COMBINATION OF LOW DOSE ANTI-THYMOCYTE GLOBULIN (ATG) AND REDUCED DOSE POST TRANSPLANT CYCLOPHOSPHAMIDE (PTCY), FOR HAPLOIDENTICAL STEM CELL TRANSPLANT IN ACUTE LEUKEMIA : A SINGLE CENTER RETROSPECTIVE STUDY

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Background: Haploidentical stem cell transplant (Haplo-SCT) with standard post-transplant cyclophosphamide (50mg/kg, day +3,+4) is an effective platform, but with considerable early non relapsed mortality (NRM) in our patients. We tried to reduce the NRM by adopting reduced dose ATG plus PTCy.. Here, we report our preliminary data on Haplo-SCT with a novel combination of low dose rabbit ATG (2.5mg/kg, day -2) and reduced dose PTCy (50mg/kg day+3).
Methods: 30 patients with acute leukemia, who underwent Haplo-SCT from February 2021 till February 2024 were recruited. Comparison was made between 20 patients received standard dose PTCy and 10 patients with our novel combination (ATG/PTCy). Standard dose PTCY group was done earlier in year 2021 till 2023, whereas ATG/PTCy based transplant was in 2023/2024
Results: The median follow up for PTCy and ATG/PTCy group was 28 months (22-33) and 5.5months (3-15), respectively. No significant differences between the group in term of age, gender, disease status, Karnofsky score and donor-recipient CMV status. All patients received myeloablative conditioning, except 2 patients in ATG/PTCy group. ATG/PTCy group received a median CD34 cell of 5.9x106/kg (4-7.1) and PTCy group received 5.0x106/kg (3.9-8.14). Neutrophil engraftment was earlier in ATG/PTCy group compared to PTCy, 11.5 days (10-15) and 16 days (13-21) respectively. Similarly, platelet engraftment in ATG/PTCy was 11.5 days (10-13), and 18 days (12-26) in PTCy group. The cumulative incidence of CMV reactivation at day +60 was 89% in PTCy and 63% in ATG/PTCy group (P=0.018). Cumulative incidence of acute GVHD in PTCy group was 42% (95% CI: 18-67), compared to 50% (95% CI:31-79) in ATG/PTCy (P=0.12). Both groups have similar grade I-II Acute GVHD, except for 1 patient who has grade III GVHD. 8 patients with hemorrhagic cystitis (grade II to IV) in PTCy group, with only 2 (grade I and II) occurred in ATG/PTCy group. 11 deaths were reported in PTCy group, in which 4 deaths were before day +90. In ATG/PTCy group, there were 2 deaths due to disease relapsed and EBV-PTLD.
Conclusion: Our preliminary data shown that combination of low dose ATG/PTCy has earlier neutrophil/platelet engraftment and low occurrence of hemorrhagic cystitis, leading to a lower early NRM. The risk of CMV reactivation and acute GVHD is similar with standard dose PTCy.