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INTRODUCTION

Small cell lung cancer (SCLC) accounts for approximately 15% of lung cancer cases and is characterized by rapid growth, early metastasis, and poor prognosis. Most patients present with extensive-stage disease (ES-SCLC). Outcomes for relapsed or refractory (R/R) ES-SCLC remain poor. Tarlatamab, a bispecific T-cell engager (BiTE), was recently approved for patients with ES-SCLC who have received prior systemic therapy. Approval was based on the DeLLphi-301 trial, which demonstrated a median progression-free survival (PFS) of 4.9 months and an objective response rate of 40%. However, trial enrollment underrepresented racial and ethnic minority populations, and real-world data. Oncology clinical pharmacists play a critical role in the safe initiation and ongoing management of tarlatamab therapy, including medication optimization, toxicity mitigation, and patient education, yet their contributions are often underrecognized. This study evaluates real-world safety and effectiveness outcomes of tarlatamab in ES-SCLC at a large academic community cancer center with a diverse patient population and characterizes the value of oncology clinical pharmacist interventions. The primary outcome is incidence of cytokine release syndrome (CRS) and immune effector cell–associated neurotoxicity syndrome (ICANS) secondary to tarlatamab administration, including median time of onset, and management. Secondary objectives include progression-free survival (PFS) and cost-avoidance associated with interventions made by oncology clinical pharmacists.

METHODS

Time period: October 1, 2024, to October 31st, 2025. Inclusion criteria: Adult patients with ES-SCLC who received at least one dose of tarlatamab. Exclusion criteria: Patients who did not meet inclusion criteria. Study design: Retrospective cohort study Study site: Large academic community cancer center.

DISCUSSION AND CONCLUSION

In this real-world cohort of patients with heavily pretreated ES-SCLC tarlatamab was most commonly initiated in the second-line setting following prior chemotherapy and immunotherapy. The study population reflects a clinically high-risk group, with substantial rates of brain and liver metastases. Safety findings were consistent with the known toxicity profile of T-cell–engaging therapies, as CRS and ICANS occurred primarily early in treatment, most often on Cycle 1 Day 1. Both toxicities were effectively managed with standard supportive measures, including antipyretics, tocilizumab, and corticosteroids, without unexpected safety signals. PFS was estimated using the Kaplan–Meier method; however, these data remain immature, as the majority of patients were censored at the time of analysis. 63.6% of patients remained on therapy with no documented disease progression or death, limiting definitive conclusions regarding treatment durability. Ongoing follow-up is needed to better characterize long-term outcomes. Oncology clinical pharmacists contributed extensively throughout care, supporting medication management, toxicity mitigation, and treatment optimization, underscoring their critical role in the safe delivery of complex immunotherapies. In this real-world analysis, grade 2 CRS and ICANS were the most severe toxicities observed, and clinical benefit was achieved despite these events. Oncology clinical pharmacists play a vital role in optimizing safety, clinical outcomes, and healthcare resource utilization in patients receiving BiTE therapy.

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RESULTS

Table 1. Patient Demographics

Baseline Demographics (N=22)	
Age (years, median)	64
Sex (female, %)	12 (52.2)
Race	
White	18 (78.3)
Black	5 (21.7)
Ethnicity	
Hispanic	7 (30.4)
Site of Metastasis (n, %)	
Brain	7 (30.4)
Liver	10 (43.5%)
ECOG	
0	18 (81.8)
1	4 (18.2)
Legend: ES-SCLC, Performance Status.	

Table 2. CRS/ICANS Incidence (N=22)

CRS Grades	
Grade 1	3
Grade 2	6
Grade ≥ 3	0
Treatment	
Received tocilizumab	3
Median Time to Onset – Hours	16.4
ICANS Grades	
Grade 1	2
Grade 2	6
Grade ≥3	0
Treatment	
Received dexamethasone	8
Median Time to Onset – Hours	15.8

Intervention Type	Intervention Definition	Quantity	Cost Avoidance (\$US)
Medication Reconciliation ¹	Reconciling and documenting the most current active medication list	215	\$50/20 min
Lab Monitoring ²	Ordering, assessing, and following laboratory results for dose adjustment, toxicity management, or efficacy	27	\$287
Patient Education/Counseling ³	Providing education to improve understanding of medications or disease states for patients and caregivers	176	\$141
Chemotherapy regimen review/Advanced Workup ⁴	Review of chemotherapy protocols to verify dosing, calculations, adjustments, and overall regimen appropriateness and safety.	330	\$220
Order Clarification ⁵	Clarifying or modifying chemotherapy medication orders	34	\$50/10 min
Transition of Care ⁶	Coordinating and ensuring continuity of care between inpatient and outpatient; evaluation for CRS and ICANS prior discharge.	144	ND ^a
Infectious Diseases Therapeutic Drug Monitoring ⁷	Modifying medication doses based on patient-specific factors	34	\$150/30 min
New Treatment Plan Application/Review ⁸	Evaluation and verification of newly initiated oncology treatment plans, including regimen selection, dosing, scheduling, supportive care, and alignment with clinical guidelines	22	ND ^a
Total		978	\$122,715
a. ND - Cost avoidance was not calculated due to the absence of standardized cost avoidance estimates			
Total 978 pharmacist interventions were identified. Cost avoidance was calculated for 812 interventions.			

