Pretransplant measurable residual disease and post-transplant outcomes in acute myeloid leukemia

A retrospective single-centre time-to-event analysis

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BACKGROUND AND OBJECTIVE

Detectable measurable residual disease (MRD) before allogeneic transplantation identifies residual leukemic burden that may increase post-transplant relapse. We evaluated survival, relapse and non-relapse mortality according to pretransplant MRD status.

METHODS

• Retrospective single-centre cohort of 32 adults with AML undergoing allogeneic transplantation.

• OS: transplant to death. RFS: transplant to relapse or death, with censoring at last follow-up.

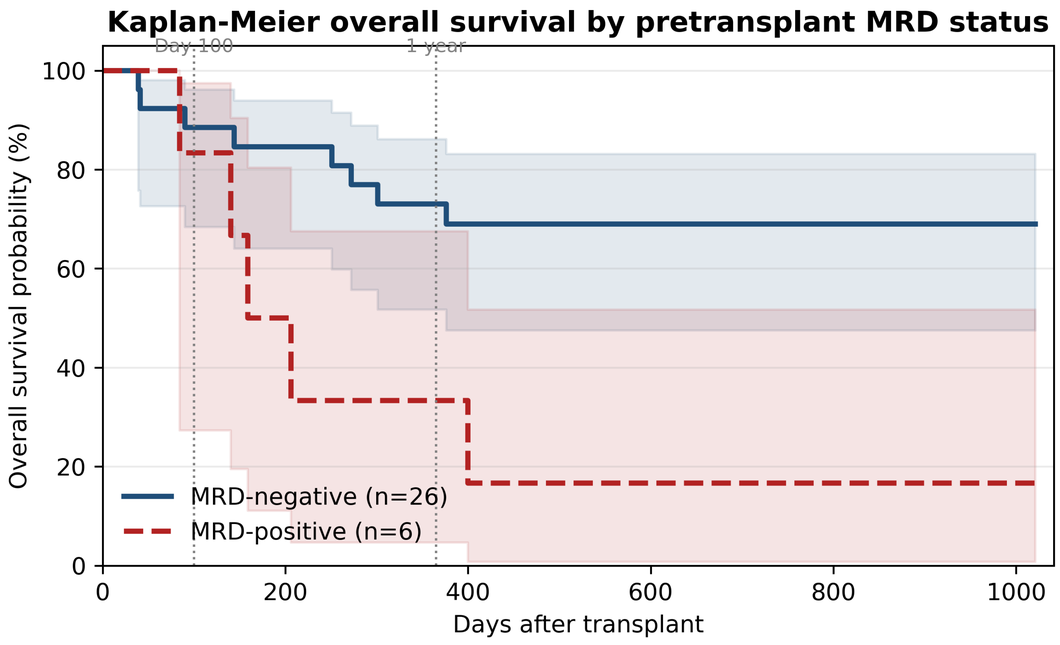
• Kaplan–Meier estimates, log-rank tests and Cox models assessed survival. Relapse and NRM used competing-event cumulative incidence.

• Exploratory adjustment used age, HCT-CI, donor type and conditioning. ELN/cytogenetic risk was unavailable.

COHORT AT A GLANCE

32	26	6	40
PATIENTS	MRD−	MRD+	MEDIAN AGE

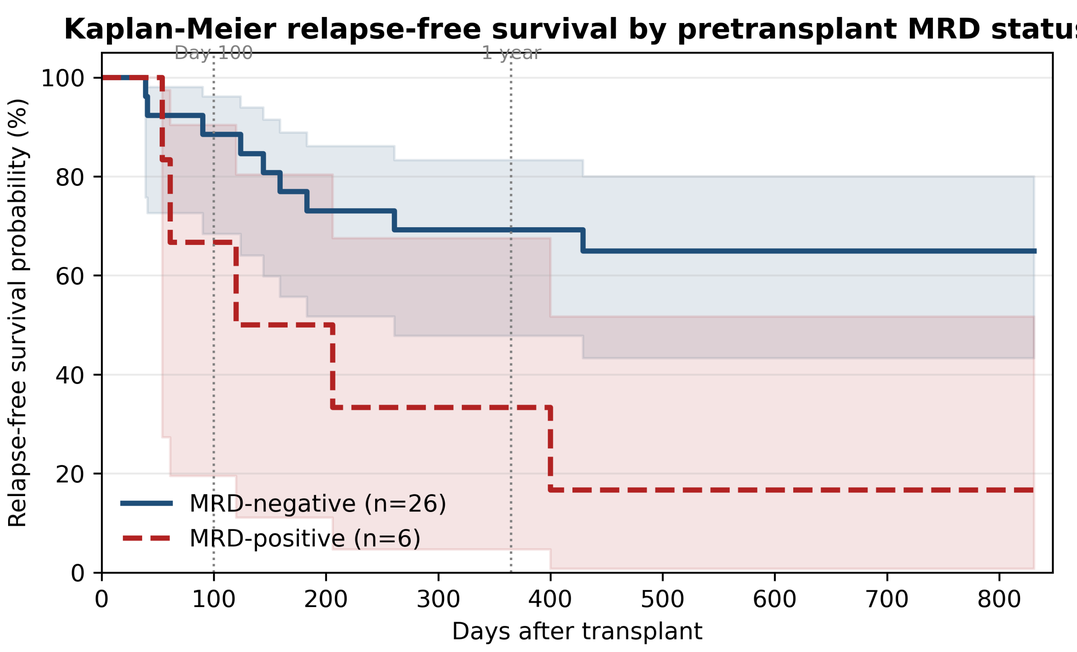
OVERALL SURVIVAL



No. at risk	0	100	365	730
MRD-negative	26	23	18	8
MRD-positive	6	5	2	0

1-year OS: 73.1% with MRD negativity vs 33.3% with MRD positivity. Log-rank p=0.010.

RELAPSE-FREE SURVIVAL



No. at risk	0	100	365	730
MRD-negative	26	23	17	7
MRD-positive	6	4	2	0

1-year RFS: 69.2% with MRD negativity vs 33.3% with MRD positivity. Log-rank p=0.017.

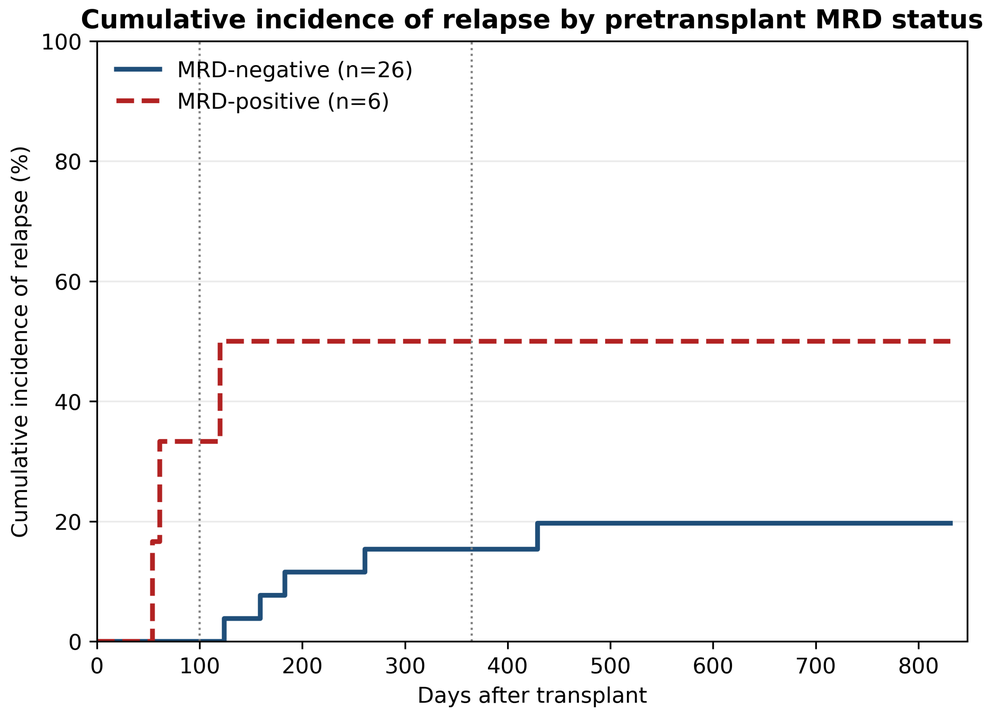
KEY FINDING

Pretransplant MRD positivity was associated with an approximately fourfold higher unadjusted mortality hazard and a threefold higher 1-year relapse incidence.

1-YEAR OUTCOMES

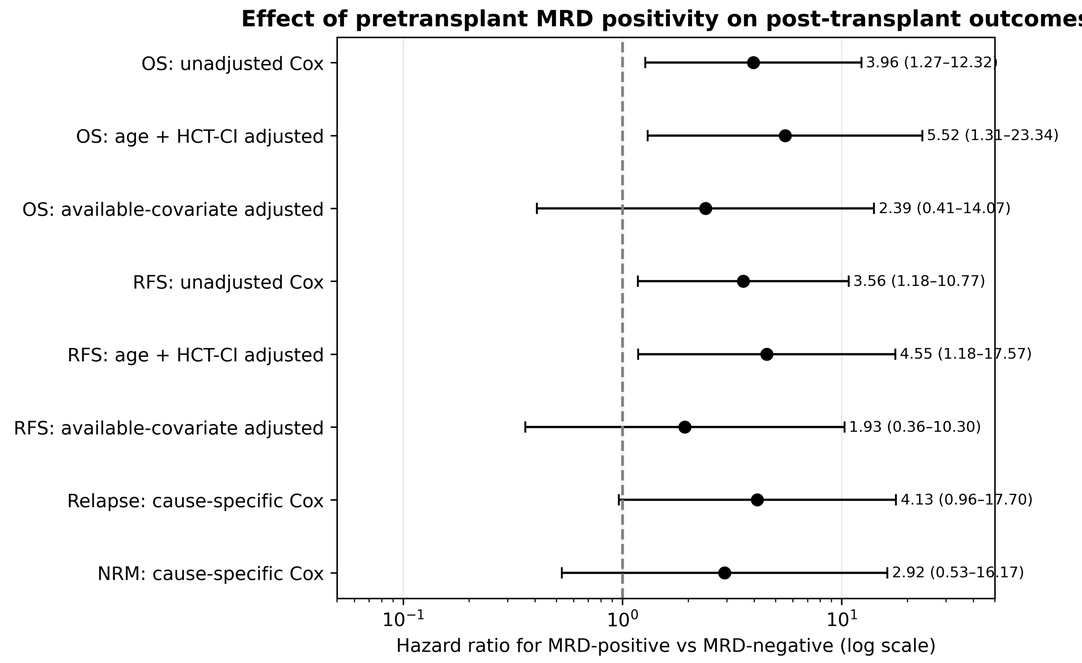
Outcome	MRD− (n=26)	MRD+ (n=6)
Overall survival	73.1%	**33.3%**
Relapse-free survival	69.2%	**33.3%**
Relapse incidence	15.4%	**50.0%**
Non-relapse mortality	15.4%	**16.7%**

RELAPSE WAS THE DOMINANT ADVERSE SIGNAL



At 1 year, relapse incidence was 50.0% in MRD-positive patients and 15.4% in MRD-negative patients.

EFFECT ESTIMATES



Unadjusted OS HR 3.96 (95% CI 1.27–12.32); unadjusted RFS HR 3.56 (95% CI 1.18–10.77).

CONCLUSION

Pretransplant MRD positivity identified a high-risk AML transplant subgroup with inferior unadjusted OS and RFS. The outcome difference appeared predominantly relapse-driven, supporting MRD-informed peri-transplant risk assessment and post-transplant surveillance.

Limitations: small cohort, only 6 MRD-positive patients, sparse events and unavailable ELN/cytogenetic, molecular and serial post-transplant MRD data. Adjusted estimates remain exploratory.

Selected references: Heuser et al. Blood 2021; Buckley et al. Haematologica 2017; Walter et al. J Clin Oncol 2011.