



Original Article

Post-Transplant Relapse in Acute Leukemia: Comparative Value of MRD and Chimerism

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Supplementary Files

Supplementary Data - 1

Table S1. Comparison of chimerism status at months 2 and 12 of relapsed and non-relapsed patients with acute leukemia.

Total Chimerism	Relapsed	Non-relapsed	p-value	T- cell Chimerism	Relapsed	Non-relapsed	p-value
<b>AML patients</b>							
Month 2, n=156	n=54	n=102	0.172	Month 2, n=114	n=38	n=76	0.091
MC	14 (25.9%)	17 (16.7%)		MC	13 (34.2%)	15 (19.7%)	
CC	40 (74.1%)	85 (83.3%)		CC	25 (65.8%)	61 (80.3%)	
Month 6, n=118	n=50	n=68	0.007	Month 6, n=86	n=31	n=55	0.015
MC	16 (32.0%)	8 (11.8%)		MC	10 (32.3%)	6 (10.9%)	
CC	34 (68.0%)	60 (88.2%)		CC	21 (67.7%)	49 (89.1%)	
<b>ALL patients</b>							
Month 2, n=61	n=25	n=36	0.998	Month 2, n=46	n=14	n=32	0.689
MC	2 (8.0%)	3 (8.3%)		MC	3 (21.4%)	5 (15.6%)	
CC	23 (92.0%)	33 (91.7%)		CC	11 (78.6%)	27 (84.4%)	
Month 12, n=45	n=12	n=33	0.996	Month 12, n=32	n=7	n=25	0.992
MC	1 (8.3%)	2 (6.1%)		MC	1 (14.3%)	4 (16.0%)	
CC	11 (91.7%)	31 (93.9%)		CC	6 (85.7%)	21 (84.0%)	
AHSCT: Allogeneic hematopoietic stem cell transplantation, CC: Complete chimerism, MC: Mixed chimerism							

Supplementary Data - 2

Data from 83 patients who tested positive for at least one molecular marker assessed at our center were included in the analysis. Of these, 54 had AML and 29 had ALL.

Among AML patients, 19 (35.1%) were positive for *NPM1*, 17 (31.4%) for *FLT3* mutations (including 14 with *FLT3-ITD* and 3 with *FLT3-TKD*), 10 (18.5%) for t(8;21), 8 (14.8%) for inv(16), 5 (9.2%) for t(9;22), and 4 (7.4%) for t(4;11). Among ALL patients, 22 (75.8%) had t(9;22) and 7 (24.1%) had t(4;11).

In AML patients, the number of those with molecular MRD positivity prior to transplantation was 12 (75%) among those who relapsed and 15 (55.6%) among those who did not relapse (p=0.202). At the day 28 assessment, molecular MRD positivity was detected in 5 relapsed patients (31.3%) and 4 non-relapsed patients (16%) (p=0.284). At month 3, 5 patients (35.7%) in the relapsed group and 4 (20%) in the non-relapsed group were MRD-positive (p=0.446). A statistically significant difference in molecular MRD positivity between relapsed and non-relapsed patients was observed only at month 12, where 4 relapsed patients (50%) were MRD-positive, while none of the non-relapsed patients were MRD-positive (p=0.010).

In ALL patients, pre-transplant molecular MRD positivity was found in 4 relapsed patients (80%) and 7 non-relapsed patients (36.8%) (p=0.141). At day 28, molecular MRD positivity was observed in 1 relapsed (25%) and 4 non-relapsed (25%) patients (p=0.999). At month 3, 2 relapsed patients (50%) were MRD-positive, whereas none of the non-relapsed patients were positive (p=0.032). No molecular MRD positivity was detected in either group at month 12.

Among AML patients with available molecular MRD data who relapsed, 14 of 19 patients (73.68%) exhibited molecular MRD positivity prior to relapse. Similarly, among relapsed ALL patients with available molecular MRD data, 5 of 7 patients (71.4%) showed molecular MRD positivity before clinical relapse.

**Table S2.** Comparison of molecular MRD status of relapsed and nonrelapsed patients with AML and ALL after AHST.

MRD status	AML (n=54)			ALL (n=29)		
	Relapsed	Non-relapsed	p value	Relapsed	Non-relapsed	p value
Pre-transplant, n=67	n=16	n=27	0.202	n=5	n=19	0.141
	12 (75.0%)	15 (55.6%)		4 (80.0%)	7 (36.8%)	
Day 28, n=61	n=16	n=25	0.284	n=4	n=16	0.999
	5 (31.3%)	4 (16.0%)		1 (25.0%)	4 (25.0%)	
Month 3, n=54	n=14	n=20	0.446	n=4	n=16	0.032
	5 (35.7%)	4 (20.0%)		2 (50.0%)	0 (0.0%)	
Month 12, n=38	n=8	n=14		n=2	n=14	
	4 (50.0%)	0 (0.0%)				

HSCT: Allogeneic hematopoietic stem cell transplantation MRD: Measurable residual disease