STEM CELL TRANSPLANT

OP 16

The role of T helper 22 cells during engraftment at hematopoietic stem cell transplantation

O. Yucel[1,*], M. Ulubahsi[1], T. Ulas[2], O. Salim[1], D. Ekinci[1], L. Undar[1]

[1] *Department of Hematology Akdeniz University School of Medicine, Antalya, Turkey*
[2] *Department of Hematology Near East University School of Medicine, Nicosia, Cyprus*

Objective: T helper 22 (Th22) and T helper 17 (Th17) cells that are especially a subtype of CD4+ T lymphocyte are known to secrete interleukin 22 (IL-22). Th22 cells have been reported to play a role in infection, chronic inflammation, tumor development, autoimmune disease pathogenesis, and cell development. However, the role and number of cells whose carrying IL-22 in patients with hematopoietic stem cell transplantation is unknown. In this study, the number of circulating cells carrying IL-22, IL-17A, TNF-α and IFN-γ were investigated before hematopoietic stem cell transplantation (at stem cell infusion day) and during engraftment.

Methodology: A total of 10 patients who underwent autologous or allogeneic hematopoietic stem cell transplantation consecutively at the Department of Stem Cell Transplantation at Akdeniz University School of Medicine between July and December 2019 and 10 healthy people as a control group were included in this study. After separating the peripheral blood mononuclear cells (PBMCs) from the peripheral blood both at the transplantation day (before stem cell infusion) and at the engraftment, PBMCs were incubated by phorbol myristate acetate (PMA), ionomycin and monensin for 4 h. After that, the number of absolute lymphocytes carrying IL-22, IL-17A, TNF-α and IFN-γ among CD3 and CD4 double-positive T cells were determined by flow cytometry in patient and control groups, respectively.

Results: The diagnosis of patients' were multiple myeloma (6/10), B cell acute lymphoid leukemia (1/10), acute myeloid leukemia (1/10), non-hodgkin lymphoma (1/10), and gestational trophoblastic disease (1/10), respectively. While 6 of patients (') had autologous stem cell transplantation, 4 patients (@) had allogeneic stem cell transplantation. The number of absolute lymphocytes carrying IL-22, IL-17A, TNF-α and IFN-γ was found significantly lower in the patient group compared with the control group as shown in Table 1. In the patient group, although, there was no statistically significant difference between them, the number of absolute lymphocytes carrying IL-22, IL-17A, TNF-α and IFN-γ at engraftment were higher than stem cell infusion day (D0). Table 1 The absolute count of lymphocytes carrying IL-22, IL-17A, TNF-α and IFN-γ at stem cell infusion day (D0).

Conclusion: In our study, we detected that the number of absolute lymphocytes carrying IL-22, IL-17A, TNF-α and IFN-γ at stem cell infusion day (D0) were significantly lower in the patient group compared with control group. This might be related with previous received treatments including conditioning regimen, chemotherapy or radiotherapy. In addition to, although there was a trend increased the absolute count of lymphocytes carrying IL-22, IL-17A, TNF-α and IFN-γ at engraftment in the patient group, there was no significant difference between D0 and engraftment. This could be related to small sample size as well. In conclusion, we think that further larger prospective studies are needed to clarify for this issue in patients with hematopoietic stem cell transplantation.

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OP 17

Story of success of haploidentical hematopoietic stem cell transplantation in aplastic anemia: a systematic review and meta-analysis of clinical outcome and risk assessment

G. Elgohary

Ain shams university Hospitals, Heliopolis, Egypt

Objective: Story Of Success Of Haploidentical Hematopoietic Stem Cell Transplantation in Aplastic Anemia: A Systematic Review and Meta-analysis of Clinical Outcome and risk assessment. Authors: Ghada ElGohary1,2 1King Khalid University Hospital, Riyadh, Saudi Arabia 2Faculty of Medicine Ain Shams University, Cairo Egypt Running title: Haploidentical Stem Cell Transplantation in Aplastic Anemia.

Case report: Abstract Aplastic anemia (AA) is a very serious hematological disorder which can be solely cured by hematopoietic stem cell transplantation (HSCT). Haploidentical HSCT is a new emerging modality with encouraging outcomes in several blood conditions,yet it is still under several trials in AA Objectives: To assess the feasibility and safety of the haploidentical HSCT in patients with severe and very severe AA.

Methodology: This is a systematic review and meta-analysis of studies related to haploidentical stem cell transplantation in idiopathic aplastic anemia emphasizing the investigating rates of successful engraftment, acute graft-versus-host-disease (aGvHD), chronic GvHD (cGvHD), besides the transplant-related mortality (TRM), and post-transplantation viral infections (including cytomegalovirus [CMV]) in patients with AA.

Results: The effects of reduced intensity (RIC) and non-myeloablative conditioning (NMA) as well as various GvHD-prophylaxis regimens on these outcomes were evaluated in our study. In total of fifteen studies that were identified, (577 patients, 58.9% males), successful engraftment was observed in 97.3% of patients (95% CI, 95.9–98.7) while grade II-IV aGvHD and cGvHD has been reported in 26.6% and 25.0%, respectively. The incidence of TRM was 6.7% per year (95% CI, 4.0 to 9.4). RIC regimens were associated with higher proportions of successful engraftment (97.7% vs. 91.7%, $p = 0.03$) and aGvHD (29.5% vs. 18.7%, $p = 0.008$) when compared to NMA regimens with no differences in cGvHD or mortality incidence. When compared to methotrexate-containing regimens and other regimens, post-transplant-cyclophosphamide-containing regimens (PTCy) has helped to reduce the rates of aGvHD (28.6%, 27.8%, and 12.8%, respectively, $p = 0.02$), CMV viremia (55.7%, 38.6%, and 10.4%,

respectively, $p < 0.001$), and CMV disease in initially-viremic patients (2.1%, 33.0%, and 0%, respectively, $p < 0.001$).

Conclusion: We can conclude that Haploidentical HSCT is associated with promising outcomes in terms of successful engraftment and reduced complications. Engraftment success has been noticed in the majority of patients with severe and very severe AA, while TRM and GvHD rates were acceptable. NMA conditioning was better in terms of lower CMV viremia and acute GVHD but not in terms of RRT, mortality and engraftment. The addition of PTCy regimens have showed lower GvHD and lower CMV incidence at a price of non-significant increase in the incidence of mortality per year. NMA vs. RIC and PTCy vs others may be used depending on both patient's and donor's profiles besides each institution's setup and resources Recommendation: Still we are in need of more studies to weigh the risk and benefits of Haplo SCT in AA.

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OP 18

Long-term results of allogeneic peripheral blood hematopoietic stem cell transplantation for severe aplastic anemia

E. Aladag[1,*], H. Goker[2], H. Demiroglu[2], S. Aksu[2], N. Sayınalp[2], I. Haznedaroglu[2], O. Ozcebe[2], Y. Buyukasık[2]

[1] *Hacettepe University Department Hematology, Ankara, Turkey*
[2] *Hacettepe University Department Hematologyacettepe University Department Hematology, Ankara, Turkey*

Objective: Aplastic anemia (AA) is a life-threatening disorder of hematologic stem cell which, if untreated, may be associated with significant morbidity and mortality due to the recurrent infections or bleeding. Currently, the first treatment option is allogeneic hematopoietic stem cell transplant (allo-HSCT) for patients younger than 40 years. Bone marrow is recommended as the stem cell source due to less graft versus host disease (GVHD) risk and better outcomes than peripheral blood (PB)-derived stem cell. Recently, a few data of PB-derived allo-HSCT in AA has been published, due to its easy applicability and early engraftment advantage. The aim of this study is to share the data of AA patients who have underwent PB-derived allo-HSCT in our bone marrow transplantation center.

Methodology: Twenty-seven patients who underwent PB-derived allo-HSCT from human leukocyte antigen matched sibling donors were analyzed retrospectively.

Results: The median follow-up time of the patients was 95.2 months (range, 4.8–235 months). The 10-year survival was 89%. The median neutrophil and platelet engraftment time was 11 days (range, 9–16 days) and 13 days (range, 11–29 days, respectively. Primary platelet engraftment failure was observed in only 1 patient (3.7%). Acute and chronic GVHD observed in 2 (7.4%) and 3 (11.1%) patients, respectively. Neutropenic fever was observed in 13 (44.8%) of patients until the engraftment after allo-HSCT. One patient died due to CMV infections, two died due to septic shock secondary to fungal infection.

Conclusion: This study demonstrated that PB is the stem cell source of choice for patients with SAA.

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PEDIATRIC HEMATOLOGY
HEMATOLOGY – GENERAL

OP 19

Hematological parameters and peripheral blood morphologic abnormalities in children with COVID-19

N. Yarali*, Y. Akcabelen, Y. Unal, A. Ozkaya-Parlakay

Ministry of Health Ankara City Hospital, Ankara, Turkey

Objective: The aim of this study is to evaluate the hematologic parameters and peripheral blood cell morphological changes in children with COVID-19 and compare them with those of children suspected but then confirmed to be negative for SARS-CoV-2.

Methodology: Thirty children were tested to be positive for SARS-CoV-2 and the remaining 40 were negative. Hemoglobin, leukocyte, neutrophil, lymphocyte, monocyte counts according to age-specific intervals, platelet, large unstained cell counts, and delta neutrophil index were recorded. Differential counts were formulated by manual counting and morphology of the blood cells were evaluated.

Results: The mean leukocyte counts of the SARS-CoV-2 positive and negative groups were $7.0 \pm 3.7 \times 10^9$/L and $10.4 \pm 7.1 \times 10^9$/L, respectively ($p < 0.05$). Nine (30%) children with COVID-19 had lymphopenia. Among children with COVID-19, absolute lymphocyte count was lower in those with pneumonia ($p < 0.05$). Reactive lymphocytes were noted in 77.8% and 90% in the SARS-CoV-2 test positive and negative groups, respectively ($p > 0.05$). Mean absolute neutrophil counts of the SARS-CoV-2 test positive and negative groups were $3.7 \pm 2.9 \times 10^9$/L and $5.4 \pm 4.2 \times 10^9$/L ($p < 0.05$). Four patients (13.3%) with SARS-CoV-2 test positive had neutrophilia and seven (23.3%) had mild neutropenia. In the peripheral smear, vacuolated monocytes and dysplastic changes in neutrophils and platelets were noted in both groups.

Conclusion: Leukocyte, neutrophil and monocyte counts were significantly lower in children with COVID-19 compared with symptomatic children without COVID-19. Lymphopenia, reactive lymphocytosis and dysplasia, could be noted in children with COVID-19. Further studies on hematological findings linked with the course of the disease in children are warranted.

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