

Clinical Outcomes of Haploidentical Hematopoietic Cell Transplantation Using Non-first-degree vs First-degree Related Donors for Hematological Diseases

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Abstract

Objective To compare the clinical outcomes of Non-first-degree versus First-degree Related Donor Haploidentical Hematopoietic Cell Transplantation in Patients with Hematological Diseases. **Methods** Clinical data of 756 patients who underwent allogeneic HSCT at the First Medical Center of Chinese PLA General Hospital from November 1, 2017 to November 1, 2021 were retrospectively reviewed, including 32 recipients with NFD donors and 724 recipients with FD donors. Patients in the FD group were matched at a 3:1 ratio to the NFD group according to disease category, pre-transplant disease remission status and gender, with age difference ≤ 15 years and transplantation interval ≤ 6 years between matched pairs. Finally, 29 patients in the NFD group and 87 patients in the FD were enrolled. **Results** The median age of both groups was 31 (14–60) years. Except for seven patients who died early before hematopoietic reconstitution, all remaining patients achieved successful neutrophil and platelet engraftment. No significant differences were observed in median neutrophil engraftment time (FD:13.0 days vs NFD:11.0, $P=0.11$) and platelet engraftment time (FD:14.0 days vs NFD:13.5, $P=0.71$). The 3-year overall survival (OS:74.1% vs 82.8%, $P=0.34$), disease-free survival (DFS:74.3% vs 75.9%, $P=0.71$), cumulative relapse rate (11.7% vs 6.9%, $P=0.26$) and non-relapse mortality (NRM:14.0% vs 17.2%, $P=0.60$) were comparable between the two cohorts. Similarly, no statistical differences were found in the 3-year cumulative incidence of chronic graft-versus-host disease (cGVHD:32.7% vs 34.5%, $P=0.80$), extensive cGVHD (12.9% vs 13.8%, $P=0.88$), day-100 grade II–IV acute GVHD (aGVHD:42.5% vs 41.4%, $P=0.97$) and grade III–IV aGVHD (8.0% vs 10.3%, $P=0.70$). Multivariate Cox regression analysis demonstrated that disease risk index (DRI) was an independent prognostic factor for OS (HR=2.84, 95%CI:1.05–7.66, $P=0.04$) and DFS (HR=2.65, 95%CI:1.06–6.65, $P=0.03$). **Conclusion** For patients lacking appropriate first-degree related haploidentical donors, non-first-degree relatives can serve as an alternative donor source for haplo-HSCT in hematological Diseases.

Keywords

Allogeneic Hematopoietic Stem Cell Transplantation, Non-first-degree Related Donor, Graft-versus-host Disease