiple Myeloma Patients Receiving CAR T-Cell Therapy: A National Inpatient Analysis

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Abstract

Background

Acute kidney failure (AKF) is a potentially serious complication among patients with multiple myeloma (MM). As CAR T-cell therapy becomes increasingly utilized, contemporary real-world data describing the burden and consequences of AKF in this population remain sparse.

Methods

We analyzed adult MM hospitalizations undergoing CAR T-cell therapy within the National Inpatient Sample (2018–2022). Patients with end-stage renal disease, chronic kidney disease stage 3a or higher, and unspecified CKD stage were excluded. Patients were stratified by development of AKF, and inpatient outcomes including mortality, infections, cytokine release syndrome (CRS) and length of stay were compared.

Results

Among 1,890 MM patients receiving CAR T-cell therapy, 245 (13.0%) developed AKF. In-hospital mortality was significantly higher among patients with AKF compared with those without AKF

(8.2% vs 0.9%, $p < 0.001$). AKF was associated with higher rates of pneumonia (10.2% vs 1.5%, $p < 0.001$), sepsis (10.2% vs 1.5%, $p < 0.001$) and hemophagocytic lymphohistiocytosis (8.2% vs 1.2%, $p = 0.002$). The overall incidence of CRS was comparable between groups (60.0% vs 65.7%, $p = 0.511$); however, severe (grade 4) CRS was observed more frequently among patients with AKF (5.7% vs 0%, $p < 0.001$). Patients with AKF experienced longer hospital stays (18.4 vs 14.0 days, $p = 0.005$). In the subgroup of patients who developed AKF, outcomes were similar regardless of CRS status, with no statistically significant differences in mortality or other major inpatient complications.

Conclusion

AKF in MM patients undergoing CAR T-cell therapy is associated with substantially higher mortality, infectious complications and prolonged hospitalization. These associations remain significant even after accounting for the influence of CRS, indicating that AKF serves as an independent indicator of severe clinical decline. These findings highlight the importance of vigilant renal monitoring and early supportive interventions in patients undergoing CAR T-cell therapy.

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