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POSTER ABSTRACTS

723.ALLOGENEIC TRANSPLANTATION: LONG-TERM FOLLOW-UP AND DISEASE RECURRENCE

A Prediction Model for Early Recurrence after Allogeneic Hematopoietic Stem Cell Transplantation in Patients with CMML: A Nationwide Representative Multicenter Study

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Introduction:
Chronic myelomonocytic leukemia (CMML) is a clonal hematopoietic stem cell malignancy. Some patients experience prolonged remission after aggressive chemotherapy, but the only current therapy with proven curative potential is allogeneic hematopoietic stem cell transplantation (allo-HSCT). However, not all CMML patients benefit from allo-HSCT, and many experience relapse. Relapse is the leading cause of treatment failure for CMML treated with allo-HSCT, and treatment options for patients relapsing after allo-HSCT are limited. This study conducted a nationwide multicenter real-world study to identify risk factors and develop a novel prediction model for early recurrence in CMML patient posttransplantation. Clinicians can improve the survival of CMML patients with a high risk of early recurrence by intervening as early as possible.

Methods:
Patients ≥18 years old with CMML treated with allo-HSCT for the first time between 2005 and 2022 were included in this nationwide, multicenter, real-world study. Twenty-seven medical centers participated in this analysis, including the derivation cohort from 26 centers and the validation cohort from another center. Information collected included demographic and clinical characteristics, previous treatments and responses, and allo-HSCT treatment details. We first calculated the univariable association of each variable with 1-year relapse in the derivation cohort. Second, the variables with p values less than 0.1 in the univariate analysis were further included as candidate predictors in the multivariate analysis using a backward stepwise logistic regression model. The variables that remained in the final model based on the outcomes of the multivariate analysis in the derivation cohort were identified as independent prognostic factors. A scoring system to predict early recurrence after allo-HSCT was also established, and scores were assigned to the prognostic factors based on the regression coefficient.

Results:
Using multivariable logistic regression methods with stepwise variable selection, two highly significant independent prognostic factors for the early recurrence of CMML posttransplantation were identified: bone marrow blast cell count at diagnosis (p=0.026; odds ratio [OR], 1.149; 95% confidence interval [CI], 1.02-1.30), and leukocyte count pretransplantation (p=0.005; odds ratio [OR], 1.212; 95% confidence interval [CI], 1.06-1.39). A risk grading model was constructed according to the regression coefficients. Bone marrow blast cell count 0-5% is 0 point, 5%-10% is 1 point; 10-20% is 2 points, and >20% is 3 points. Leukocyte count 0-10×10^9/L is 0 point, 10-20×10^9/L is 2 points, and >20 $\times10^9$/L is 4 points. The points scored for each of these two factors were added to yield the overall risk score, which ranged from zero to seven. Patients were stratified into a low-risk group (0-1 point), a intermediate-risk group (2-3 points) and a high-risk group (4-7 points). The validated internal c-statistic was 0.790 (95% CI, 0.657-0.923), and the external c-statistic was 0.710 (95% CI, 0.580-0.840). The early recurrence rates of the derivation cohort in the low-risk, intermediate-risk, and high-risk groups were 5.9%, 17.9% and 31.8% (p<0.05). The Kaplan–Meier estimations of relapse-free survival revealed good separation between these risk groups, and 91.9%, 79.4% and 66.1% (p<0.05), respectively. According to the calibration plots, the model-predicted probabilities showed a good correlation with the actual observed frequencies. Decision curve analysis indicated that the clinical implementation of the prognostic model could benefit early recurrence CMML patients.

Conclusion:
CMML patients who relapse after allo-HSCT have a poor prognosis. An integrated prediction model based on clinical biomarkers was developed and externally validated, and this is the first straightforward scoring model that incorporates clinical and laboratory risk factors to evaluate the early recurrence of CMML patients after receiving allo-HSCT. This model can be effectively utilized to help improve the survival and prognosis of CMML patients by accelerating the early identification of patients at a high risk of relapse and contributing to the appropriate implementation of urgent medical support.

Disclosures No relevant conflicts of interest to declare.

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