Collaborative Retrospective Analysis of Haploidentical Hematopoietic Stem Cell Transplantation Outcomes in Hematologic Malignancies: Insights from the Argentine Group of Bone Marrow Transplantation and Cellular Therapy (GATMO-TC)

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Abstract

Haploidentical hematopoietic stem cell transplantation (Haplo-HSCT) has emerged as very important therapeutic option for malignant hematologic disorders. In Argentina the median time to an unrelated donor is about 5-7 months, and only 30% of the patients manage to transplant in the last evaluation[1].

This study, conducted in collaboration with the Argentine Group of Bone Marrow Transplantation and Cellular Therapy (GATMO-TC), aims to evaluate overall survival (OS), progression-free survival (PFS), graft-versus-host disease-free, relapse-free survival (GRFS), transplant-related mortality (TRM), and incidence of graft-versus-host disease (GVHD) in allogeneic Haplo-HSCT for acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), and myelodysplastic syndrome (MDS).

A retrospective analysis was conducted on 287 patients who underwent Haplo-HSCT with post-transplant cyclophosphamide from 2014 to 2022 across eight institutions within the Argentine Group of Bone Marrow Transplantation and Cellular Therapy (GATMO-TC).

Statistical analysis included Kaplan-Meier survival and Grey's test for commutative incidence.

Results

The analysis included 287 patients with a median age of 42 years (range: 16-77); 56% were male. Diagnoses included AML (50%), ALL (37%), and MDS (12%).

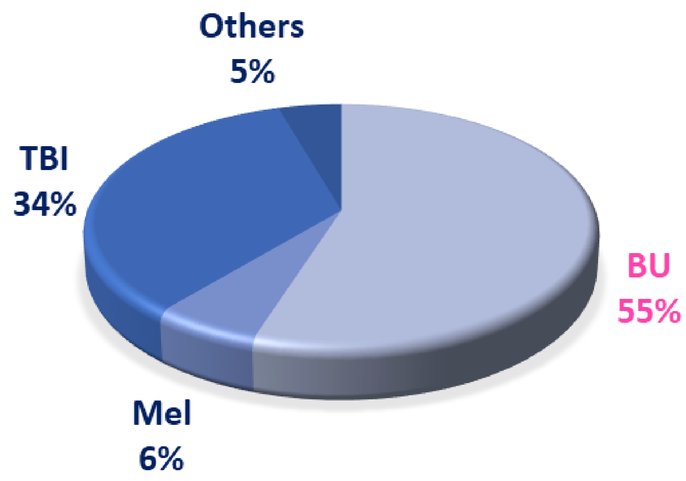
Among these patients, 75% received a myeloablative busulfan-based conditioning regimen, with 75% of the stem cells sourced from peripheral blood. Pre-transplant status showed 78% of AML and 63% of ALL patients in complete remission, while 63% of MDS patients had stable disease with <10% blasts. Median follow-up was 27.7 months.

Total patients	287
Median of age (r)	42 (15-77)
> 60 Years (%)	53 (17)
Sex N (%)	
Male	174 (56)
Female	136 (44)
Disease (%)	
AML	157 (51)
ALL	116 (37)
MDS	37 (12)
Risk HCT-CI/ (%)	<3 /(84)
	>3/(16)
Risk DRI /(%)	Intermediate 39%
	High 58%

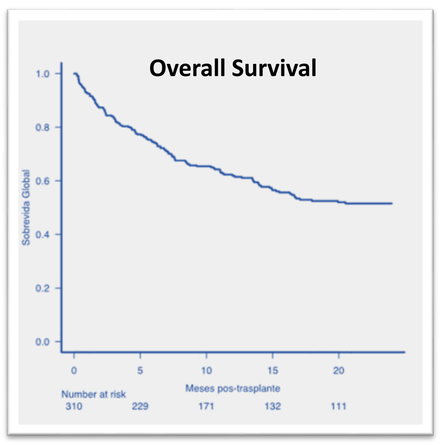
Donors	
Median age (r)	34 (13-72)
<45 years (%)	222 (71)
Sex N (%)	
Male	202 (65)
Female	108 (35)
Relative N (%)	
Father	14 (5)
Mother	23 (7)
Brother	106 (34)
Sister	65 (21)
Son	79 (25)
daughter	20 (6)
Cousin	3 (1)

Source	
Peripheral Blood	74%
Bone Marrow	11%
mix	15%

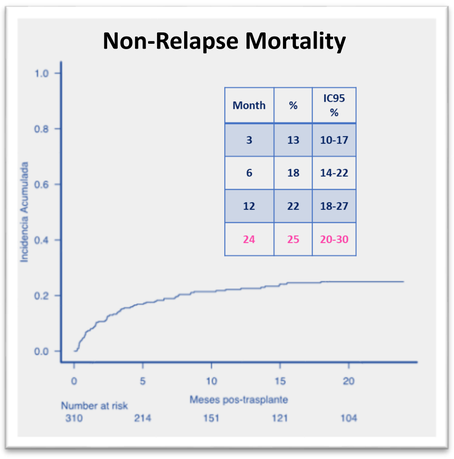
Intensity	
MAC 75%	RIC 25%



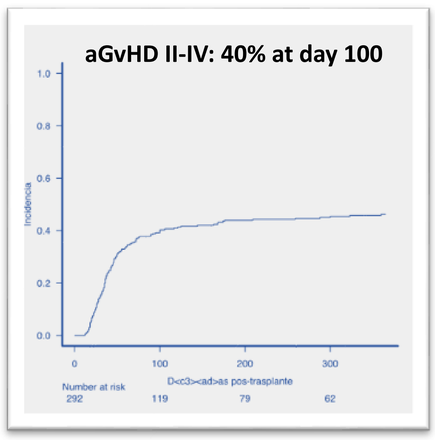
Two-year OS and PFS were 51.5% and 44.3%, respectively. Multivariate analysis revealed HCT-CI, donor age, and conditioning intensity impacting OS and Disease Risk Index (DRI) influencing PFS. TRM at 3, 12, and 24 months was 13%, 22%, and 25%, with relapse rates of 6%, 24%, and 31%; infections were the leading cause of death. GRFS at 2 years was 38.1%. Incidence of acute GVHD II-IV was 40% and 46% at day 100 and 365, with III-IV GVHD at 0.7% and 5%. Chronic GVHD rates were 3.3% and 13% at 6 and 24 months.

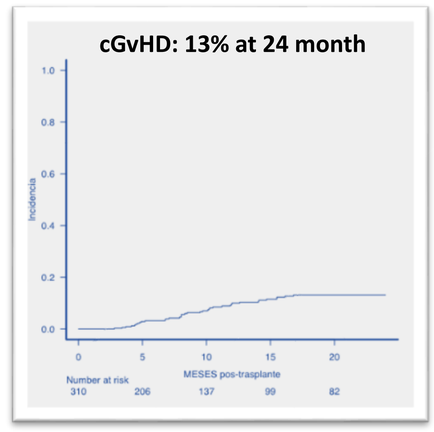


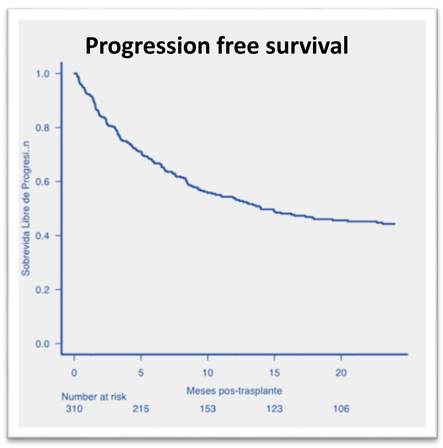
Variable	HR	p
Year > 50	1.03 (0,68-1,54)	0.88
Year of transplant	0.96 (0,89-1,04)	0.36
DRI risk group	0.77 (0,54-1,10)	0.15
Donor age	1.01 (1-1,02)	0.02
HCT-CI ≥2	1.49 (1,05-2,11)	0.02
Conditioning intensity	1.47 (1,02-2,132)	0.03



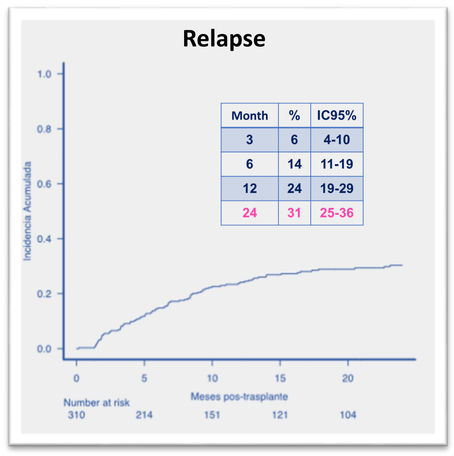
Month	%	IC95 %
3	13	10-17
6	18	14-22
12	22	18-27
24	25	20-30



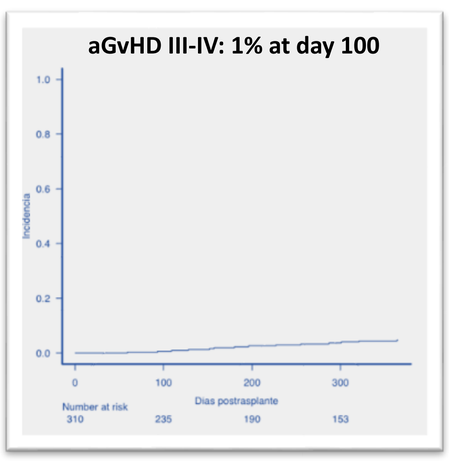




Variable	HR	p
Year of transplant	0.95 (0.89-1.02)	0.23
DRI risk intermediate vs high	0.71 (0.524-0.98)	0.04
Donor age	1.01 (0.99-1.02)	0.07
Conditioning intensity	1.25 (0.89-1.76)	0.18



Month	%	IC95%
3	6	4-10
6	14	11-19
12	24	19-29
24	31	25-36



Conclusion

This collaborative study with GATMO-TC demonstrates that Haplo-HSCT is a well-established therapeutic option with acceptable rates of OS, PFS, GRFS, TRM, and GVHD incidence. Further analysis is needed to understand the impact of infections as a major cause of mortality. These findings contribute to the consolidation of Haplo-HSCT as a valuable treatment modality for hematologic malignancies

References

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