

CORRELATION BETWEEN MOBILIZATION REGIMEN AND CD34⁺ STEM CELL YIELD IN MULTIPLE MYELOMA (MM) PATIENTS UNDERGOING AUTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANTATION (AUTO-HSCT): A SINGLE-CENTER RETROSPECTIVE ANALYSIS

S. Hlukhovska¹, I. Salii¹, A. Chuchvych¹, B. Skulskyi²

1. First Lviv Medical Union, Lviv, Ukraine. Hematology and Bone Marrow Transplantation Department
2. CNE "Clinical Center of Oncology, Hematology, Transplantology and Palliative Care of Cherkasy Oblast Council", Cherkasy, Ukraine



INTRODUCTION

Adequate CD34⁺ cell collection is a prerequisite for successful auto-HSCT in multiple myeloma (MM), whereas mobilization failure may prolong treatment timelines and increase costs.

OBJECTIVE

To evaluate the correlation between mobilization regimen and CD34⁺ cell yield, and to identify patient-related factors associated with mobilization outcome in MM patients undergoing auto-HSCT at our center.

METHODS

Single-center retrospective observational analysis of consecutive MM patients mobilized between February 2024 and March 2026.

PATIENTS

Thirty-three consecutive MM patients (19 female, 14 male; mean age 52.5 years, range 36–67) proceeding to first auto-HSCT after induction therapy and achieving at least partial response.

REFERENCES

- Popat, Uday et al. "Impairment of filgrastim-induced stem cell mobilization after prior lenalidomide in patients with multiple myeloma." *Biology of blood and marrow transplantation : journal of the American Society for Blood and Marrow Transplantation* vol. 15,6 (2009): 718-23. doi:10.1016/j.bbmt.2009.02.011
- Wan, Yu et al. "The impact of multiple myeloma drugs treatments on autologous stem cell transplantation in the era of new drugs." *Frontiers. Oncology*. vol.15 (2025) doi: 10.3389/fonc.2025.1479164

ACKNOWLEDGEMENTS

Olha Novosad

MAIN OUTCOME MEASURES

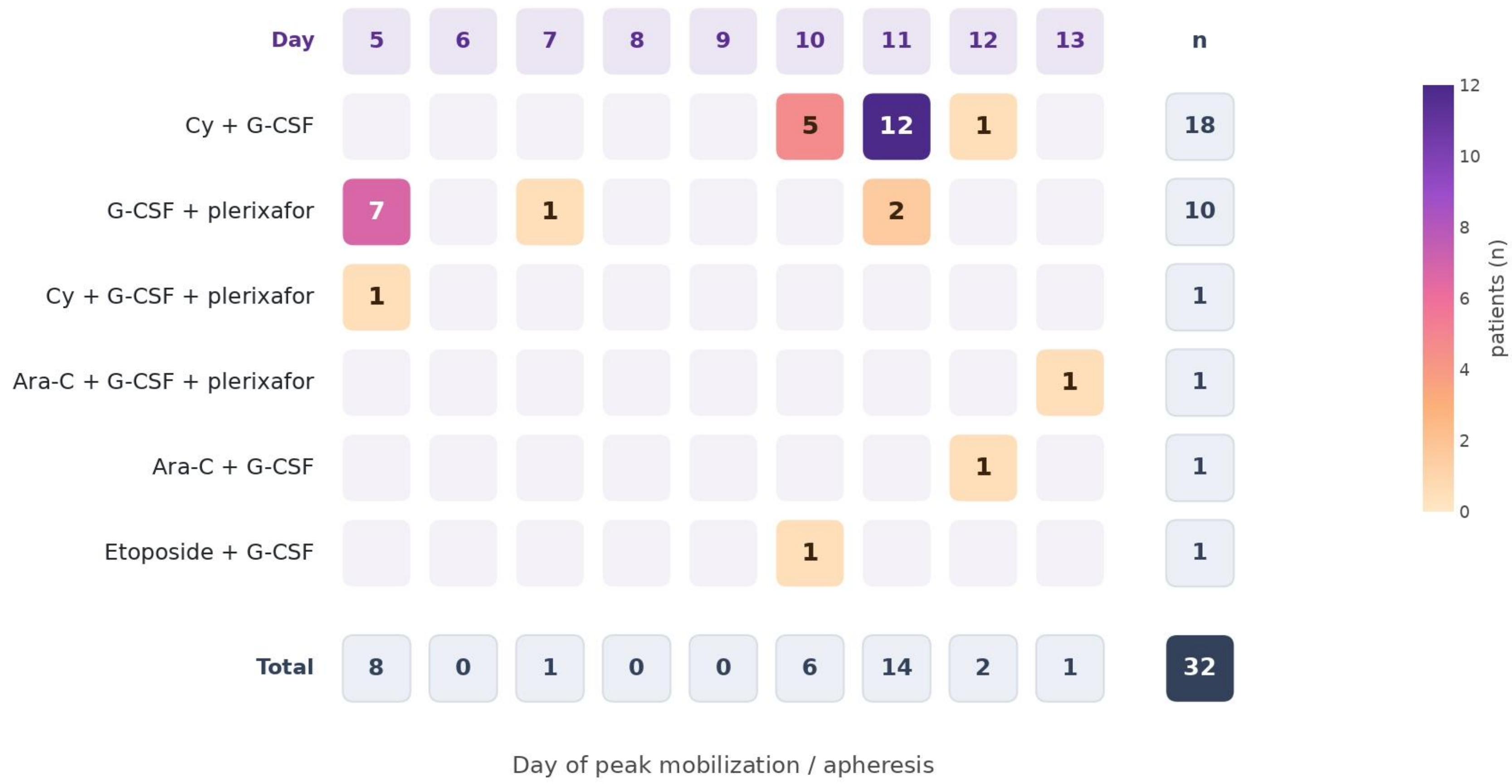
Total CD34⁺ cells collected (×10⁶/kg), proportion achieving minimum (≥2×10⁶/kg) and optimal (≥4×10⁶/kg) thresholds, number of apheresis sessions, and poor-mobilizer rate. Correlations with prior therapy lines, lenalidomide exposure, time from last chemotherapy, and baseline blood counts were assessed using Spearman analysis

INTERVENTIONS

Mobilization regimens included cyclophosphamide plus G-CSF (n=17), cyclophosphamide plus G-CSF with plerixafor rescue for poor mobilization (n=8), upfront cyclophosphamide/G-CSF/plerixafor (n=2), cytarabine plus G-CSF (n=2), etoposide plus G-CSF with or without plerixafor (n=2), rescue G-CSF plus plerixafor alone (n=1), and other complex salvage strategies (n=1). Apheresis was initiated between days 5 and 13.

Timing of peak CD34⁺ mobilization by regimen

Number of patients reaching apheresis on each day · n = 32



CONCLUSIONS

Cyclophosphamide plus G-CSF with on-demand plerixafor rescue achieved a 100% minimum-yield success rate. Greater lenalidomide exposure was associated with reduced CD34⁺ yield, supporting earlier mobilization in heavily pretreated patients. Prospective validation in larger cohorts is warranted.

RESULTS

Median CD34⁺ yield was 4.39×10⁶/kg (range 1.1–51.6). All patients (100%) achieved the minimum threshold; 54.5% reached the optimal target. Single apheresis was sufficient in 81.8%. Poor mobilizer rate after cyclophosphamide plus G-CSF was 24.2%; plerixafor rescue salvaged all such cases. Cumulative lenalidomide cycles correlated negatively with CD34⁺ yield (p = −0.34, p≈0.05), while total prior therapy lines showed a weaker, non-significant negative trend (p = −0.28, p=0.11), suggesting prior therapy nature — particularly lenalidomide exposure —influences mobilization more than the line count alone. All patients successfully engrafted following auto-HSCT.

Table 1. Peak CD34⁺ mobilization occurred later with chemomobilization than with G-CSF plus plerixafor.

Number of patients (n = 32) reaching the apheresis threshold on each day after the start of mobilization, stratified by regimen. Colour intensity is proportional to the number of patients in each cell (scale bar, right); empty cells indicate no patients. Row totals (n) give the number of mobilization courses per regimen; column totals give the number of patients who underwent apheresis on each day. Counts refer to mobilization courses, so patients remobilized after failure contribute more than once

CONTACT INFORMATION

Solomiia Hlukhovska
solomiia.hlukhovska@outlook.com