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POSTER ABSTRACTS

613.ACUTE MYELOID LEUKEMIAS: CLINICAL AND EPIDEMIOLOGICAL

A Prognostic Score Model for Relapsed/Refractory Acute Myeloid Leukemia Patients after Allogeneic Hematopoietic Stem Cell Transplantation

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Introduction

Patients with acute myeloid leukemia (AML) can achieve complete remission (CR) after receiving initial therapy, while some patients will develop relapsed/refractory AML (R/R-AML), which has a poor prognosis. Allogeneic hematopoietic stem cell transplantation (allo-HSCT) has been shown to be effective in improving the prognosis of R/R-AML patients. It is necessary to evaluate the factors that can affect the prognosis of patients receiving allo-HSCT for R/R-AML, including leukemia-free survival (LFS) and overall survival (OS). In previous studies, such prognostic evaluation factors included cytogenetics, response to salvage induction therapy before transplantation, time from diagnosis to transplantation, and acute graft-versus-host disease (aGVHD). However, there is still a lack of a prognostic model that can systematically predict prognosis at an early stage after transplantation. In this study, a prognostic model was established to predict the 2-year prognosis of R/R-AML patients receiving allo-HSCT.

Method

Refractory AML is defined as no CR after 2 courses of intensive induction treatment, while relapsed AML is defined as $\geq$ 5% bone marrow blasts, reappearance of blasts in the blood or development of extramedullary AML after CR. In this retrospective study, patients receiving allo-HSCT for R/R-AML from January 1, 2015, to June 30, 2021 at Peking University People's Hospital were identified and divided into a derivation cohort and an external validation cohort according to the time of transplantation. Detailed data of all patients were collected from medical records. Categorical variables were analyzed using the 2-tailed Fisher's exact test. Continuous variables were analyzed using the Mann–Whitney U test. Factors with a P value $<$ 0.10 were included in the multivariate Cox analysis. Factors that were identified as independent prognostic factors in the multivariate Cox analysis were included in the score model.

Results

A total of 200 patients who received allo-HSCT for relapsed/refractory AML were identified. The median age of diagnosis of AML was 39.5 years (range, 18-68 years), and the median age of transplantation was 40 years (range, 20-68 years). In the overall survival analysis, age at diagnosis, age at transplantation, sex, white blood cell (WBC) count at diagnosis, WBC engraftment time and duration from AML diagnosis to allo-HSCT were identified as potential prognostic factors. In the multivariate Cox analysis, age $>$ 55 years (HR, 3.587; 95% CI, 1.099 to 11.702; P =.034), WBC level at AML diagnosis $<$ 4.0$\times$10^9/L (HR, 4.548; 95% CI, 1.209 to 17.104; P =.009) and duration from AML diagnosis to HSCT $>$ 250 days (HR, 6.541; 95% CI, 0.941 to 5.488;

P =.058) were identified as independent prognostic factors. A model for the survival rate of R/R AML patients receiving allo-HSCT was developed according to the regression coefficients of the multivariate analysis. Patients who met the criteria of age > 55 years, WBC level at AML diagnosis < 4.0×10^9/L or duration from AML diagnosis to HSCT > 250 days received 1 point for each variable. Points 0, 1-2, and 3 were defined as low, median and high risk, respectively. This prognostic score model performed well in the external cohort (AuROC =.783; 95% confidence interval,.599 to.966). In the LFS analysis, WBC count at AML diagnosis < 4.0×10^9/L (HR, 3.120; 95% CI, 1.198 to 8.122; P =.020) and female sex (HR, 2.778; 95% CI, 1.013 to 7.617; P =.047) were related to poor LFS .

Conclusion

In this study, we developed a prognostic score model of 2-year OS for R/R–AML patients after receiving allo-HSCT. Independent prognostic factors included age at transplantation (> 55 years), WBC count at AML diagnosis (< 4.0×10^9/L) and duration from AML diagnosis to HSCT (> 250 days). This model can effectively evaluate the 2-year mortality of R/R-AML patients after receiving allo-HSCT and help improve the prognosis of patients. There was a higher mortality for patients with R/R–AML after receiving allo-HSCT when the WBC count at the time of AML diagnosis was lower than the normal range. Considering that the main cause of death of patients in this study was infection, this correlation may be related to the destruction and reconstruction of the immune system.

Disclosures No relevant conflicts of interest to declare.

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