COMPARATIVE OUTCOMES OF HCT WITH POST-TRANSPLANT CYCLOPHOSPHAMIDE IN OLDER ADULTS: THE IMPACT OF DONOR TYPE

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Introduction

- Hematopoietic stem cell transplants (HCT) have increased in older adults; doubling in patients ≥ 65, including those ≥75 years old over the past decade.
- Post-transplant cyclophosphamide (PTCy)-based graft-versus-host disease (GVHD) prophylaxis has become widely adopted across various donor types.
- Despite this increasing adoption, comparative data remain limited.

Methods

- Single center retrospective study at MD Anderson Cancer Center from 2017-2024.
- Included all consecutive patients ≥65 years old with any hematologic malignancy who underwent their first HCT with PTCy.
- Included: 8/8 MUD (n=371), MSD (n=123), haploidentical donor (n=87) or 7/8-HLA MMUD (n=29).

Results

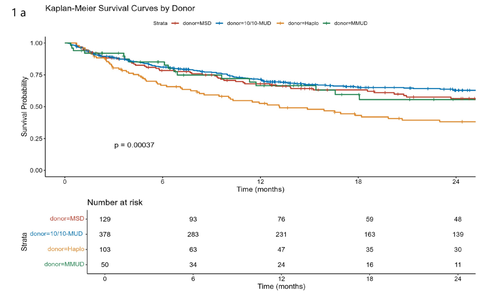
	8/8 MUD	MSD	Haplo	7/8 MMUD
Total N = 610	371	123	87	29
Patient age, years				
65-69	205 (55.3)	76 (61.8)	56 (64.4)	18 (62.1)
70-74	135 (36.4)	40 (32.5)	26 (29.9)	9 (31.0)
≥ 75	31 (8.4)	7 (5.7)	5 (5.7)	2 (6.9)
Median (IQR)	69 (67-72)	69 (66.5-70.5)	68 (67-70)	68 (66-71)
Donor age, years				
<30	212 (57.1)	0 (0.0)	7 (8.0)	15 (51.7)
30-50	139 (37.5)	1 (0.8)	69 (79.3)	13 (44.8)
>50	20 (5.4)	122 (99.2)	11 (12.6)	1 (3.4)
Median (IQR)	29 (35-36)	65 (61-68)	40 (34-44)	30 (28-40)
Patient Sex				
Male	248 (66.8)	67 (54.5)	66 (75.9)	12 (41.4)
Female	123 (33.2)	56 (45.5)	21 (24.1)	17 (58.6)
Disease				
AML/MDS	299 (80.6)	100 (81.3)	70 (80.5)	24 (82.8)
ALL	3 (0.8)	2 (1.6)	0 (0.0)	0 (0.0)
Other*	69 (18.6)	21 (17.1)	17 (19.5)	5 (17.2)
DRI				
Low	10 (2.7)	1 (0.8)	2 (2.3)	0 (0.0)
Intermediate	278 (74.9)	93 (75.6)	60 (69.0)	18 (62.1)
High	75 (20.2)	27 (22.0)	25 (28.7)	10 (34.5)
Very high	8 (2.2)	2 (1.6)	0 (0.0)	1 (3.4)
Conditioning				
MAC	228 (61.5)	82 (66.7)	46 (52.9)	17 (58.6)
RIC/NMA	143 (38.5)	41 (33.3)	41 (47.1)	12 (41.4)
Graft type				
BM	42 (11.3)	0 (0.0)	52 (59.8)	6 (20.7)
PBPC	329 (88.7)	123 (100.0)	35 (40.2)	23 (79.3)
HCT-CI				
0	61 (16.4)	19 (15.4)	11 (12.6)	10 (34.5)
1-2	110 (29.6)	35 (28.5)	22 (25.3)	7 (24.1)
≥ 3	200 (53.9)	69 (56.1)	54 (62.1)	12 (41.4)
D/R CMV				
Neg/Neg	87 (23.5)	24 (19.5)	16 (18.4)	4 (13.8)
Neg/Pos	160 (43.1)	22 (17.9)	26 (29.9)	9 (31.0)
Pos/Neg	46 (12.4)	12 (9.8)	11 (12.6)	5 (17.2)
Pos/Pos	78 (21.0)	65 (52.8)	34 (39.1)	11 (37.9)
D/R sex mismatch				
Female-to-Male	72 (19.4)	35 (28.5)	16 (18.4)	3 (10.3)
Other	299 (80.6)	88 (71.5)	71 (81.6)	26 (89.7)
KPS				
≥90	155 (41.8)	49 (39.8)	34 (39.1)	10 (34.5)
<90	169 (45.6)	56 (45.5)	35 (40.2)	11 (37.9)
Missing	47 (12.7)	18 (14.6)	18 (20.7)	8 (27.6)
Year of HCT				
<2022	176 (47.4)	67 (54.5)	48 (55.2)	10 (34.5)
≥2022	195 (52.6)	56 (45.5)	39 (44.8)	19 (65.5)
Time to HCT, mo				
< 6	123 (33.2)	52 (42.3)	24 (27.6)	8 (27.6)
6 -12	110 (29.6)	33 (26.8)	23 (26.4)	11 (37.9)
>12	138 (37.2)	38 (30.9)	40 (46.0)	10 (34.5)
Race				
White	345 (93.0)	100 (81.3)	65 (74.7)	25 (86.2)
Other	24 (6.5)	21 (17.1)	22 (25.3)	4 (13.8)
Missing	2 (0.5)	2 (1.6)	0 (0.0)	0 (0.0)
Follow-up; median months (IQR)	23.80 (12.40-44.20)	26.10 (13.30-47.10)	25.40 (8.87-50.00)	13.10 (4.89-22.30)

*Other: Chronic lymphoid leukemia, chronic myeloid leukemia, myeloproliferative disease, lymphoma, multiple myeloma.

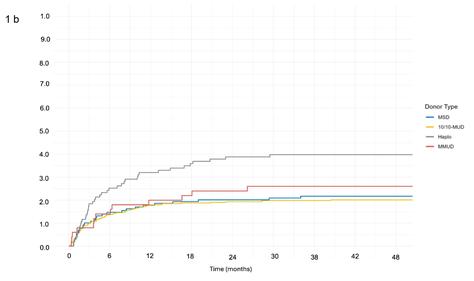
Results

- Donor age varied across the groups:
  - MUD and MMUD: median of 29-30 years.
  - MSD: median of 65 years.
  - Haploidentical: median of 40 years.
- OS in the haplo group (HR 1.59, 95% CI 1.08-2.34, p=0.02) predominantly driven by NRM (HR 2.10, 95% CI 1.25 - 3.53, p=.005).
- Most common cause of death was relapse.
  - Proportion was higher in recipients of matched donors (MSD 52%; MUD 44%) compared with mismatched donors (haploidentical 35%; MMUD 36%).

1 a



1 b



1 c

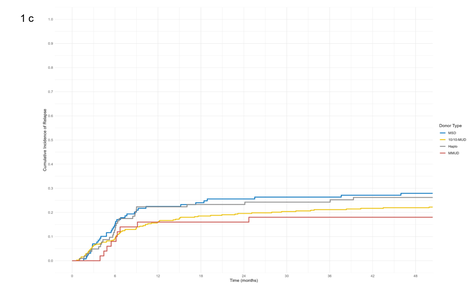


Fig 2 Density Plot of Donor Age by Donor

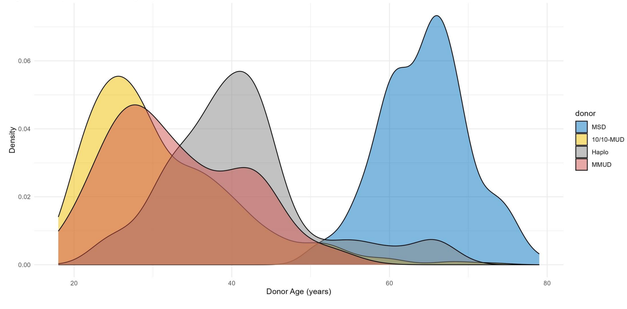


Figure 1: Outcomes post – HCT showing (a) Kaplan-Meier estimate of overall survival (OS), (b): Cumulative incidence of non-relapse mortality (NRM), (c): Cumulative incidence of relapse comparing matched sibling donor MSD (red line), MUD (blue line), Haploidentical (orange line) and MMUD (green line) groups.

Figure 2: Density plot of donor age distribution by donor type.

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