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# P1393 HIGHER DOSE OF CD34+ CELLS PROMOTES EARLY RECONSTITUTION OF NATURAL KILLER CELLS AND IS ASSOCIATED WITH BETTER OUTCOMES AFTER UNMANIPULATED HEMATOPOIETIC STEM CELL TRANSPLANTATION FOR MYELOID MALIGNAN

**Topic:** 22. Stem cell transplantation - Clinical

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**Background:** Natural killer (NK) cells are potent effectors for eliminating myeloid leukemia and this effect is particularly robust after T-cell-deplete allogenic hematopoietic stem cell transplantation (allo-HSCT). The significance of NK cells after unmanipulated transplantation is less clear and factors affecting early NK reconstitution remain elusive.

**Aims:** To evaluate early NK reconstitution and its effects on HSCT outcomes and related factors.

**Methods:** This study retrospectively analyzed a cohort of 180 allo-HSCT recipients who received unmanipulated grafts between June 2012 and May 2020. All patients have acute myeloid leukemia or myelodysplastic syndrome, and most of the patients and donors (99%) are serologically positive for cytomegalovirus (CMV). NK counts in the peripheral blood at 30 days after allo-HSCT (NK30) are strongly associated with all-cause mortality and a cut-off value at 90 cell/μl is determined for further prognostic analysis.

**Results:** Higher NK30 is associated with reduced disease relapse (HR 0.56, $P = 0.02$), lower CMV reactivation (HR 0.41, $P = 0.001$) and better survival (HR 0.43, $P = 0.01$). Further analysis finds that NK30 is associated with the dose of $CD34^+$ cells ($r = 0.739$, $P < 0.001$) and not the numbers of mature NK cells in the graft. In flow cytometric analysis of cryopreserved day +30 bone marrow samples, patients in continuous complete remission ($N = 6$) demonstrate higher frequencies of $CD34^+CD7^+$ progenitor cells and $CD56^{bright}$ NK cells as compared to patients with disease relapse within 1 year ($N = 6$). No suppressive effect of T cells on NK recovery is found since the majority of patients (131/180, 72.8%) received rabbit anti-thymocyte immunoglobulin (ATG) in the conditioning regimen.

**Summary/Conclusion:**

Higher dose of $CD34^+$ cells promotes early recovery of NK cells after allo-HSCT with unmanipulated graft and NK30 represents a valuable prognostic marker of better outcomes. Our data thus provide new information for the therapeutic manipulation of NK cells for the promotion of transplant outcome.