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abstract

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Plerixafor vs G-CSF. Graft composition and main outcomes in pediatric cohort with acute leukemia after αβ T cell depleted haplo-HSCT

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Introduction: The impact of donor mobilization strategy on graft composition and hematopoietic stem cells transplantation (HSCT) outcomes remains the point of interest.

Methodology: The study cohort includes 295 acute leukemia patients. All patients received their first haplo-HSCT in complete remission with the αβ T cell depletion method (ProdigyTM, CliniMACSTM by Miltenyi Biotec) from January 2012 to April 2021. The total cohort was divided into two groups by G-CSF + Plerixafor (Mozobil, Genzyme Ltd, Netherlands) or G-CSF donor mobilization strategy, «Plerixafor group» 95(32%) and «G-CSF group» 200(68%) patients accordingly. Relapse and non-relapse mortality (NRM) risks were calculated for each group at 3 years by cumulative risk method (CIR and CI_NRM), groups were compared by Gray's test. The number of graft cells per kg was compared by Mann–Whitney U-test.

Results: The median value (MV) of graft NK cells per kg for G-CSF group was significantly greater than for Plerixafor group (36*106 cells/kg (IQR (25-55)*106 cells/kg) vs 25*106 cells/kg (IQR (18-36)*106 cells/kg), p<0.001). MV of graft stem cells and αβ T cells for G-CSF group was also greater than for Plerixafor group (9.94*106 cells/kg (IQR (8.00-10.85)*106 cells/kg) vs 8.52*106 cells/kg (IQR (7.05-10.17)*106 cells/kg), p=0.002 for stem cells; 26*10^3 cells/kg, (IQR (14-53)*10^3 cells/kg) vs 22*10^3/kg (IQR (7-39)*10^3 cells/kg), p=0.026 for αβ T cells accordingly).

There were no differences in MV for total CD3+ cells and γδ T cells subpopulation. CI_NRM was significantly higher for the G-CSF group: 8.3% (CI 4.8%-13.0%) in comparison to 1.1% (CI 0.1%-5.5%) for the Plerixafor group, p=0,021. On the other hand, CIR was lower for the G-CSF group in comparison to the Plerixafor group (24.7% (CI 18.5%-31.4%) vs 39.0% (CI 28.5%-49.2%) accordingly, p=0.015).

Conclusion: Graft NK cells absolute counts per kg were significantly higher for G-CSF group. Plerixafor mobilization group showed improved NRM, while the impact of plerixafor mobilization on the CIR should be further validated in an independent cohort and the mechanisms studied in-depth.