Post-transplant outcomes of AML with cytogenetic evolution

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Background

- Cytogenetic abnormalities at diagnosis is a crucial prognostic marker in patients with acute myeloid leukemia.
- Cytogenetic evolution (CE) is defined by additional cytogenetic aberrations and its incidence is around 30-40%.
- CE is not well defined in AML while it heralds an unfavorable prognosis in CML and ALL.
- Patients with AML develop CE at relapse either before or after allogeneic stem cell transplant (AlloSCT) may have worse outcomes.

Objective

- We evaluated a prognostic role of pre-transplant CE in patients with AML who underwent AlloSCT in CR2.

Patients and Methods

Study Population

Included 62 patients in second remission after first relapsed AML who underwent AlloSCT between 2005 and 2018 at University of Minnesota. 24 patients had CE events at the time of first relapse.

Definition

Cytogenetic evolution is defined by any additional cytogenetic abnormalities detected by conventional G-banding at the first relapse. Cytogenetic risk classification is performed by European Leukemia Network (ELN) 2017 risk stratification.

Statistical Analyses

The distributions of demographic/clinical characteristics were summarized using counts and frequencies (for categorical variables) or means and standard deviations (for continuous ones). Survival curves were estimated using the Kaplan-Meier product-limit method and compared by log-rank test. Multivariate Cox regression was used to analyze the effects of cytogenetic evolution on the post-transplant survival.

Results

Patients Characteristics

Baseline patient characteristics were similar for age at diagnosis, sex, secondary AML, and ELN cytogenetic risk at diagnosis. However, average WBC count at diagnosis was higher without CE (mean 56.5 x 10^9/L) compared with CE (mean 32.3 x 10^9/L).

Disease characteristics

- The duration of CR1 (<1 year VS > 1 year) was significant to the outcomes of patients transplanted from cord blood seemed uncommon and occurred in 40% of patients who underwent AlloSCT in CR2.

Transplant related characteristics

- The DFS at 5-year was estimated 60% in patients with CR1 duration > 1 year in comparison with 34% in patients with CR1 duration < 1 year (p = 0.006).

Discussion

- Cytogenetic evolution in patients with AML was not uncommon and occurred in 40% of patients who underwent AlloSCT in CR2.
- Pre-transplant cytogenetic evolution at relapse was not prognostic for transplant outcomes in patients who achieved CR2 and proceeded with AlloSCT.
- The duration of CR1 (<1 year VS > 1 year) was significant to predict post-transplant survival outcomes.
- The outcomes of patients transplanted from cord blood seemed comparable to patients transplanted from other sources.

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