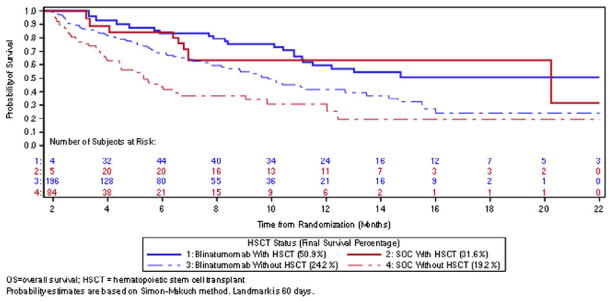

Figure 2. Simon-Makuch estimates for overall survival (Full analysis set).

did those receiving blinatumomab (86% [43/50]); more patients treated with blinatumomab had haploidentical (10% [5/50]) or cord blood transplants (4% [2/50]) than did those receiving SOC (0% [0/18]). Based on Simon-Makuch estimates, patients had higher survival rates following blinatumomab + alloHSCT than SOC + alloHSCT (last follow-up survival probability 50.9% vs 31.6%) (Figure 2). Using time-dependent Cox regression adjusting for response status, alloHSCT vs no alloHSCT after blinatumomab was associated with a 55% reduction in the risk of death (hazard ratio .45 [95% CI .24, .84]; $P = .012$).

Limitations: The study was not designed to measure the impact of alloHSCT on OS.

Conclusions: In this population, there appeared to be a potential OS benefit of alloHSCT following blinatumomab.

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Minimal Residual Disease Status in Acute Myeloid Leukemia Patients Undergoing T-Cell Replete Haploidentical Transplantation. an Analysis From the Acute Leukemia Working Party (ALWP) of the European Society for Blood and Marrow Transplantation (Ebmt)

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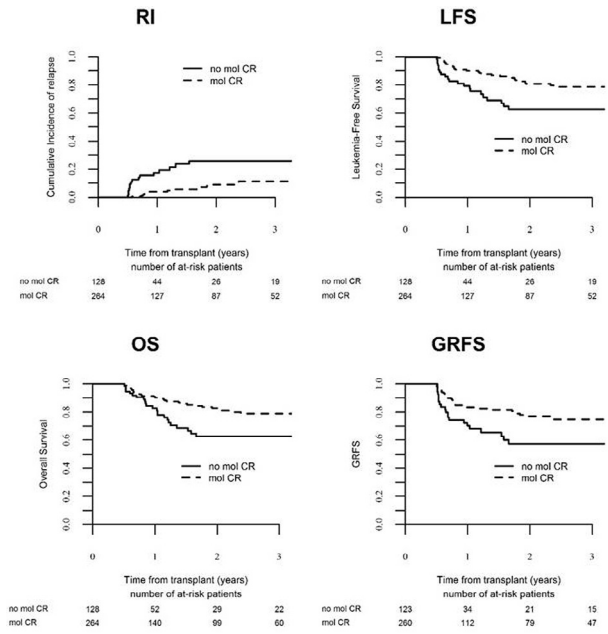
Background: Assessment of minimal residual disease (MRD) is actively transitioning into the mainstream routine evaluation of response to therapy and prognostication schemes in patients (pts) with acute myeloid leukemia (AML). While it is well established that pre-transplant positive MRD studies predict for relapse and transplantation outcome in pts transplanted either from matched sibling donors or matched unrelated donors, it is currently unknown whether MRD has comparable prognostic value for pts undergoing haploidentical stem cell transplantation (haplo-SCT).

Methods: To analyze the prognostic impact of MRD in haplo-SCT, we performed a retrospective analysis using the ALWP multicenter registry. All adult AML pts with known MRD status at transplant who underwent a first T-cell replete related haplo-HCT in first or second complete remission from 2006 to 2016 were included.

Results: Three hundred ninety-three pts of whom 265 were MRD negative and 128 were MRD positive prior to transplant met the study inclusion criteria. Median follow-up period was 26 and 15 months for MRD negative and positive pts, respectively. Compared to MRD positive pts, MRD negative pts were more likely to be *NPM1*^{wt} (65% vs. 46%; $P = .01$) as well as harbor poor risk cytogenetics (15% vs. 7%; $P < .001$). Both groups of pts did not differ to a significant degree in terms of patient age, performance status, *FLT3-ITD*status, conditioning intensity, and post-transplant immunomodulation strategy (namely, use of post-transplant cyclophosphamide or anti-thymocyte globulin). In multivariate analysis, MRD negative patients experienced lower relapse incidence [Hazard ratio (HR) = .31, confidence interval (CI) 95%, .18-0.56; $P < .0001$] and better leukemia-free survival (LFS) (HR = .62, CI 95%, .41-0.93; $P = .023$) compared to MRD positive pts. Non-relapse mortality (HR = 1.34, CI 95%, .68-2.62; $P = .39$) and acute graft versus host disease (HR = 1.09, CI 95%, .64-1.84; $P = .78$) were not significantly different between both groups. Similarly, overall survival (OS) (HR = .7, CI 95%, .44-1.12; $P = .14$) as well as graft versus host disease-free/relapse-free survival (HR = .71, CI 95%, .48-1.04; $P = .078$) were not significantly impacted by MRD status. Subset analysis for MRD positive pts revealed that pts with CMV$^+$ donors experienced decreased relapse rates (HR = .32, CI 95%, .15-0.65; $P = .001$) as well as increased survival (HR = .37, CI 95%, .17-0.8; $P = .012$). No significant predictive factors for clinical outcome were identified in the MRD negative patient subset. A landmark analysis at 6 months (figure) suggests that the clinical benefit of pre-transplant MRD negativity in terms of relapse, OS, LFS, and GRFS is realized at this time point.

Conclusion: MRD negativity at transplant is associated with a reduced relapse rate and improved LFS in AML patients undergoing T-cell replete haplo-SCT.



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Validation of a Predictive Model for Survival in Patients with Acute Myeloid Leukemia and Myelodysplastic Syndrome Receiving Hematopoietic Stem Cell Transplantation

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Background: Outcomes of allogeneic stem cell transplantation (AHSCT) vary based on both disease and patient characteristics. Our group developed a model to predict survival in patients with AML/MDS using 3 factors, 2 disease-related (cytogenetics, disease status at transplant) and 1 patient-related (HCT-CI) *(Bachegowda et al.Blood.2017)*. This model effectively stratified patients into 3 risk groups with very different survival. Here we aim to validate this model in a large cohort of AML/MDS patients receiving AHSCT with different donors.

Methods: The analysis included 934 patients with AML/MDS, (489 male; 52%) with a median age of 53 years (range 18-65 years). Five hundred and forty patients (58%) were in first or second complete remission (CR1/2). Donor types included MRD (n = 377, 40%), MUD (n = 416, 45%) MMD (n = 68, 7%) and T-cell replete HAPLO (n = 73, 8%). Patients were stratified into 3 risk groups according to the previously published model: 1) ***low-risk*** *group:* patients in first or second CR (CR1/2) with intermediate- or favorable-risk cytogenetics, irrespective of HCT-CI, 2) ***intermediate-risk*** *group:* patients beyond CR1/2 and/or with adverse-risk cytogenetics and HCT-CI score </= 4, and 3) ***high-risk group***: patients with at least one negative prognostic factor—beyond CR1/2 and/or with adverse-risk cytogenetics and a HCT-CI score >4.

Results: For the entire group, the cumulative incidence of NRM and relapse rate at 1 year was 17% and 30%, respectively. Having HCT-CI >4 (HR 2.2, $P < .0001$), transplantation in beyond CR1/2 (HR 1.87, $P < .0001$) and advanced age (HR 1.02, $P = .008$) predicted high NRM, whereas adverse cytogenetic risk (HR 1.66, $P < .0001$) and transplantation in beyond CR1/2 (HR 2.38, $P < .0001$) were associated with high relapse rate.

At 5 years post-transplant, OS, PFS, GRFS were 43%, 39%, and 24%, respectively. Independent predictors for poor PFS were transplantation in beyond CR1/2 (HR 2.83, $P < .0001$) and adverse cytogenetic risk (HR 1.53, $P < .0001$) while HCT-CI >4 approached statistically significance (HR 1.2, $P = .07$).

No differences in PFS, NRM and relapse were seen between different donor types.

Using our previously described predictive model, 351, 412 and 155 patients were stratified into low-, intermediate- and high-risk, respectively, with significantly different survival. The 5-year PFS was 59% for low (reference), 30% for intermediate (HR 2.43, 95%CI 1.97-2.99, $P < .001$) and 22% for high-risk group (HR 3.29, 95%CI 2.57-4.21, $P < .001$). (Figure 1A,B)

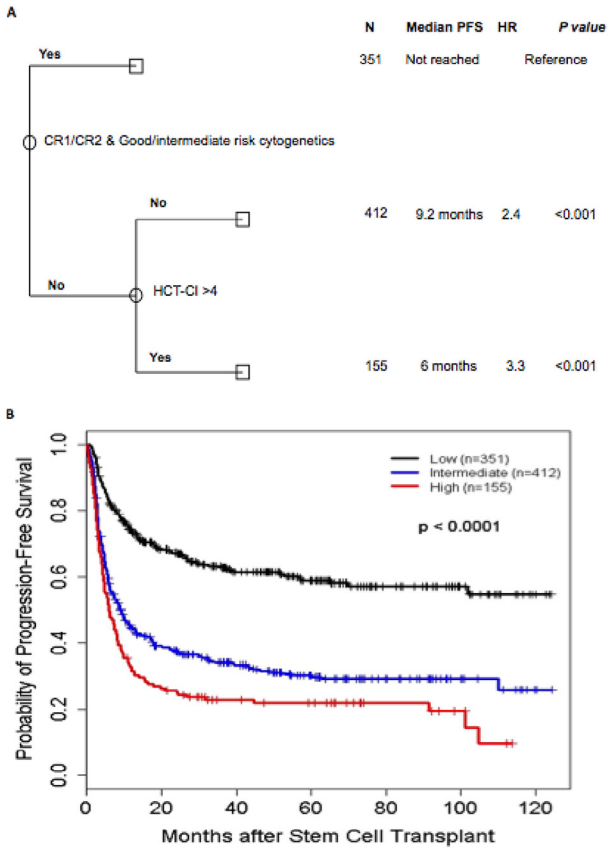

Figure 1. (A) Predictive model for PFS using disease risk category and HCT-CI. (B) PFS according to the risk groups.

Conclusions: Our study shows that, using 2 most important disease-related factors (cytogenetics, disease status at transplant) and one patient-related factor (HCT-CI), we can better stratify survival for patients with AML/MDS after transplantation. This might help to better compare transplant outcomes between different studies and have important therapeutic implications.

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Ultrasensitive Detection of Genomic Minimal Residual Disease before or after Allogeneic Hematopoietic Cell Transplantation for Adult AML is Associated with Inferior Survival

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Background: Genomic minimal residual disease (MRD) detection of AML in the setting of allogeneic transplantation (HSCT) has been limited by inadequate sensitivity for most