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Impact of ABO-Mismatching Following HLA-Mismatched Unrelated Donor Hematopoietic Stem Cell Transplantation for AML—a Report From the ALWP of the EBMT

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Background: ABO incompatibility between donor and recipient is not considered a barrier to successful allogeneic hematopoietic stem cell transplantation (HCT). Nearly one-half of all HCT will involve recipient-donor ABO mismatching (ABO-MM), which can be classified as either major, minor or bidirectional. The analyses of clinical outcomes in ABO-MM HCT have yielded inconsistent results and no large series have studied the impact of ABO-MM in patients (pts) receiving mismatched unrelated donor HCT (MMURD-HCT).
Methods: We identified 1013 pts who underwent MMURD-HCT (876 peripheral blood donors, 137 bone marrow [BM] donors) from January 2005 to December 2014 and studied the long term impact of ABO-MM MMURD-HCT in pts with AML. The comparative analysis was performed between pts receiving ABO-matched vs. ABO-MM for common outcome variables. PB and BM groups were analyzed separately.
Results: Among the PB group, 349 (40%) pts received ABO-matched grafts whereas 527 (60%) underwent ABO-MM MMURD-HCT including 241 (28%) minor ABO-MM (minor-A, 160 [66%]), 215 (24%) major ABO-MM (major-O, 200 [93%]) and 71 (8%) bidirectional ABO-MM (Bidirectional-A, 37 [52%]). Median age was 53 years (range, 18-75) and was not significantly different between ABO groups ($P = .27$). The median follow-up period was 34 months (IQR,13-59). More than half of pts were in CR1 and nearly one third of pts were with active disease prior to transplantation. 369 (42%) pts received ablative and 507 (58%) reduced intensity or non-ablative conditioning regimens. The donor graft was HLA-matched at 9/10 in 782 (89%) and at 8/10 in 94 (11%) pts. 785 (90%) pts received either *in vivo* (87%) or *ex vivo* T-cell (3%) depletion. There were no significant differences in distributions of pts and transplant characteristics among ABO- groups. 97% pts engrafted and the rate of engraftment (ABO-matched 97%; major-MM 98%, minor-MM 95%, bidirectional 97%) was not different between ABO-groups ($P = .32$). The cumulative incidences (CI) of day 100 grade II-IV acute GVHD was 30% (III-IV, 13%) and the 3-year CI of chronic GVHD was 37% (95% CI, 33-40), and were not significantly different between the ABO-groups ($P = .20$ and .39). At 3 years, OS, LFS, RI, NRM and GVHD-free/relapse-free survival (GRFS) for the entire cohort were 43%, 38%, 36%, 26% and 29%, respectively. No significant differences in OS, LFS, RI, NRM, GRFS and chronic GVHD were observed between ABO-groups, in multivariate analysis. The analyses were performed separately for pts receiving BM grafts (ABO matched 57; ABO-MM 80 [minor 39, major/ bi-directional 41]). Similarly, there was no statistical difference between ABO-groups for OS, LFS, RI, NRM, GFRS and chronic GVHD.
Conclusion: Despite the limitation of a retrospective registry based study, our large series shows no significant long term outcome difference between ABO-matched and mismatched groups after MMURD-HCT in current era.

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Comparable Survival with Organ Toxicity Predicting for Overall Survival (OS) and Non-Relapse Mortality (NRM) in Older Adult Patients after CD34+ Selected Allogeneic Hematopoietic Stem Cell Transplantation (Allo-HCT)

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Introduction: Ex vivo CD 34 + selection prior to allo-HCT reduces GVHD without increasing relapse, but usually requires myeloablative conditioning. We aimed to identify toxicity patterns in older patients & the association with OS & NRM.
Methods: A retrospective analysis was performed at Memorial Sloan Kettering Cancer Center including 200 pts who underwent CD34+ selection allo-HCT using the ClinicMACS® system between 2006-2012. All grade 3-5 toxicities by CTCAE v4.0 were collected and compared between pts ≥ 60 or <60yrs. Individual toxicities were organized into 91 toxicity categories