(AML 76%, ALL-CR1 100%, MDS 67%, ALL-CR2-3 59%), with an estimated NRM@1year of 9+/4% and relapse@1year of 21+/7%.

Other endpoints: Probability of neutrophil engraftment 100% @day60 and thrombocyte engraftment (50x10e9/L) of 84+/6% @day 180, only 1 graft failure (1.5%; MSD donor. Successfully re-grafted with CB) was noted. Toxicity endpoints: aGVHD 2-4 @day 180 was 32+/6% (grade 3-4: 14+/4%), extensive cGVHD@1year 8+/6%, non-infectious lung injury @ 2 years 12+/4% and no VOD (0%) was noted.

Conclusion: The preliminary results of this TBI-free conditioning regimen (CloFluBu) in myeloid- and lymphoblastic malignancies showed limited toxicity and encouraging LFS given the high risk group of patients. A longer follow-up and a larger cohort is needed to draw firm conclusions with regards to the anti-leukemic effect and late effects.

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Excellent Outcome for Fanconi Anemia Patients Undergoing Hematopoietic Stem Cell Transplantation (HSCT) without Radiation: A Single Center Experience on 103 Patients
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Fanconi anemia (FA) is a rare genetic disorder characterized by congenital defects, bone marrow failure and cancer predisposition. Over the past decade, survival after HSCT has greatly improved and the use of protocols without radiation are preferred in order to decrease late complications related to the development of head and neck cancer. In this study we analyzed 103 patients (pts) with FA who were transplanted between 2003 and 2014. The median age at HSCT was 9 yrs (range: 3-23yrs). All pts were transplanted in marrow failure and received bone marrow from matched siblings (MSD) (n=49) or Alternative donors (AD) (n=54). This latter group included 12 other related donors (ORD) and 42 unrelated donors (URD). Preparatory regimen with Cyclophosphamide 60mg/kg (CY60) was given to all pts with MSD or ORD while pts with URD received CY60 + Fludarabine 125mg/m2 + rabbit ATG 5mg/kg. All pts received GVHD prophylaxis with cyclosporine and methotrexate. Three pts died before D+28 and were not evaluable for engraftment (MSD: 2 pts and URD: 1 pt). One patient (MSD) developed primary graft failure, received a 2nd transplant without success and was finally rescued after a 3rd transplant with a haploidentical donor. She is alive and well 3yrs after HSCT. Ninety-nine pts engrafted but 5 pts developed late graft failure (MSD=2pts; ORD=1pt; URD=1pt) between 50 and 742 days after transplant (M: 84 days). Four out of these 5 pts are alive and well with full donor chimerism after a 2nd or 3rd HSCT. At last follow-up, the majority of pts transplanted from AD had full donor chimerism (96%) while approximately 50% of pts with MSD donors had mixed chimerism. Mucositis grade II-III occurred in 70% of pts. Viral infections were more frequent when AD were used (60%) compared to MSD (28%). Hemorrhagic cystitis occurred in 22% of AD transplants and it was uncommon after MSD transplants (only 1 pt). After AD transplantation, acute GVHD grade II-IV occurred in 12/33 evaluable pts and any Chronic GVHD occurred in 21/38 evaluable pts. MSD had a lower incidence of acute GVHD (3/47 evaluable pts) while Chronic GVHD occurred in 14/47 evaluable pts. Ninety-one pts are alive between 7 months and 10 years (M: 5 yrs) with an overall survival of 87% at 5 years. There was no difference in survival according to the type of donor MSD (92%), ORD (92%) and URD (83%). Patients without Acute GVHD had an overall survival of 98% compared to 58% with acute GVHD (p<0.001). Twelve pts died between 3 and 1855 days after HSCT (M: 65 days). Acute or chronic GVHD were the major causes of death (n=8) followed by infections (n=3) and central nervous system bleeding (n=1).

Conclusions: HSCT for FA has improved dramatically during the past decade. In this study, the use of non-irradiation protocols was associated with an excellent survival, successful engraftment and very low mortality rate.
Methods: Pediatric patients (<21 years old, n=34) on a research protocol between 4/2006 and 6/2014 receiving myeloablative conditioning (FLU/CY/13.2 Gy TBI) with or without expanded CB HSPC (fresh or cryopreserved) were included. Duration of initial hospitalization, use of opiate pain medications (by continuous infusion or PCA), and use of TPN were determined for each patient. All blood stream infections occurring during initial hospitalization were also recorded. Statistical comparisons between groups were made with two-tailed, unpaired t-tests.

Results: 11 patients received expanded CB HSPC in addition to 1-2 unmanipulated CB units while a concurrent cohort of 23 patients received the same conditioning regimen without expanded cell infusion. The mean time to neutrophil count of 500/μl was 16.5 v. 22.1 days in patients receiving expanded cells or not, respectively (p=0.026). The mean duration of initial hospitalization was 43.2 v. 55.6 days (p=0.05) (Fig. 1), mean duration for continuous opiate medications 9.7 v. 18.1 days (p=0.07), and mean time receiving TPN was 20.7 v. 30.1 days (p=0.06) (Fig. 2). Although not statistically significant, bacterial blood stream infections were identified during their initial hospitalization in 3 patients receiving expanded CB HSPC compared to 10 in the standard treatment group.

Conclusions: In addition to reduce time to ANC recovery, these results suggest that administration of expanded CB HSPC may significantly reduce initial hospitalization and may also reduce utilization of pain medications and nutritional support in the pediatric population receiving CBT. Thus, this cellular therapy has the potential to decrease the risk of morbidity and mortality post-CBT by reducing regimen related toxicities that directly result from delayed hematopoietic recovery.

A Multi-Institutional Retrospective Data Analysis of Hematopoietic Cell Transplantation for Less Severe Sickle Cell Disease

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Background: Outcomes of matched sibling donor (MSD) HCT for children with severe sickle cell disease have improved with disease-free survival approaching 95%. As outcomes have improved, interest in extending HCT to less severely affected children has increased. However, there remains little published experience in these patients. We describe the largest multi-institutional retrospective review of MSD HCT for patients with less severe SCD.

Methods: Patients who received MSD HCT at three centers (Children’s National Medical Center, Children’s Healthcare of Atlanta, and Columbia University Medical Center) between January 2004–June 2014 were eligible for inclusion in the analysis. Those with severe complications, such as stroke and recurrent acute chest syndrome, were excluded, using eligibility criteria from a recently completed trial for severe SCD (clinicaltrials.gov, NCT00968162).

Results: 25 patients (M/F: 13/12) met eligibility. 22 had HbSS and 3 HbSC. The median age was 5.3 years (1–18.3). 8 patients had no acute SCD related-complications. The most frequent complication was vaso-occlusive pain 14/25 (56%) with a lifetime median of 1 crisis. 7 patients had splenic sequestration as the only acute complication. Twenty-four received myeloablative conditioning; 19 received BM, 3 cord blood (CB) and 3 BM + CB. Donor engraftment was achieved in all cases. Mean peripheral whole blood or myeloid donor chimerism was 94% and 89%, at day +100 and +365 respectively. No patients suffered severe regimen-related toxicities and none experienced seizures, encephalopathy or other neurologic complications. One patient developed acute GVHD (grade III), which responded to therapy. None developed chronic GVHD. Of the 17 patients who are a year or more from transplant, all are off immune suppression. With a median follow-up of 23 months (5–130 months) all patients are alive and free of SCD.

Conclusions: HLA MSD HCT for children with less severe sickle cell appears to be highly effective. Given that nearly all patients with SCD, regardless of their disease course during childhood, will suffer serious morbidity as adults and have a markedly shortened life expectancy, our experience suggests HCT is appropriate for children with less severe disease. Prospective studies involving these patients are needed.

Neuroblastoma and Ewing’s Sarcoma Associated with ROR1 Expression Can Be Effectively Targeted with NK Cells Modified to Express an Anti ROR1 Chimeric Antigen Receptor

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