



General AML

Types of donors for allogeneic hematopoietic stem cell transplantation in AML patients in CR1

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In poor risk Acute Myeloid Leukemia (AML) patients in First Complete Remission (CR1), post-remission therapy by Allogeneic Hematopoietic Stem Cell Transplantation (allo-HSCT) is the treatment of choice. A possible donor for allo-HSCT includes HLA Matched Related Donors (MRDs), which most patients lack. However, alternative donors available for patients in need of allo-HSCT include Matched Unrelated Donor (10/10 and 9/10; MUD), Umbilical Cord Blood (UCB) grafts, and Haplo-Identical (haplo) donors.¹ The preferred donor type is still unclear in poor risk AML patients who require allo-HSCT and there is a paucity of comparative studies of donor type on the survival outcomes in this group of patients hence the rationale for this study.

In an article published in [Blood Advances](#), [Jurjen Versluis](#) from the [Erasmus University Medical Center Cancer Institute](#), Rotterdam, The Netherlands, and colleagues discuss their retrospective data which compared the outcomes of recipients of allo-HSCT with poor risk AML in CR1 by donor type.²

6,545 poor-risk AML patients in CR1 receiving allo-HSCT between 2000 and 2014 and reported to the [European Society for Blood and Marrow Transplantation](#) (EBMT) Acute Leukemia Working Party were included in this study. Patients received allo-HSCT from either an MRD (n = 3,511), 10/10 MUD (n = 1,959), 9/10 MUD (n = 549), UCB graft (n = 333), or haplo (n = 193).

The key results of the study were:

- 2-year Overall Survival (OS) in recipients of MRD, 10/10 MUD, and haplo allo-HSCT; 59±1% vs 57±1% vs 57±4%, respectively; $P = 0.19$
- 2-year OS in recipients of 9/10 MUD and UCB grafts compared to MRD allo-HSCT; 49±2% vs 44±3% vs 59±1%, respectively; $P < 0.001$
- OS was not significantly different in MRD allo-HSCT and 10/10 MUD compared to haplo allo-HSCT; HR = 0.99 vs 1.12, respectively
- OS after 9/10 MUD and UCB grafts was significantly worse compared to MRD allo-HSCT; HR = 1.23, $P = 0.005$; and HR = 1.54, $P < 0.001$, respectively
- 2-year Non Relapse Mortality (NRM) in recipients after haplo allo-HSCT and UCB grafts compared to MRD allo-HSCT; 26±3% vs 29±3% vs 15±1%, respectively; $P < 0.001$

The authors highlighted that their study is the largest comparative study of MRD and alternative donors in the homogenous subgroup of patients with poor-risk AML in CR1 in urgent need of an allo-HSCT to date.

In conclusion, Versluis *et al.* suggested that “well-matched donors including MRD and 10/10 MUD are preferred over UCB and MMUD patients with poor-risk AML in CR1”. Additionally, “If an MRD or 10/10 MUD is not available, then the repertoire of alternative donors includes 9/10 MUD, UCB grafts, and haplo-identical donors. The latter type of donor is increasingly applied and now approximates results with matched donors”. The authors however noted that their study had several limitations and thus suggested that their results would need to be validated in a prospective randomized study.

Abstract

Allogeneic hematopoietic stem cell transplantation (alloHSCT) remains the treatment of choice to consolidate remission in patients with poor-risk acute myeloid leukemia (AML). With increasing alternative donors available, the preferred donor or stem cell source is debated. We set out to study outcome in recipients of alloHSCT with poor-risk AML in first complete remission (CR1) by donor type. A total of 6545 adult patients with poor-risk AML in CR1 receiving an alloHSCT using matched related donor (MRD, n = 3511) or alternative donors, including 10/10 (n = 1959) or 9/10 matched unrelated donors (MUDs, n = 549), umbilical cord blood (UCB) grafts (n = 333), or haplo-identical (haplo) donors (n = 193) were compared. Overall survival (OS) at 2 years following MRD alloHSCT was an estimated $59 \pm 1\%$, which did not differ from 10/10 MUD ($57 \pm 1\%$) and haplo alloHSCT ($57 \pm 4\%$). OS, however, was significantly lower for 9/10 MUD alloHSCT ($49 \pm 2\%$) and UCB grafts ($44 \pm 3\%$), respectively ($P < .001$). Nonrelapse mortality (NRM) depended on donor type and was estimated at $26 \pm 3\%$ and $29 \pm 3\%$ after haplo alloHSCT and UCB grafts at 2 years vs $15 \pm 1\%$ following MRD alloHSCT. Multivariable analysis confirmed the impact of donor type with OS following MRD, 10/10 MUD, and haplo alloHSCT not being statistically significantly different. NRM was significantly higher for alternative donors as compared with MRD alloHSCT. Collectively, these results suggest that alloHSCT with MRDs and 10/10 MUDs may still be preferred in patients with poor-risk AML in CR1. If an MRD or 10/10 MUD is not available, then the repertoire of alternative donors includes 9/10 MUD, UCB grafts, and haplo-identical donors. The latter type of donor is increasingly applied and now approximates results with matched donors.

References

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2. [Versluis J.](#) *et al.* Alternative donors for allogeneic hematopoietic stem cell transplantation in poor-risk AML in CR1. *Blood Advances*. 2017 Feb 28; 1(7): 477–485. DOI: [1182/bloodadvances.2016002386](#).

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