DOI: 10.46765/2675-374X.2023V4N3P207

SHORT COMMUNICATION

SECOND HEMATOPOIETIC STEM CELL TRANSPLANTATION IN ACUTE LEUKEMIAS: EVALUATING SUCCESS AND CHALLENGES

Alessandra Paz[1] (ORCid 0000-0001-6429-3998)

1 Chief department Hematological e Stem cell transplantation Hospital de clinicas de porto alegre

Corresponding author: Alessandra Paz (Email: alepaz@hcpa.edu.br)

Received: 08 Out 2023 • Revised: 10 Nov 2023 • Accepted: 06 Dec 2023.

INTRODUCTION

Hematopoietic stem cell transplantation (HSCT) is a life-saving procedure for individuals with acute leukemias (AL). In some cases, patients may require a second bone marrow transplant due to relapse. This text explores the outcomes, success rates and challenges associated of second HSCT (sHSCT).

The defined role of the sHSCT in Acute Leukemias after relapse is to be define. Socié et al found that the success rate of second transplants for diseases like leukemia can range from 20% to 50%, with better outcomes in cases of acute leukemia compared to chronic forms. Moukalled in recent review found in patients whit acute myeloid leukemia that time between first transplantation and relapse is important prognosis factor (11% vs 34% 2-years OS in patients relapsing before and after 6 months respectively). The optimal conditioning regiment remains controversial with no statistically difference between sources types and whether the same or different donor used with reduced intensity regiment (RIC) [1,2].

MD Anderson center sHSCT 91 myeloid leukemias retrospective review between 2000 and 2019 found a median age 44 years (range, 18-73) and Overall survival (OS), disease free survival (DFS) and not relapsed mortality (NRM) rates of 36%, 27% and 18% respectively. Acute GVHD III-IV was 11% and chronic at 2 years was 18%. Most common cause of death was relapse. Presence of chronic GVHD after the first HSCT (HR 2.9 (95% CI, 1.5–5.7; p=0.001), and HCI >2(HR 2.6 (95% CI, 1.4–4.9; p=0.003)), were associated with worse outcomes. No difference to same or different donor. In last 10 years patients with >6 months remission duration after first HCT undergoing sHSCT had better outcomes (HR 2.5 CI95%1.2–5.2; p=0.02)), there was an increased use of Haploidentical (58% x 41%) and change of donors in sHSCT (67% x 39%) They noted more patients using maintenance therapy after second in the last decade (27% vs 2%, p=0.0007) [3].

In meta-analyses from ASCT published in 2022 with 20 studies and 2770 patients the OS/DFS/NRM rates was of 34%, 30 and 51% respectively. The OS was two times higher if patient is in remission (38 x 17%) and no difference if same or different donor (HR 1.1, CI95%- 0.78-1.3) [4].

The question whether sHSTC or Donor Lymphocytes infusion (DLI), is better to myeloid disease considering the recognized benefic effect of graft versus leukemia (GVL) in this group patients, a retrospective registry study from the Acute Leukemia Working Party (ALWP) of the European Society for Blood and Marrow Transplantation(EBMT) involving 418 adults who received an allo-HCT2 (n = 137) or DLI (n = 281) for post allograft-relapsed AML showed very similar 2- years OS allo-HCT2, 26%; 5-year allo-HCT2, 19% vs 2-year OS DLI 25%; 5-year OS 15%; P = .86) and relapse before 6 months was the main prognosis factor in both groups[5].

In case of acute lymphoblastic leukemias (ALL) second transplant results are disappointing. The acute Lymphoblastic leukemia Working Party (ALWP) from EBMT studing in 245 ALL patients with median age 34(18 to 74) the 2-years OS 29,8% and DFS 19.8%. The majority procedures used unrelated donors and before car T cell availability. The EBMT registry in more recent publication in 214 ALL patients between 2004 until 2013 demonstrated 43%and 33% 2 and 5 years OS, and 34% and 31% DFS. Acute GVHD was 25% and CGVHD 22%. With no difference between same or change donor. Identified favorable prognosis factors were: more than 12 months between transplants, CGVHD after first HSTC and complete remission before de second HSTC[1];

In summary the second transplant can be a option to a select group patient and best results are in patients that relapsed 6 months after the first HSTC with complete remission, HCI <2 .Apparently wasn't difference used same donor or not and RIC regiment can be good option.

REFERENCES

1. Nagler A, Labopin M, Dholaria B, et al. Second allogeneic stem cell transplantation in patients with acute lymphoblastic leukaemia: a study on behalf of the Acute Leukaemia Working Party of the European Society for Blood and Marrow Transplantation. Br J Haematol. 2019;186(5):767-76.
2. Moukalled NM, Kharfan-Dabaja MA. What is the role of a second allogeneic hematopoietic cell transplant in relapsed acute myeloid leukemia? Bone Marrow Transplant. 2020;55(2):325-31.
3. Yalniz FF, Saliba RM, Greenbaum U, et al. Outcomes of Second Allogeneic Hematopoietic Cell Transplantation for Patients With Acute Myeloid Leukemia. Transplant Cell Ther. 2021;27(8):689-95.
4. Kharfan-Dabaja MA, Reljic T, Yassine F, et al. Efficacy of a Second Allogeneic Hematopoietic Cell Transplant in Relapsed Acute Myeloid Leukemia: Results of a Systematic Review and Meta-Analysis. Transplant Cell Ther. 2022;28(11):767.e1-11.
5. Kharfan-Dabaja MA, Labopin M, Polge E, et al. Association of Second Allogeneic Hematopoietic Cell Transplant vs Donor Lymphocyte Infusion With Overall Survival in Patients With Acute Myeloid Leukemia Relapse. JAMA Oncol. 2018;4(9):1245-53.