most patients but less than 5% of patients achieve a molecular remission. Therefore, combination regimens consisting of allogeneic HSCT and imatinib have been proposed. We used murine models of allogeneic HSCT to investigate the effects of imatinib administration in the peri-transplant period. We used an MHC-matched allogeneic HSCT model (B10.BR → CBA) and a congenic syngeneic HSCT model (Ly5.1 → B6). All mice received lethal doses of radiation followed by injection of 5×10^6 T-cell depleted bone marrow cells. Imatinib was administered via intraperitoneal injection twice daily from day -1 to day 8 of transplant at a dose of 45 mg/kg/dose. In the congenic model, all imatinib-treated mice died by day 8 whereas control mice had 100% survival (combined data of 2 transplants; n=16; p<0.0001). Similarly, the imatinib-treated mice in the allogeneic HSCT model had inferior survival compared to controls (p=0.0001). We analyzed imatinib-treated allogeneic HSCT recipients on day +14 and found that thymocyte counts were significantly reduced in the imatinib treated group (0.96×10^6) compared to controls (8.2×10^6) (p<0.00002). The numbers of CD4$^+$, CD8$^+$ and double positive thymocytes were also significantly reduced. Total splenocyte counts were diminished in the imatinib-treated group as well, but the difference was not significant (29.8×10^6 vs. 37.3×10^6). The numbers of splenic CD3$^+$ T cells, B220$^+$ B cells and NK1.1$^+$ NK cells were significantly reduced in the imatinib-treated allogeneic HSCT recipients. We found no differences in the total number of bone marrow cells or CFU-GM or BFU-E colonies in imatinib-treated mice versus controls. We performed weekly complete blood counts and noted significant decreases in the hemoglobin concentration (day +7 and +14), platelets (day +7) and lymphocytes (day +21). In conclusion, peri-transplant administration of imatinib to recipients of a syngeneic or allogeneic T-cell depleted HSCT results in significant mortality, which is associated with profound defects in T-, B- and NK-lymphopoiesis, as well as moderate decreases in erythrocyte and platelet recovery.

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CD4$^+$Vβ11$^+$ T CELLS EXHIBIT LIMITED TCR-α REPERTOIRE DIVERSITY IN THE miHA-MATCHED C57BL/6 → BALB.B MODEL OF GRAFT-VERSUS-HOST DISEASE

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Spectratype analysis of the TCR Vβ chain is a useful tool for examining the T cell repertoire of clonally expanded populations of T cells responding to minor histocompatibility antigens (miHAs) during graft-versus-host disease (GVHD). The nature of miHAs in the CD4-mediated, H2^b-matched C57BL/6 → BALB.B model remains elusive, but previous spectratype analysis demonstrated a vital role for CD4$^+$Vβ11$^+$ T cells in mediating GVHD. Transfer of C57BL/6 CD4$^+$Vβ11$^+$ T cells, along with T cell-depleted bone marrow, caused lethal GVHD in BALB.B mice. The TCR Vβ chain alone does not determine the specificity of peptide-MHC recognition. The specificity of peptide-MHC recognition is mainly determined by the CDR1 and CDR3 loops of both the TCR-α and -β chains. Evidence from crystallographic studies, TCR-α transgenic mice, and tumor-reactive T cells from humans showed that a single TCR-α chain could pair with multiple TCR-β chains and still maintain peptide specificity. These studies suggest that the TCR-α chain may have a predominant role in antigen recognition. Analysis of the TCR-α chain has not been previously examined using the well-characterized system of spectratype analysis. Upon transplant of unfractionated C57BL/6 CD4$^+$ T cells into lethally irradiated BALB.B recipients, analysis of the TCR-α repertoire within the BALB.B-reactive CD4$^+$Vβ11$^+$ C57BL/6 T cell population was performed on day 10. Our data show that there is limited Vα diversity in the CD4$^+$Vβ11$^+$ response to BALB.B miHAs. The limited TCR diversity seen with both the Vα and Vβ chains suggests that C57BL/6 CD4$^+$ T cells recognize a limited number of antigenic peptides in this model.

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PURE RED CELL APLASIA (PRCA) FOLLOWING ABO-INCOMPATIBLE ALLOGENEIC BONE MARROW TRANSPLANTATION

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Background: Pure red cell aplasia (PRCA) following ABO incompatible allogenic BMT has been reported. The treatment of PRCA varies widely with no clear consensus amongst transplant institutions. **Method:** 3 patients were found to have PRCA. Retrospective analysis of patients and treatment characteristics of these forms the basis of this report. In addition, we provide systemic review of the treatment of PRCA following allogeneic transplant from the published literature. **Results:** All 3-patients had acute myelogenous leukemia and received graft from ABO incompatible donor. The median age was 49 years (range = 39–62). Conditioning and GVHD prophylaxis included, CY/TBI =2, BU/CY=1, Cyclosporine + Methotrexate = 3. Median time to PRCA from the date of transplant was 30 weeks (range =13–32). Two patients received treatment with prednisone at 1 mg/kg; one patient was treated with Erythropoietin alone. Median time to respond and transfusion independence in steroid treated patients was 15 days (data not available for patient treated with Erythropoietin). Total of 39 published reports describe 60 patients with PRCA following ABO mismatch allogeneic transplant. The successful treatment of PRCA varies widely and include, no treatment (spontaneous resolution) = 15, Cyclosporine discontinuation =4, tapering of cyclosporine and onset of GVHD = 2, reinstitution of cyclosporine = 1, Erythropoietin alone = 7, Steroids alone = 4, Steroids + Erythropoietin = 1, Plasmapheresis = 10, Immuno-adsorption aphaeresis = 4, Antilymphocyte globulin = 2, Antithymocyte globulin = 2, Rituximab = 2, Donor leukocyte infusion (DLI) = 2. Treatment details were not available in 4 reports. The median time to response (transfusion independence) is available in 19/60 patients. Median time to response was higher in patients with DLI and immunotherapy (observation/erythropoietin/steroids/CSA tapering = 56 days, ATG/ALG/Rituximab/DLI = 69). **Conclusion:** Initial management with observation, cyclosporine tapering, erythropoietin with or without steroids results in resolution of PRCA in over 50% patients. Refractory patients should be treated with plasmapheresis, immuno-adsorption aphaeresis, immunotherapy (ATG, ALG, Rituximab, DLI) in that order.

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PROGNOSTIC FACTORS FOR ALLOGENEIC STEM CELL TRANSPLANTATION (ASCT) FOR UNTREATED FIRST RELAPSE OF ACUTE MYELOID LEUKEMIA (AML)/MYELODYSPLASTIC SYNDROME (MDS)

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Introduction: The treatment of patients relapsing after primary therapy for Acute Myeloid Leukemia or High Risk Myelodysplastic Syndromes is controversial. Although many centers recommend proceeding to allografting if a donor is available without re-induction therapy, the data on which this recommendation is based is limited, because of small numbers and patient heterogeneity. **Methods:** To determine potential clinical factors that could allow physicians to decide which patients with first relapse AML/MDS could benefit or not from re-induction therapy we performed a retrospective analysis of 81 patients (39 males; 42 females) who received ASCT for untreated AML after First Relapse (n=60), MDS (n=13) and MDS/AML (n=8) between 01/1989 and 02/2003 at M.D. Anderson Cancer Center. **Results:** Median age was 39 years (range 17–68). The median time interval from diagnosis to transplant was 0.7 years (range 0.22–4.23). 73 patients received transplant from related donors (63 siblings, 5 children, 5 parents) and 8 from matched unrelated donors. Preparative regimens included TBI based (n=20), FM ± ATG (n=10), FB ± ATG, Bu/Cy (n=11), Bu/Cy/TT (n=18), BuCyDAC (n=2), others (n=8).