New follow-up methodologies for acute leukemias in allogenic hematopoietic stem cell transplantation

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Background: Allogeneic hematopoietic stem cell transplantation (Allo-HSCT) is considered a potential therapy for long-term survival, used as post-remission therapy in leukemias whose response to earlier treatments was not effective. Relapse and associated disease progression are some of the main complications after the transplantation period that may lead to uncertain clinical endings. Transplantation monitoring markers must be effective in the follow-up disease [1-5]. **Aim:** This study aimed to evaluate the presence of mixed chimerism (MC) in peripheral blood along the follow-up of patients after Allo-HSCT to optimize the predictive value of recurrence of the underlying disease. **Methods:** Peripheral blood samples from 143 individuals with Acute Myeloblastic Leukemia (AML) and 80 individuals with B/T Cell Acute Lymphoblastic Leukemia (LLB/T) between January 2013 and December 2019. Chimerism conditions were performed at the first moment of evidence of MC and one year after transplantation, using a PCR multiplex (Mentype® Chimera®) from Biotype. **Results:** The mean age of patients undergoing transplantation was 43.8 and 31 years and the mean survival was 11,1 and 12 months for AML and LLB/T patients, respectively. After 1 year of HSCT, 30% and 31,7% of LLB/T and AML patients showed complete chimerism (CC), opposed 70% and 68,3% exhibit MC. However, 68% and 72% of that denote a progressive MC. On LLB/T and AML patients, 50% and 60% keeped MC; 39% and 33% evolved from MC to CC; 11% and 5% regressed from CC to MC, respectively. **Conclusions:** The evaluation of chimerism over one year of Allo-HSCT in both leukemias, concluded that although the percentage of CC was lower than the MC, the percentage of progressive chimerism was significantly more evident than decreasing chimerism, which may indicate a decrease probably of recurrence and a better prognosis. Most patients maintained stable MC, supporting the idea of balance between donor and recipient cells, or evolved from MC to CC, which shows a positive evolution in transplant engraftment [6-12].

Keywords: Allogeneic hematopoietic stem cell transplantation; biomarkers; chimerism; genetics; leukemia.

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