

Impact of Donor Age in Haploidentical versus Matched Unrelated Donor Hematopoietic Cell Transplantation with Post-Transplant Cyclophosphamide in Patients with Acute Myeloid Leukemia

A re-analysis of a publicly available CIBMTR® (Center for International Blood and Marrow Transplant Research®) dataset

Study Details:

The study examined the impact of donor age and type on outcomes in acute myeloid leukemia (AML) patients undergoing reduced-intensity conditioning hematopoietic cell transplantation (RIC HCT) from younger matched unrelated donors (MUD) versus younger or older haploidentical donors (haplo). All patients received post-transplant cyclophosphamide (PTCy) graft-versus-host disease (GVHD) prophylaxis.

Patients with AML (n=775) were separated into three groups based on donor type: younger MUD (n=84), younger haplo (302), and older haplo (389).

Results at a Glance:

- This study reported the highest 3-year overall survival (OS) in the younger MUD group (68.5%), compared to the younger (50.8%) and older (42.2%) haplo groups. Both haplo groups displayed significantly higher non-relapse mortality (NRM) and inferior OS than the younger MUD group, with the highest NRM observed in the older haplo group (22.0%).
- The older haplo (33.7%) group exhibited a higher risk for acute GVHD than the younger haplo (25.8%) and younger MUD (20.2%) groups. Still, no significant differences were seen in chronic GVHD rates.
- Infections and causes of death did not vary significantly between the groups, although fungal infections were more common in the older haplo group.

Figure: Outcomes by Donor Type and Age

	Univariate analysis	Multivariate analysis	
	Estimates	HR	P-value
Overall Survival, 3 years			
Young MUD	68.5	Ref	
Young Haplo	50.8	1.95	0.005
Old Haplo	42.2	2.36	<0.001
NRM, 3 years			
Young MUD	8.0	Ref	
Young Haplo	11.0	3.72	0.009
Old Haplo	22.0	6.91	<0.001
Grade II-IV aGVHD, day 100			
Young MUD	20.2	Ref	
Young Haplo	25.8	1.67	0.06
Old Haplo	33.7	2.69	0.001

Clinical Impact:

In patients with AML undergoing RIC HCT with PTCy for GVHD prevention, younger MUDs yielded better outcomes than haplo donors, regardless of donor age. Older haplo donors demonstrated increased risk of NRM and acute GVHD without significant differences in relapse or OS. These findings suggest a preference for younger MUDs over haplo donors in treating adult patients with AML in complete remission. These results emphasize the importance of considering all available donor sources when determining the best donor for a patient in need of RIC HCT.

Read the publication in *Transplantation and Cellular Therapy* (DOI:[10.1016/j.jtct.2023.03.028](https://doi.org/10.1016/j.jtct.2023.03.028)).

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