Mixed phenotype acute leukemia: outcomes with allogeneic stem cell transplantation. A retrospective study from the Acute Leukemia Working Party of the EBMT

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Table 1 (Internet only)

DATA ON MATCHED-PAIR ANALYSIS

A) Comparison ALL with MPAL

Nr of controls	N		
1	27	27	
2	42	84	
3	420	1260	1371
median follow-up (patients alive) months	33.28 (0.43 - 200.89)		
N	**ALL**	MPAL	**Test p-value**
	1371	489	
median follow-up (patients alive) mo	33.93 (0.43 - 200.89)	32.07 (0.85 - 180.79)	
AGE_median (range) (IQR)	37.7(18-70.9)(26.1-49)	37.5(18.1-73.1)(26.3-49.4)	0.741
YEAR_median (range)	2010(2000-2014)	2010(2000-2014)	0.752
age18-35	642 (46.83%)	226 (46.22%)	0.965
age36-55	549 (40.04%)	197 (40.29%)	
age>=56	180 (13.13%)	66 (13.5%)	
2000-2004	171 (12.47%)	62 (12.68%)	0.981
2005-2010	627 (45.73%)	225 (46.01%)	
2011-2014	573 (41.79%)	202 (41.31%)	
Time from diagnosis to CR1	5.1(0.4-21.6)(4.2-6.5)	5(0.2-24)(4.1-6.4)	0.388
By classes (in months)			
(0.03,4.56]	526 (38.37%)	188 (38.45%)	0.998

(4.56,5.64]	324 (23.63%)	115 (23.52%)	
(5.64,7.34]	318 (23.19%)	112 (22.9%)	
(7.34,24]	203 (14.81%)	74 (15.13%)	
match-Sibling donor	749 (54.63%)	269 (55.01%)	0.885
UD	622 (45.37%)	220 (44.99%)	
patient male	868 (63.31%)	310 (63.39%)	0.974
patient female	503 (36.69%)	179 (36.61%)	
donor male	895 (65.28%)	312 (63.8%)	0.557
donor female	476 (34.72%)	177 (36.2%)	
no F->M	1105 (80.6%)	389 (79.55%)	0.617
F->M	266 (19.4%)	100 (20.45%)	
intermediate risk cytogenetics	256 (18.67%)	101 (20.65%)	<10-4
poor risk	514 (37.49%)	93 (19.02%)	
NA	601 (43.84%)	295 (60.33%)	
Phi neg	232 (32.4%)	147 (75.38%)	<10-4
Phi pos	484 (67.6%)	48 (24.62%)	
	655	294	
Patient CMV neg	584 (48.67%)	197 (46.24%)	0.348
Patient CMV pos	616 (51.33%)	229 (53.76%)	
missing	161	62	
Donor CMV neg	599 (48.94%)	201 (46.1%)	0.39
Donor CMV pos	625 (51.06%)	235 (53.9%)	
missing	171	63	
BM	327 (23.85%)	120 (24.54%)	0.76
PB	1044 (76.15%)	369 (75.46%)	
MAC chemo	350 (25.53%)	130 (26.58%)	0.474
MAC TBI	754 (55%)	254 (51.94%)	

RIC	267 (19.47%)	105 (21.47%)	
no in vivo TCD	667 (53.92%)	240 (54.92%)	0.719
in vivo TCD	570 (46.08%)	197 (45.08%)	
missing	134	52	
No aGVHD II	901 (67.95%)	316 (68.55%)	0.812
aGVHD II-IV	425 (32.05%)	145 (31.45%)	
missing	45	28	
Causes of death	**ALL**	**MPAL**	
N	544	197	
Cardiac toxicity	3 (0.59%)	0 (0%)	
haemorhage	5 (0.98%)	1 (0.55%)	
Failure/Rejection	2 (0.39%)	2 (1.1%)	
VOD	16 (3.13%)	8 (4.4%)	
Infection	95 (18.59%)	33 (18.13%)	
IP	4 (0.78%)	4 (2.2%)	
GVHD	130 (25.44%)	40 (21.98%)	
Original disease	227 (44.42%)	87 (47.8%)	
second malignancy	5 (0.98%)	1 (0.55%)	
other transp related	24 (4.7%)	6 (3.3%)	
missing	33	15	

B) COMPARISON AML WITH MPAL

Nr of controls	**N**		
1	18		
2	46		
3	434		
median follow-up (patients alive) months	35.67 (0.62 - 188.13)		

N	AML	MPAL	Test p-value
	1412	498	
median follow-up (patients alive)	36.75 (0.62 - 188.13)	32.72 (0.85 - 180.79)	
AGETX_median (range) (IQR)	40.3(18-74.4)(29.3-51.8)	38.1(18.1-73.1)(26.4-49.5)	0.009
YEAR_median (range)	2009(2000-2014)	2010(2000-2014)	0.407
age18-35	617 (43.7%)	224 (44.98%)	0.878
age36-55	586 (41.5%)	203 (40.76%)	
age>=56	209 (14.8%)	71 (14.26%)	
2000-2004	184 (13.03%)	65 (13.05%)	0.992
2005-2010	651 (46.1%)	228 (45.78%)	
2011-2014	577 (40.86%)	205 (41.16%)	
Time from diagnosis to CR1	5(0.1-22.3)(4.1-6.4)	5(0.2-24)(4.1-6.4)	0.903
By classes (in months)			
(0.03,3.93]	312 (22.1%)	110 (22.09%)	0.995
(3.93,5.08]	429 (30.38%)	154 (30.92%)	
(5.08,6.56]	341 (24.15%)	118 (23.69%)	
(6.56,24]	330 (23.37%)	116 (23.29%)	
match-Sibling donor	787 (55.74%)	275 (55.22%)	0.842
UD	625 (44.26%)	223 (44.78%)	
patient male	875 (61.97%)	313 (62.85%)	0.727
patient female	537 (38.03%)	185 (37.15%)	
donor male	936 (66.29%)	317 (63.65%)	0.287
donor female	476 (33.71%)	181 (36.35%)	

no F->M	1138 (80.59%)	397 (79.72%)	0.672
F->M	274 (19.41%)	101 (20.28%)	
intermediate risk cytogenetics	430 (30.45%)	100 (20.08%)	<10-4
poor risk	155 (10.98%)	97 (19.48%)	
NA	827 (58.57%)	301 (60.44%)	
Patient CMV neg	470 (38.21%)	160 (36.61%)	0.554
Patient CMV pos	760 (61.79%)	277 (63.39%)	
missing	182	61	
Donor CMV neg	599 (48.94%)	201 (46.1%)	0.309
Donor CMV pos	625 (51.06%)	235 (53.9%)	
missing	188	62	
BM	328 (23.23%)	126 (25.3%)	0.727
PB	1084 (76.77%)	372 (74.7%)	
MAC chemo	406 (28.75%)	136 (27.31%)	0.704
MAC TBI	670 (47.45%)	247 (49.6%)	
RIC	336 (23.8%)	115 (23.09%)	
no in vivo TCD	693 (55.4%)	245 (54.93%)	0.866
in vivo TCD	558 (44.6%)	201 (45.07%)	
missing	161	52	
No aGVHD II	968 (72.18%)	319 (67.87%)	0.076
aGVHD II-IV	373 (27.82%)	151 (32.13%)	
missing	71	28	
Causes of death	**AML**	**MPAL**	
N	527	201	
Cardiac toxicity	2 (0.41%)	0 (0%)	
haemorhage	6 (1.22%)	1 (0.54%)	
Failure/Rejection	3 (0.61%)	1 (0.54%)	

VOD	6 (1.22%)	8 (4.3%)	
Infection	93 (18.94%)	32 (17.2%)	
IP	10 (2.04%)	4 (2.15%)	
GVHD	88 (17.92%)	44 (23.66%)	
Original disease	259 (52.75%)	87 (46.77%)	
second malignancy	9 (1.83%)	1 (0.54%)	
other transp related	15 (3.05%)	8 (4.3%)	
missing	36	15	

Multivariate analysis of risk comparing MPAL with AML and ALL (separate comparisons)

Outcomes, HR (95% CI)	MPAL	AML	ALL
LFS	1.00	1.211 (1.04- 1.41)	1.58 (0.99-1.35)
p value		*0.04*	*0.062*
OS	1.00	1.126 (0.95- 1.33)	1.097 (0.93-1.30)
p value		*0.16*	*0.280*
RI	1.00	1.144 (0.94-1.40)	1.203 (0.98- 1.47)
p value		*0.18*	*0.072*
NRM	1.00	1.320 (1.04- 1.41)	1.093 (0.86-1.38)
p value		*0.023*	*0.46*
cGVHD	1.00	0.905 (0.75- 1.10)	0.842 (0.69- 1.02)
p value		*0.33*	*0.081*

Abbreviations : MPAL : mixed phenotype acute leukemia, AML : acute myelogenous leukemia, HR : hasard ratio, LFS : leukemia-free survival ; OS : overall survival ; RI : relapse incidence, NRM : non-relapse mortality ; cGVHD : chronic graft-versus host disease
HR >> 1 for AML respectively ALL indicates that MPAL has a worse outcome in these comparions