

10/10 HL Matched versus Non 10/10 HLA Matched Hematopoietic Stem Cell Transplantation in Patients with Acute Leukemia and Myelodysplastic Syndrome

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Background: Hematopoietic Stem Cell Transplantation (HSCT) is a curative treatment option for various diseases, especially hematologic malignancies. Donor selection is a crucial factor affecting the success of treatment in patients undergoing allogeneic HSCT(allo-HSCT). The most significant factor in donor selection is the HLA tissue compatibility. In our study, we investigated the impact of HLA tissue compatibility on transplant outcomes in patients with acute leukemia and myelodysplastic syndrome who underwent allo-HSCT at our center.

Methods: Between January 2017 and June 2023, a total of 77 patients who underwent allo-HSCT with a diagnosis of Acute Leukemia or Myelodysplastic Syndrome at the Adult Bone Marrow Transplantation Unit were included in the study. HLA tissue compatibility was determined based on high-resolution subtyping for HLA A, B, C, DR, and DQ by Sanger sequence-based typing (SBT). Full HLA match between the donor and the patient was classified as 10/10 compatibility. Transplant outcomes of the patients transplanted from HLA 10/10 donors and those without 10/10 HLA transplanted were compared. Statistical analysis was performed using the SPSS 25.0 program.

Results: Of the 77 patients, 44 (57.1%) were male. 48 patients (62.3%) were AML, 22 patients (28.6%) were ALL and 7 patients (9.1%) were MDS, respectively. The median age was 46 (18-67). Among patients, 58 (75.3%) were transplanted from 10/10 HLA matched donors. When compared the 10/10 HLA matched group and non 10/10 HLA matched group, no significant difference was observed according to hospitalization duration at HSCT unit (26 vs 32 days, $p=0.301$), neutrophil engraftment time (13 vs 14 days, $p=0.99$), platelet engraftment time (16.5 vs 16 days, $p=0.975$), acute graft versus host disease (GVHD) (29.3% vs 52.6%, $p=0.116$), and chronic GVHD (27.6% vs 31.6%, $p=0.967$), respectively. The mean follow-up duration for patients was 32 months. Although the relapse rate (24.1% vs 10.5%, $p=0.330$) and the mortality rate (53.4% vs 42.1%, $p=0.553$) was higher in 10/10 HLA matched group, there was no statistical difference. The median progression free survival (PFS) and overall survival (OS) in the whole population was 24.8 months and 25.1 months, respectively. There were no significant differences in OS ($p=0.747$) and PFS ($p=0.412$) between 10/10 HLA matched group and non 10/10 HLA matched group. Acute GVHD was the only negative predictive factor for OS in multivariate analysis (HR:1.9, $p=0.048$). Furthermore, age $\geq$ 60 years was only factor that associated with shorter PFS in multivariate analysis (HR:2.1, $p=0.044$).

Conclusion: When compared 10/10 HLA matched and non 10/10 HLA matched patients' transplantation outcomes, there was no significant difference in almost all the parameters. But limited patient numbers and heterogeneity of disease were the main obstacles to making a further comment.