BURDEN OF MYELOSUPPRESSION AMONG PATIENTS WITH EXTENSIVE-STAGE SMALL CELL LUNG CANCER TREATED WITH CHEMOTHERAPY IN A COMMUNITY ONCOLOGY SETTING

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INTRODUCTION

- Myelosuppressive hematologic adverse events (HAEs; anemia, neutropenia, and/or thrombocytopenia) are common complications of chemotherapy treatment among patients with cancer[1]
- Cytotoxic chemotherapy remains the cornerstone of treatment for patients with extensive-stage small cell lung cancer (ES-SCLC)[2–4]
- Chemotherapy-induced myelosuppression is managed with dose reductions/delays and/or supportive care interventions, such as granulocyte colony-stimulating factor (G-CSF), erythropoiesis-stimulating agents (ESAs), and red blood cell (RBC)/platelet transfusions[5]
  - In February 2021, trilaciclib, an intravenous cyclin-dependent kinase 4/6 inhibitor, was approved by the US Food and Drug Administration to decrease the incidence of chemotherapy-induced myelosuppression in adult patients when administered prior to a platinum/etoposide- or topotecan-containing chemotherapy regimen for ES-SCLC[6]
  - In March 2021, the National Comprehensive Cancer Network Clinical Practice Guidelines in Oncology (NCCN Guidelines®) added trilaciclib as a prophylactic option to manage chemotherapy-induced myelosuppression in patients with ES-SCLC, as indicated, to its Guidelines for Small Cell Lung Cancer,[7] and for Hematopoietic Growth Factors[5]

OBJECTIVE

- To assess the prevalence of grade ≥ 3 myelosuppressive HAEs and associated health care resource utilization (HCRU) in the community oncology setting, among:
  1. Chemotherapy-treated patients with ES-SCLC (primary analysis)
  2. Chemotherapy-treated patients with ES-SCLC receiving trilaciclib (secondary analysis)

METHODS

Data Source

- This retrospective, observational study was conducted using structured data from the Integra Connect database

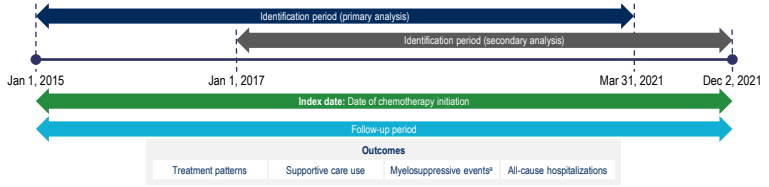
Study Population

- Primary and secondary analyses were conducted on data from 2 separate patient populations in the Integra Connect database:
  - For the primary analysis, adult chemotherapy-treated patients with ES-SCLC were identified between January 1, 2015, and March 31, 2021
  - For the secondary analysis, adult patients with ES-SCLC who received trilaciclib as part of their index chemotherapy regimen between January 1, 2017, and December 2, 2021, were identified
- For both analyses, a data-driven algorithm was applied to identify patients with ES-SCLC on the basis of chemotherapy treatment and to exclude those who had received treatment or tested positive for non–small cell lung cancer (ie, patients who had received afatinib, bevacizumab, cetuximab, erlotinib, fluorouracil, nab-paclitaxel, nivolumab, osimertinib, paclitaxel, pemetrexed, or vinorelbine, or had tested positive for *KRAS*, *EGFR*, *HER2*, *BRAF*, *ALK*, *MET*, *ROS-1*, *RET*, or *NTRK1/2/3* mutations)
- Patients were followed from the date of chemotherapy initiation (index date) until death, loss to follow-up, or end of study, whichever occurred first (**Figure 1**)

Outcomes and Analysis

- Myelosuppressive HAEs were identified using laboratory values based on Common Terminology Criteria for Adverse Events version 5.0 definitions[8] (**Figure 1**)
- The prevalence and frequency of grade ≥ 3 HAEs, treatment patterns, supportive care use (G-CSF, ESAs, blood transfusions), and all-cause hospitalizations during follow-up were reported (**Figure 1**)

Figure 1. Study Design



[a] Severe anemia (grade 3: hemoglobin < 8.0 g/dL); severe neutropenia (grade 3: absolute neutrophil count [ANC] ≥ 500 to < 1000 cells/μL; grade 4: ANC < 500 cells/μL); severe thrombocytopenia (grade 3: ≥ 25,000 to < 50,000 platelets/μL; grade 4: < 25,000 platelets/μL).

RESULTS

Study Population

- 3277 chemotherapy-treated and 21 chemotherapy + trilaciclib–treated patients with ES-SCLC were identified and included in the analysis; data on baseline disease and characteristics are provided in **Table 1**

Table 1. Demographic and Clinical Characteristics at Baseline

Baseline Characteristic	Chemotherapy-Treated Patients with ES-SCLC (N = 3277)	Chemotherapy + Trilaciclib–Treated Patients with ES-SCLC (N = 21)
Age, mean (SD), years	68 (9.1)	70 (8.3)
< 65 years, n (%)	1079 (32.9)	4 (19.0)
≥ 65 years, n (%)	2198 (67.1)	17 (81.0)
Male sex, n (%)	1651 (50.4)	10 (47.6)
Race, n (%)		
White	1968 (60.1)	16 (76.2)
Black	178 (5.4)	1 (4.8)
Asian	8 (0.2)	0
Other or not documented	1123 (34.3)	4 (19.0)
ECOG PS, n (%)		
0	784 (23.9)	8 (38.1)
1	1341 (40.9)	10 (47.6)
2	514 (15.7)	3 (14.3)
≥ 3	138 (4.2)	0
Not documented	500 (15.3)	0
Year of index date, n (%)		
2015	166 (5.1)	0
2016	452 (13.8)	0
2017	437 (13.3)	2 (9.5)[a]
2018	522 (15.9)	2 (9.5)[a]
2019	803 (24.5)	0
2020	897 (27.4)	0
2021	0	17 (81.0)
Payer, n (%)		
Commercial	816 (24.9)	3 (14.3)
Government	1136 (34.7)	8 (38.1)
Self-pay	57 (1.7)	1 (4.8)
Other or not documented	1268 (38.7)	9 (42.9)

[a] Patients received trilaciclib in a clinical trial setting.
ECOG PS, Eastern Cooperative Oncology Group performance status; ES-SCLC, extensive-stage small cell lung cancer.

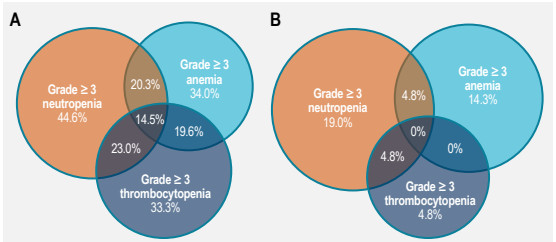
Treatment Patterns

- Of the 3277 chemotherapy-treated patients with ES-SCLC, almost two-thirds (65.7%) received chemotherapy alone, with most (70.3%) receiving etoposide + carboplatin as the index regimen; approximately one-third of patients (34.3%) received chemotherapy + immunotherapy, with most (89.3%) receiving etoposide + carboplatin + atezolizumab
  - Among the 21 patients who received chemotherapy + trilaciclib, 14.3% received trilaciclib with chemotherapy alone and 85.7% received trilaciclib with chemotherapy + immunotherapy

Myelosuppressive HAEs

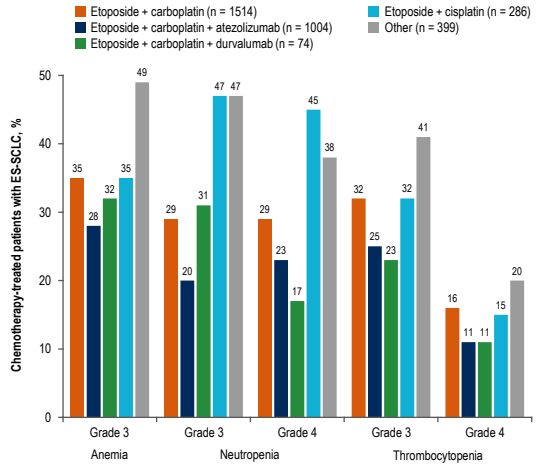
- Of the 3277 chemotherapy-treated patients with ES-SCLC, 57.4% had at least 1 grade ≥ 3 myelosuppressive HAE, including 34.0% with grade ≥ 3 anemia, 44.6% with grade ≥ 3 neutropenia, and 33.3% with grade ≥ 3 thrombocytopenia
  - 19.6–23.0% had grade ≥ 3 HAEs in 2 or more lineages, and 14.5% had grade ≥ 3 HAEs in all 3 lineages (**Figure 2A**)
- Among the 21 patients who received chemotherapy + trilaciclib, 28.6% had at least 1 grade ≥ 3 myelosuppressive HAE, including 14.3% with grade ≥ 3 anemia, 19.0% with grade ≥ 3 neutropenia, and 4.8% with grade ≥ 3 thrombocytopenia
  - < 5% had grade ≥ 3 HAEs in 2 or more lineages, and none had grade ≥ 3 HAEs in all 3 lineages (**Figure 2B**)
- Grade ≥ 3 myelosuppressive HAEs were observed across all index regimens in chemotherapy-treated patients with ES-SCLC, with a 28–49% incidence of grade 3 anemia, 17–47% incidence of grade ≥ 3 neutropenia, and 11–41% incidence of grade ≥ 3 thrombocytopenia (**Figure 3**)

Figure 2. Proportions of Patients with ES-SCLC with Grade ≥ 3 HAEs[a]: (A) Chemotherapy-Treated Patients (N = 3277) and (B) Chemotherapy + Trilaciclib–Treated Patients (N = 21)



[a] Percentages were calculated using the number of patients with laboratory value(s) for the corresponding endpoint(s) as the denominator.
ES-SCLC, extensive-stage small cell lung cancer; HAE, hematologic adverse event.

Figure 3. Proportion of Chemotherapy-Treated Patients with ES-SCLC with Grade ≥ 3 HAEs Across Index Regimens (N = 3277)[a]



[a] The 4 index regimens shown represent 88% of regimens. "Other" represents all other index regimens, each of which were received by < 2% of patients.
ES-SCLC, extensive-stage small cell lung cancer; HAE, hematologic adverse event.

HCRU for HAE Management

- HCRU associated with the management of myelosuppressive HAEs is presented in **Table 2**
- Of the 3277 chemotherapy-treated patients with ES-SCLC, 2751 (83.9%) received a long-acting (LA) G-CSF (2003 [61.1%] within 3 days after the index date) and 352 (10.7%) received RBC transfusions; 242 (7.4%) patients were hospitalized between days 8 and 16 post index, and 617 (18.8%) were hospitalized between days 1 and 21 post index
  - Among the 2751 patients who received LA G-CSF, 30.3% had grade ≥ 3 anemia and 29.4% had grade ≥ 3 thrombocytopenia
  - Among 476 patients who received ESA, 37.0% had grade ≥ 3 neutropenia and 51.9% had grade ≥ 3 thrombocytopenia
- Among the 21 patients who received chemotherapy + trilaciclib, 15 (71.4%) received LA G-CSF (10 [47.6%] within 3 days after the index date), 1 (4.8%) received RBC transfusions, and none received platelet transfusions at any time after the index date; no patients were hospitalized between days 8 and 16 post index, and 1 (4.8%) was hospitalized between days 1 and 21 post index

Table 2. Health Care Resource Utilization

HCRU	Chemotherapy-Treated Patients with ES-SCLC (N = 3277)	Chemotherapy + Trilaciclib–Treated Patients with ES-SCLC (N = 21)
Transfusions any time after the index date, n (%)		
RBC transfusions	352 (10.7)	1 (4.8)[a]
Platelet transfusions	80 (2.4)	0
Patients receiving growth factor support, n (%)		
LA G-CSF within 3 days after the index date	2003 (61.1)	10 (47.6)
LA G-CSF any time after the index date	2751 (83.9)[b]	15 (71.4)
ESA any time after the index date	476 (14.5)[c]	4 (19.0)
All-cause hospitalizations		
Hospital visits between days 8 and 16 post index, n (%)	242 (7.4)	0
Length of stay, mean (SD)	17 (58)	NA
Hospital visits between days 1 and 21 post index, n (%)	617 (18.8)	1 (4.8)
Length of stay, mean (SD)	34 (97)	1 (NA)

[a] Patient did not have any grade ≥ 3 HAEs. [b] Among 2751 patients, 30.3% had grade ≥ 3 anemia and 29.4% had grade ≥ 3 thrombocytopenia. [c] Among 476 patients, 37.0% had grade ≥ 3 neutropenia and 51.9% had grade ≥ 3 thrombocytopenia.
ES-SCLC, extensive-stage small cell lung cancer; ESA, erythropoiesis-stimulating agent; G-CSF, granulocyte colony-stimulating factor; HAE, hematologic adverse event; HCRU, health care resource utilization; LA, long-acting; NA, not applicable; RBC, red blood cell.

LIMITATIONS

- Results were based on data from community oncology settings and may not be generalizable beyond this setting
- Hospitalizations may be under captured, due to data limitation
- The sample size of patients with ES-SCLC who received chemotherapy + trilaciclib was too small for statistical comparison with patients who were treated with chemotherapy without trilaciclib; future studies using data from larger patient populations are recommended to enable this comparison

CONCLUSIONS

- Results from this study suggest that there is substantial burden of myelosuppressive HAEs among patients treated with chemotherapy ± immunotherapy for ES-SCLC in a community oncology setting
- More than half (57.4%) of chemotherapy-treated patients had a grade ≥ 3 myelosuppressive HAE in at least 1 lineage, with a notable proportion having multilineage myelosuppression
- 83.9% of chemotherapy-treated patients received LA G-CSF and 10.7% received RBC transfusions
- Therapies to protect bone marrow from multilineage HAEs, such as trilaciclib, have the potential to reduce such burden

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