Materials and Methods: We retrospectively analyzed all patients (n = 64) from January 1, 2009 to December 31, 2009 at our institution undergoing allogeneic SCT for hematologic malignancies. PLT refractoriness was defined as a clinical requirement for platelet crossmatching. Clinical outcomes studied included day 100 and one year survival, platelet and neutrophil engraftment and acute GVHD incidence. Risks of death and GVHD were compared between groups with logrank tests and were estimated with the Kaplan-Meier method. Number of days to platelet or neutrophil engraftment was compared with the Wilcoxon rank-sum test.

Results: Allogeneic SCT was performed in 64 patients including three pediatric patients. 10/64 (16%) patients demonstrated PLT refractoriness. Patients with PLT refractoriness had higher risk of acute GVHD (Grade I-IV) as compared to non refractory patients (p = 0.046). Excluding patients without platelet engraftment due to early death, patients with pretransplant PLT refractoriness (n = 9) had delayed PLT engraftment, median (IQR) = 27 days (19.5-64.50) compared to non-refractory patients (n = 52), median (IQR) = 19 days (16-23) (p = 0.01). However, there was no significant differences in terms of overall survival, GVHD grade II-IV or time to neutrophil engraftment

Conclusions: PLT refractoriness may be associated with increased incidence of acute GVHD and delayed platelet engraftment resulting in longer platelet transfusion support. A larger study is planned to confirm these findings.

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RADIOTHERAPEUTIC TECHNIQUES IN ALLOGENEIC HEMATOPOIETIC CELL TRANSPLANT (HCT)

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Radiotherapy (RT) is used as an antineoplastic and immunomodulatory therapy prior to allogeneic HCT. The practice of incorporating RT as part of HCT varies widely across centers worldwide. The present study explores the use of RT in 14,920 allogeneic HCT recipients (total body irradiation [TBI], N = 14,696, and total lymphoid irradiation [TLI], N = 402) reported to the Center for International Blood and Marrow Transplant Research between 1995 and 2010. TBI was performed in 335 reporting centers in 42 countries. The median age of TBI recipients was 33 years and the median age increased from 31 to 39 years during the period (p<0.0001). TBI was most commonly use in HCT for acute lymphocytic leukemia (87%) and in patients with prior central nervous system (CNS) leukemia involvement (76%, p<0.001). Shielding was used in 52% of patients, commonly for lungs (72%) and eyes (14%). The median dose of TBI was 12 Gy, with most patients receiving 2 fractions per day (60%, p<0.0001), for total of 6 doses (34%, p<0.0001). Myeloablative TBI doses (>8 Gy) decreased from 94% to 63% during the period (p<0.001). Conversely, reduced intensity and non-myeloablative (RI/NMA) TBI doses increased from <1% to 36% (p<0.001). TBI was most frequently combined with cyclophosphamide (97%) in myeloablative regimens and fludarabine (68%) in RI/NMA regimens. 11% of patients who received TBI also received RT within 14 days of starting conditioning; treatment was directed at the CNS (35%) and gonads (41%). TLI was performed in 70 centers in 22 countries. The median age for TLI recipients was 37 years and the median age increased from 29 to 56 years during the period. The most common indications for TLI was severe aplastic anemia (SAA) (23%) and acute myeloid leukemia (AML) (19%). TLI for SAA decreased from 47% to 0% while TLI for AML increased from 11% to 40% during the period. The median TLI dose was 6 Gy, with most patients receiving 6 fractions (41%). 4% of patients who received TLI also received RT within 14 days of starting conditioning; treatment was most often directed at the spleen (47%). RT practices in HCT changed during the past 16 years. There was a significant decrease use of myeloablative TBI and increase in RI/NMA TBI. Similarly, TLI practices changed towards a RI/NMA approach, being applied more frequently in older patients for treatment of malignant diseases.

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PREDICTIVE FACTORS FOR ADVERSE OUTCOMES AFTER USE OF DONOR CELL INFUSION (DCI) IN PATIENTS WITH RELAPSED HEMATOLOGICAL MALIGNANCIES TREATED WITH ALLOGENEIC HEMATOPOIETIC CELL TRANSPLANTATION (AlloHCT)

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DCI is administered after AlloHCT to enhance the graft-versus leukemia effect and thereby induce remission in patients (pts) with relapsed hematological malignancies. The purpose of this retrospective study was to identify risk factors for post-DCI progression and mortality.

We identified 47 pts with hematological malignancies who received DCI from 02/1996 to 07/2011 for disease relapse. We analyzed variables such as pts baseline demographics, malignancy type, donor relationship, type of AlloHCT, presence of GVHD, duration of post-transplant remission, use of remission induction chemotherapy prior to DCI and DCI cell dose.

Among pts treated with DCI, 36 (77%) had myeloid malignancies. Myeloablative regimen was used in 36 pts (77%) and 35 pts (74%) had HLA-identical sibling donor transplant. 45 pts (96%) had grade <2 aGVHD and 40 pts (85%) had limited or no cGVHD. Median time of post-transplant relapse was 6.0 months (range, 0.9-84.6) and the median time from transplant to DCI therapy was 7.8 months (range, 2.3- 114). DCI was used once in 89% of pts and it was preceded with chemotherapy in 35 of 45 pts (78%). Median CD34 and TNC doses for the first DCI were $2.0x10^6$ and $3.9x10^8$ respectively. The rate of post-DCI grade 3-4 aGVHD was 2% vs. 17% for extensive cGVHD. With a median follow-up of 40.8 months (range, 2.3-174.1), 38 pts (77%) had died and 29 (62%) relapsed. Relapse was the most common cause of death (n = 25, 69%) after DCI. Although pts who received unrelated DCI tended to have less post-DCI relapses (42% vs. 69%), deaths (50% vs. 86%) or fatal events due to relapse (50% vs. 73%), the numbers were too small to detect statistically significant differences between groups. Recursive partitioning analysis indicated that pts who had disease relapse within 20 months after transplant (n = 39) were at higher risk of post-DCI relapse, worse OS and RFS. Multivariable analysis demonstrated that a bone marrow cell source was associated with poor OS (HR = 2.6; 95% CI 1.3-5.6, p = 0.01) compared to peripheral blood, and that post-transplant disease relapse within 20 months was an adverse predictor for post-DCI relapse (HR = 5.2; 95% CI 1.2-22.3, p = 0.025), OS (HR = 5.5; 95% CI 1.6-18.5, p = 0.006) and RFS (HR = 3.5; 95% CI 1.2-9.9, p = 0.02).

With long follow-up we demonstrated that disease relapse within 20 months of AlloHCT portends poor clinical outcome despite DCI, but for patients with longer remission duration, DCI can result in long-term progression free survival.

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ALLOGENEIC STEM CELL TRANSPLANTATION (SCT) IN ADULT ALL PATIENTS IN CR1: RESULTS OF UNRELATED DONORS ARE COMPARABLE TO SIBLING DONORS?

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In the German Multicenter ALL Studies, patients (pts) with Ph+ ALL (very high risk, VHR), with high risk ALL (HR), e.g. B lineage