A prospective, multicenter study on hematopoietic stem-cell mobilization with cyclophosphamide plus granulocyte colony-stimulating factor and 'on-demand' plerixafor in multiple myeloma patients treated with novel agents

Roberto Mina,[1] Maria Teresa Petrucci,[2] Francesca Bonello,[3] Velia Bongarzoni,[4] Riccardo Saccardi,[5] Giuseppe Bertuglia,[1] Andrea Mengarelli,[6] Andrea Spadaro,[7] Chiara Lisi,[2] Paola Curci,[8] Roberto Massimo Lemoli,[9,10] Stelvio Ballanti,[11] Rita Floris,[12] Luca Cupelli,[13] Patrizia Tosi,[14] Attilio Olivieri,[15] Delia Rota-Scalabrini,[3] Clotilde Cangialosi,[16] Chiara Nozzoli,[5] Barbara Anaclerico,[4] Francesca Fazio,[2] Benedetto Bruno,[1] Katia Mancuso,[17,18] Paolo Corradini,[19] Giuseppe Milone[7] and Mario Boccadoro[20]

[1]Division of Hematology, AOU Città della Salute e della Scienza di Torino, University of Torino and Department of Molecular Biotechnology and Health Sciences, University of Torino, Torino; [2]Hematology, Department of Translational and Precision Medicine, Azienda Ospedaliera Policlinico Umberto I, Sapienza University of Rome, Rome; [3]Medical Oncology Department, Candiolo Cancer Institute, FPO-IRCCS, Candiolo; [4]U.O.C. Ematologia, Azienda Ospedaliera "San Giovanni/Addolorata", Roma; [5]Cellular Therapy and Transfusion Medicine Unit, Careggi University Hospital, Florence; [6]Hematology and Stem Cell Transplant Unit, IRCCS Regina Elena National Cancer Institute, Rome; [7]Division of Hematology, AOU Policlinico, University of Catania, Catania; [8]Unit of Hematology and Stem Cell Transplantation, AOUC Policlinico, Bari; [9]Clinic of Hematology, Department of Internal Medicine (DiMI), University of Genoa, Genova; [10]IRCCS Policlinico San Martino, Genova; [11]Sezione di Ematologia e Immunologia Clinica, Ospedale Santa Maria della Misericordia, località Sant'Andrea delle Fratte, Perugia; [12]S.C. Ematologia e CTMO, Ospedale Oncologico "A. Businco", Cagliari; [13]Department of Hematology, S. Eugenio Hospital, Rome; [14]Hematology Unit, Infermi Hospital, Rimini; [15]Clinica di Ematologia, Azienda Ospedaliero Universitaria delle Marche, Ancona; [16]U.O.C. Ematologia, A.O. Ospedali Riuniti Villa Sofia-Cervello, Palermo; [17]IRCCS Azienda Ospedaliero-Universitaria di Bologna, Istituto di Ematologia "Seràgnoli", Bologna; [18]Dipartimento di Scienze Mediche e Chirurgiche, Università di Bologna, Bologna; [19]Fondazione IRCCS Istituto Nazionale dei Tumori Milano, Università di Milano, Milano and [20]Department of Molecular Biotechnology and Health Sciences, University of Torino, Torino, Italy

Correspondence: R. Mina
roberto.mina@unito.it

Received: September 13, 2023.
Accepted: November 7, 2023.
Early view: November 16, 2023.

https://doi.org/10.3324/haematol.2023.284023

A prospective, multicenter study on hematopoietic stem-cell mobilization with cyclophosphamide plus granulocyte colony-stimulating factor and 'on-demand' plerixafor in multiple myeloma patients treated with novel agents

Supplementary appendix

Table S1. Univariate model for predictors of hematopoietic stem-cell mobilization failure or plerixafor administration

Parameters	OR (95% CI)	p-value
Age, >60 *vs.* ≤60 years	1.26 (0.68–2.34)	0.46
Bone marrow plasma cells at diagnosis, >60% *vs.* ≤60%	3.96 (2.04–7.7)	<0.001
R-ISS stage, III *vs.* I–II	2.88 (0.91–9.11)	0.07
Cytopenia at diagnosis, Yes *vs.* No	1.42 (0.63–3.2)	0.39
Bortezomib-based induction, Yes *vs.* No	0.19 (0.08–0.47)	0.0003
Lenalidomide-based induction, Yes *vs.* No	5.48 (2.43–12.36)	<0.001
Daratumumab-based induction, Yes *vs.* No	4.49 (1.16–17.38)	0.03
Number of induction cycles, >4 *vs.* ≤4	0.98 (0.53–1.81)	0.94
Response to induction, ≥VGPR *vs.* <VGPR	0.59 (0.31–1.13)	0.10
Grade 3–4 hematologic toxicity during induction, Yes *vs.* No	6.31 (2.74–14.54)	<0.001
Pre-mobilization ANC <2.5×10^9/L, Yes *vs.* No	2.78 (1.49–5.26)	0.001
Pre-mobilization Hb <12 g/dL, Yes *vs.* No	2.08 (1.09–4)	0.03
Pre-mobilization PLT <150×10^9/L, Yes *vs.* No	1.18 (0.26–5.44)	0.83
Time from the end of induction to Cy administration, >30 *vs.* ≤30 days	1.25 (0.66–2.35)	0.48
Time from the end of induction to Cy administration, >60 *vs.* ≤60 days	0.86 (0.32–2.35)	0.77
Cy dose, 3g/m^2 *vs.* 2g/m^2	0.79 (0.36–1.76)	0.57
Cy dose, 4g/m^2 *vs.* 2g/m^2	1.00 (0.49–2.06)	1.00

Abbreviations. ANC: absolute neutrophil count; CI: confidence interval; Cy: cyclophosphamide; Hb: hemoglobin; OR: odds ratio; PLT: platelets; R-ISS: Revised International Staging System; VGPR: very good partial response.

Table S2. Adverse events according to plerixafor administration

	No-plerixafor group (n=263)			Plerixafor group (n=38)		
Adverse event, n (%)	**Grade 2**	**Grade 3**	**Grade 4**	**Grade 2**	**Grade 3**	**Grade 4**
Bone pain	3 (1)	0	0	4 (10)	0	0
Nausea/vomiting	3 (1)	0	0	1 (3)	0	0
Diarrhea	1 (0)	0	0	0	0	0
Infections	0	2 (1)	0	0	0	0
Peripheral neuropathy*	2 (1)	0	0	0	0	0
Overall	*9 (3)*	*2 (1)*	*0*	*5 (13)*	*0*	*0*

**Peripheral neuropathy includes both motor and sensory neuropathy.*