

Background

Bispecific antibody immunotherapies are revolutionizing cancer treatment but pose distinct toxicities.^{1,2} Prompt recognition and management of cytokine release syndrome (CRS) and immune effector cell-associated neurotoxicity syndrome (ICANS) are essential to mitigate morbidity.² As the use of Bispecific T-cell engagers (BiTEs) grows, understanding patterns of emergency department (ED) visits provides critical insight into real-world management of therapy-related toxicities and guides strategies to improve patient safety and outcomes.³ This study characterizes ED utilization among cancer patients actively receiving BiTEs.

Methods

We identified all adult cancer patients who presented to our comprehensive cancer center ED between 5/29/2016 and 10/1/2024 within one week of BiTE administration. Demographic, clinical, and cancer-related characteristics were collected from the institution's data warehouse and manual chart review. Descriptive statistics were used to summarize clinical presentations and outcomes.

Results

From a total of 524 ED visits for 250 unique patients (Table 1), 61.1% resulted in admission and 14.1% in observation.

The median interval between BiTEs administration to ED presentation was 2 days. Most patients had acute lymphoblastic leukemia (76.4%) or multiple myeloma (12.0%). The predominant agents were blinatumomab (81.5%), teclistamab (5.0%), or epcoritamab (4.8%). The most common chief complaints were fever (31.1%), headache (7.3%), or fatigue (5.0%). CRS occurred in 26.3% of visits and ICANS in 11.3% (Table 2), predominantly grade ≤ 2 . Corticosteroids were initiated in the ED in 19.5% of patients. In-hospital and 30-day mortality were 3.6% and 7.1%, respectively.

Table 1. ED presentation for patients on BiTE

Characteristics	n (%)
Total	524
Days from last BiTEs, median (interquartile range)	2 (1-4)
Final medication	
Blinatumomab	427 (81.5)
Epcoritamab	25 (4.8)
Elranatamab	5 (1.0)
Talquetamab	16 (3.1)
Tarlatamab	10 (1.9)
Others	15 (6.0)
Chief complaint	
Fever	163 (31.1)
Headache	38 (7.3)
Fatigue	26 (5.0)
Abdominal pain	25 (4.8)
Suspected sepsis	16 (3.1)
Shortness of breath	14 (2.7)

Table 2. Outcomes for ED visits for patients receiving BiTE

Outcome	n (%)
Final disposition	
Admit	859 (60.6)
Discharge	369 (26.0)
Observation	167 (11.8)
Other	22 (1.6)
CRS	138 (26.3)
ICANS	59 (1.3)
In-hospital mortality	19 (3.6)
Thirty-day mortality	37 (7.1)

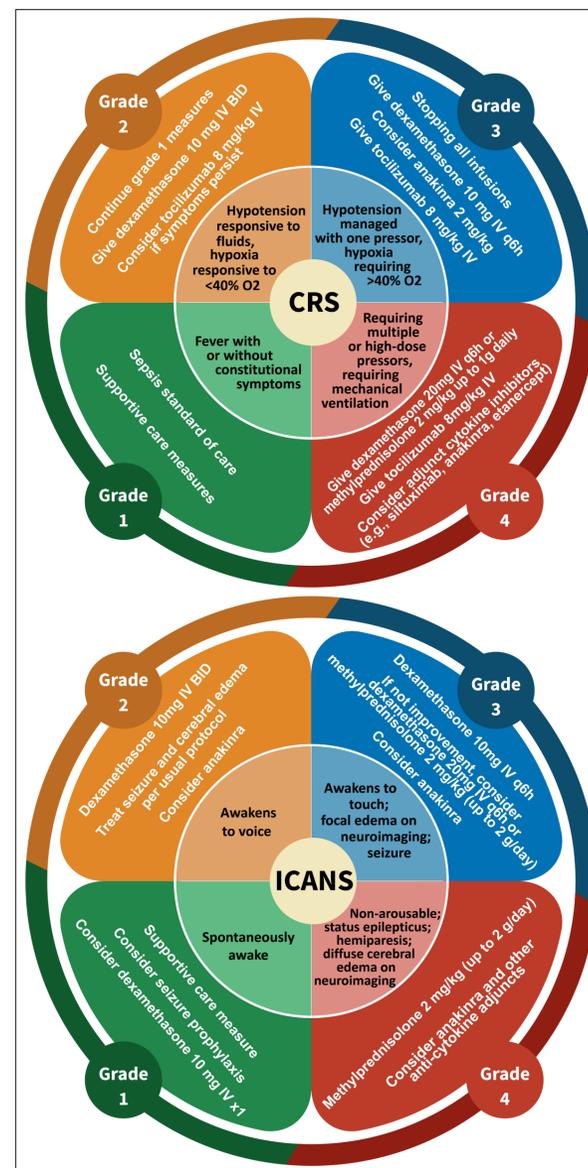


Figure 1. Overview of CRS and ICANS: grading, key symptoms, and ED management

Conclusions

Cancer patients on BiTEs frequently present to the ED, often for CRS or ICANS (Figure 1). The growing outpatient use of BiTEs necessitates that emergency physicians are capable of promptly identifying and addressing related toxicities through coordinated multidisciplinary care. A coordinated approach involving oncologists, diagnostic frameworks, and emergency physician education is critical for accurate triaging and early recognition of any immunologic adverse events. Early intervention is critical to prevent escalation of adverse events and ensure continuity of therapy.

References

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Background reading:
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