MYELOSUPPRESSION AND HEALTHCARE UTILIZATION AMONG PATIENTS WITH CHEMOTHERAPY-TREATED EXTENSIVE-STAGE SMALL CELL LUNG CANCER (ES-SCLC) WITH AND WITHOUT TRILACICLIB FROM COMMUNITY ONCOLOGY PRACTICES

Ajeet Gajra, MD, MBBS, FACP[1,2]; N. Peter Reeves, PhD[3]; Susan O'Brien, MS[4]; Victor Giancarlo Sal y Rosas Celi, PhD[5]; Michelle Moore, RPH[6]; Huan Huang, PhD[6]

[1]Hematology-Oncology Associates of CNY, Syracuse, NY, United States; [2]National Cancer Care Alliance, United States; [3]Sumaq Life LLC, East Lansing, MI, United States; [4]Electronic Medical Office Logistics (EMOL Health) LLC, Royal Oak, MI, United States; [5]Pontificia Universidad Católica del Perú, Lima, Perú; [6]G1 Therapeutics, Research Triangle Park, NC, United States

BACKGROUND

- Trilaciclib is the first and only therapy that proactively protects hematopoietic stem and progenitor cells (HSPCs)
- It was approved by the Food and Drug Administration to reduce the incidence of chemotherapy-induced myelosuppression (CIM) among adults with extensive-stage small cell lung cancer (ES-SCLC) in February 2021[1]
- The National Comprehensive Cancer Network guidelines for hematopoietic growth factors and small cell lung cancer include trilaciclib as a prophylactic treatment to manage CIM before the initiation of chemotherapy in ES-SCLC as of March 2021[2,3]

OBJECTIVES

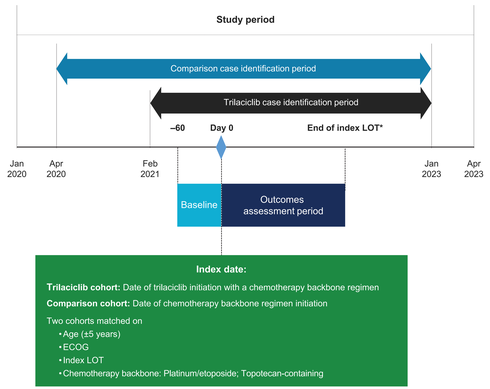
- The current study aims to compare cytopenia-related outcomes and healthcare resource utilization between patients with ES-SCLC who received trilaciclib vs. those who did not in a real-world setting

METHODS

STUDY DESIGN AND DATA SOURCE

- This is a retrospective observational study of two matched cohorts (**Figure 1**)
- Data source is the EMOL Health's database, which includes >7 million patients from >500 community oncology sites in the United States
- Structured electronic medical records (EMRs) from Jan 2020 to Apr 2023 were used for this study, supplemented by chart review

FIGURE 1. Study design



Abbreviations: ECOG=Eastern Cooperative Oncology Group; LOT=line of therapy.
* Index LOT was defined as the LOT in which the chemotherapy backbone regimen was received on the index date, in reference to the patient's treatment journey for ES-SCLC

STUDY POPULATION

- Adult patients with ES-SCLC receiving chemotherapy (with or without immunotherapy) were identified and further categorized into two study cohorts
- Trilaciclib cohort: patients who received trilaciclib in addition to chemotherapy
  - Index date was the date of trilaciclib initiation
- Comparison cohort: patients who did not receive trilaciclib anytime during the chemotherapy
  - Index date was the date of chemotherapy initiation
- The two cohorts were matched based on age as of the index date, the Eastern Cooperative Oncology Group (ECOG) score, index line of therapy (LOT) and chemotherapy backbone regimen

OUTCOMES

- Grade ≥3 myelosuppressive hematologic adverse events (HAEs) and cytopenia-related resource use
  - Myelosuppression events were identified using laboratory values based on Common Terminology Criteria for Adverse Events v5.0 definitions for anemia, neutropenia, and thrombocytopenia
    - Grade ≥3 anemia: hemoglobin <8.0 g/dL
    - Grade ≥3 neutropenia: absolute neutrophil count <1,000/μL
    - Grade ≥3 thrombocytopenia: platelet count <50,000/μL
- All-cause hospitalization
- Other outcomes, such as treatment duration, intravenous (IV) hydration and antibiotics use

STATISTICAL ANALYSIS

- Descriptive analyses were performed for patient baseline characteristics and outcomes between the two matched cohorts
- Adjusted analyses were conducted to evaluate grade ≥3 myelosuppression in ≥1, ≥2, and all three lineages, as well as all-cause hospitalization
  - A logistic regression model with random effect was conducted to assess the association of trilaciclib use with the outcomes of interest, adjusting for age, sex, index LOT and number of chemotherapy cycles receiving trilaciclib
  - Odds ratios (ORs) were estimated using a frequentist approach
  - The main analysis was conducted using data up to four cycles in all subjects
  - A subgroup analysis was conducted among the subjects who started trilaciclib during cycle 1 of LOT1 and used trilaciclib in all the cycles and the controls
  - Additional sensitivity analysis was conducted using a Bayesian approach with 95% credible intervals, with additional analysis on outcomes observed up to six cycles in the index LOT

RESULTS

BASELINE CHARACTERISTICS

- 77 patients who received trilaciclib were matched to 77 comparison patients who did not receive trilaciclib. Baseline demographic and clinical characteristics are presented in **Table 1**
  - Among 77 patients who received trilaciclib, 43 patients started trilaciclib on cycle 1 LOT1 and used trilaciclib in all the chemotherapy cycles in the index LOT
- At the index date, the mean age was around 70 years for both cohorts; almost all patients received platinum/etoposide backbone regimens; and 83% received the first-line therapy
- The two cohorts also had similar distributions in race, insurance type, and ECOG score
- Few patients had myelosuppressive HAEs during baseline

TABLE 1. Baseline demographic and clinical characteristics

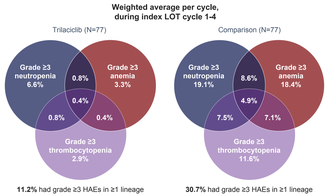
	Trilaciclib N= 77		Comparison N= 77	
Age at index date, mean (SD)	69.6	7	70.8	6.8
Gender, n (%)				
Female	37	48.1%	43	55.8%
Race, n (%)				
White	64	83.1%	68	88.3%
Black/African American	10	13.0%	7	9.1%
Other[a]	3	3.9%	2	2.6%
Payer, n (%)				
Commercial	19	24.7%	16	20.8%
Medicaid	10	13.0%	8	10.4%
Medicare	46	59.7%	51	66.2%
Other[b]	2	2.6%	2	2.6%
Index year, n (%)				
2020	0	0.0%	4	5.2%
2021	13	16.9%	52	67.5%
2022	63	81.8%	16	20.8%
ECOG score[c], n (%)				
0-1	49	63.6%	49	63.6%
2+	17	22.1%	22	28.6%
Unknown	11	14.3%	6	7.8%
Index LOT regimen, n (%)				
Platinum/etoposide-containing regimen, with or without IO	76	98.7%	76	98.7%
Topotecan-containing regimen	1	1.3%	1	1.3%
Index LOT, n (%)				
1st line	64	83.1%	64	83.1%
2nd or later lines	13	16.9%	13	16.9%
Myelosuppressive events during baseline[d], n (%)				
Grade ≥3 neutropenia, n (%)	1	1.3%	2	2.6%
Grade ≥3 thrombocytopenia, n (%)	0	0.0%	1	1.3%
Grade 3 anemia, n (%)	1	1.3%	4	5.2%

Abbreviations: ECOG=Eastern Cooperative Oncology Group; IO=immuno-oncology therapy; LOT=line of therapy; SD=standard deviation.
[a]Other included Asia, American Indian/Native/Alaskan/Native Hawaiian or other Pacific Islander and undocumented race.
[b]Other included uninsured and other payer types.
[c]Measured on the index date or within 60 days prior to and closest to the index date
[d]Measured during the 60-day period before the index date

MYELOSUPPRESSIVE HAES

- Patients receiving trilaciclib had lower rates of grade ≥3 myelosuppressive HAEs and cytopenia-related resource use compared to the matched comparison cohort (**Figures 2 and 3**)

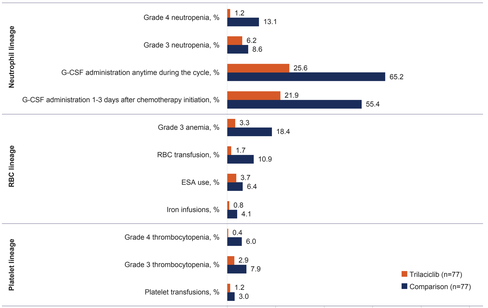
FIGURE 2. Prevalence of grade ≥3 myelosuppressive HAEs during cycle 1-4 in the index LOT



Myelosuppressive HAEs by cycle	Cycle 1 Trilaciclib N=54	Cycle 1 Comparison N=77	Cycle 2 Trilaciclib N=67	Cycle 2 Comparison N=69	Cycle 3 Trilaciclib N=64	Cycle 3 Comparison N=63	Cycle 4 Trilaciclib N=57	Cycle 4 Comparison N=58
Grade ≥3 HAEs in ≥1 lineage (%)	24.1	36.4	6.0	24.6	12.5	27.0	3.5	34.5
Grade ≥3 HAEs in ≥2 lineages (%)	3.7	13.0	0.0	11.6	1.6	14.3	0.0	15.5
Grade ≥3 HAEs in 3 lineages (%)	1.9	5.2	0.0	2.9	0.0	4.8	0.0	6.9
Grade ≥3 neutropenia + thrombocytopenia (%)	3.7	13.0	0.0	4.3	0.0	4.8	0.0	6.9
Grade ≥3 neutropenia + anemia (%)	1.9	5.2	0.0	8.7	1.6	11.1	0.0	10.3
Grade ≥3 thrombocytopenia + anemia (%)	1.9	5.2	0.0	4.3	0.0	7.9	0.0	12.1
Grade ≥3 neutropenia (%)	18.5	29.9	0.0	14.5	6.2	14.3	3.5	15.5
Grade ≥3 thrombocytopenia (%)	7.4	16.9	1.5	7.2	3.1	7.9	0.0	13.8
Grade 3 anemia (%)	3.7	7.8	4.5	17.4	4.7	23.8	0.0	27.6

Abbreviations: HAE=hematologic adverse event; LOT=line of therapy.

FIGURE 3. Grade ≥3 myelosuppressive HAEs and cytopenia-related resource use by lineage, weighted average per cycle during cycle 1-4 in the index LOT



Abbreviations: HAE=hematologic adverse event; LOT=line of therapy; G-CSF=granulocyte colony-stimulating factor; RBC=red blood cell; ESA=erythropoiesis-stimulating agent.

All-cause Hospitalizations

- Number of all-cause hospitalizations per patient was 0.35 for trilaciclib vs. 0.51 for comparison during index LOT
  - Among patients ≥1 hospitalizations, median number of hospitalizations was 1.0 in the trilaciclib cohort vs. 2.0 in the comparison cohort during the index LOT

Other Outcomes

- Trilaciclib-treated patients had similar treatment duration and number of chemotherapy cycles compared to the matched comparison cohort, and lower rates of IV hydration and antibiotics use (**Table 2**)

TABLE 2. Other outcomes during follow-up

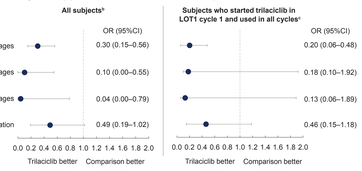
	Trilaciclib N= 77	Comparison N= 77
Duration of index LOT (days), mean (SD)	87.4 (35.9)	87.6 (52.8)
Number of chemotherapy cycles, mean (SD)	3.7 (1.0)	3.6 (1.3)
Other outcomes (weighted average per cycle, during cycle 1-4 in the index LOT)		
IV Hydration, %	10.3%	20.6%
Antibiotics, %	9.9%	16.5%
Oral antibiotics	6.6%	13.9%
IV antibiotics	5.4%	7.1%

Abbreviations: LOT=line of therapy; SD=standard deviation; IV=intravenous.

Multivariable Adjusted Analysis

- After adjusting for age, sex, index LOT and number of chemotherapy cycles receiving trilaciclib, the odds of developing an event of grade ≥3 myelosuppression in ≥1, ≥2, and 3 lineages were reduced by 70% (OR=0.30, 95%CI: 0.15 – 0.56), 90% (OR=0.10, 95%CI: 0.00 – 0.55), and 96% (OR=0.04, 95%CI: 0.00 – 0.79), respectively, with trilaciclib use. All results were statistically significant (**Figure 4**)
- The odds of all-cause hospitalization were reduced by 51% (OR=0.49, 95%CI: 0.19 – 1.02) with trilaciclib use, although the difference was not statistically significant
- The results from the sensitivity analyses were similar to the main analysis, including analysis using Bayesian approaches, a subgroup analysis of patients who started trilaciclib in LOT1 cycle 1 and used trilaciclib in all cycles, and analysis including outcomes up to six cycles

FIGURE 4. Adjusted OR of myelosuppression and all-cause hospitalization[a]



Abbreviations: OR=odds ratio; LOT=line of therapy; CI=confidence interval.
[a]ORs and their respective 95% confidence intervals were presented. Results were estimated using logistic regression models based on a frequent approach, adjusting for age, sex, LOT and number of chemotherapy cycles receiving trilaciclib. All outcomes were observed from the index date to a maximum of four cycles.
[b]All subjects were included in the analysis (n=147 [with non-missing values for the outcomes] for myelosuppression outcomes and n=154 for hospitalization).
[c]A subgroup analysis including subjects who started trilaciclib in LOT1 cycle 1 and used trilaciclib in all cycles and the controls (n=100 [with non-missing values for the outcomes] for myelosuppression outcomes and n=107 for hospitalization).
Analyses using a Bayesian approach and including outcomes up to six cycles yielded similar results.

LIMITATIONS

- Because the study used secondary data from the real world with limited sample size, only selected confounders could be controlled for through cohort matching and multivariate models
- Future prospective studies and/or real-world studies with a larger sample size, allowing for a more thorough adjustment for potential confounders are recommended to confirm the findings

CONCLUSIONS

- In this real-world study among patients with ES-SCLC undergoing chemotherapy (±immunotherapy), the odds of developing severe myelosuppression were significantly reduced with the use of trilaciclib
- There was a strong trend towards reduced odds of hospitalization with the use of trilaciclib, warranting future investigation using an adequately powered study

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DISCLOSURES
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CONTACT
For questions or comments, please contact Huan Huang hhuang@g1therapeutics.com