between the three transplant groups appeared in the first 100 days post transplant but without giving advantage to any group. Indeed, the delay of engraftment and increased treatment-related mortality observed after UCBT must be balanced with the higher risk of acute GVHD after unmanipulated BMT and with the higher risk of relapse after T-cell depleted BMT. In contrast, after day 100 posttransplant, the 3 groups achieved similar results in terms of relapse but chronic GVHD and death occurred more frequently with unmanipulated BMT and T-cell depleted BMT respectively. These results justify the simultaneous search for unrelated cord blood and unrelated bone marrow donors for children with acute leukemia. The decision to perform cord blood transplants will be based on the cell content of the graft, the number of HLA disparities and the urgency of the transplant.

22

UNRELATED CORD BLOOD TRANSPLANTATION FOR TRANSFUSION-DEPENDENT THALASSEMIA IN CHILDREN

Jaing, T.H., Hung, I.J., Yang, C.P. Chang Gung Children's Hospital, Chang Gung University, Taoyuan, Taiwan

Hematopoietic stem cell transplantation is currently the only curative therapy for transfusion-dependent thalassemia. However, approximately 30% of patients have unaffected HLA-identical siblings to serve as donors. We investigated the feasibility of unrelated cord blood transplantation (CBT) as a potential strategy for augmenting the pool of acceptable donors. Between October 2003 and December 2004, 9 children with β-thalassemia major received CBT with at least 2.5×10^7/kg TNC from unrelated donors (0-2 of 6 HLA antigens were mismatched) and were then evaluated for engraftment, adverse effects, and treatment outcome. Conditioning consisted of busulfan, cyclophosphamide, and antithymocyte globulin, and GVHD prophylaxis of cyclosporine and methylprednisolone. Median age was 3.7 years (range, 2.3-11.4 years). One patient died of penicillin-resistant *S. mitis* sepsis at day +8 prior to the "expected" time to respond. Eight of 9 patients were alive at median follow-up of 254 days after transplantation, with complete donor chimerism and transfusion independence. The median times to neutrophil engraftment, RBC transfusion independence, and platelet engraftment were 13, 34, and 45 days after transplantation, respectively. The patients showed grade I-III acute GVHD. No extensive chronic GVHD had developed at the latest contact. The medical costs per-patient with CBT in Taiwan is estimated to be approximately US$40,000 plus the cost of the cord blood unit. In summary, our results suggest that unrelated CBT is an alternative treatment for patients with transfusion-dependent thalassemia lacking an HLA-matched sibling bone marrow donor, and it is clearly cost-effective when compared to conventional treatment with blood transfusions and iron chelation therapy.

23

OUTCOMES OF UNRELATED CORD BLOOD TRANSPLANTS AND ALLOGENEIC RELATED HEMATOPOIETIC STEM CELL TRANSPLANTS IN CHILDREN WITH HIGH-RISK ACUTE LYMPHOCYTIC LEUKEMIA

Jacobsohn, D.A., Hewlett, B., Seshadri, R., Ranalli, M., Duerst, R., Kletzel, M. Children's Memorial Hospital and Feinberg School of Medicine, Northwestern University, Chicago, IL

Background: HSCT is commonly used for pediatric ALL patients (pts) with early relapse or other high-risk features. Given lack of matched-sibling donors and multiple advantages of UCB as stem cell source (less GVHD, rapid availability), we compared outcomes of pediatric ALL pts that underwent HSCT with UCB (4-5/6 HLA) or matched-sibling transplant (6/6 HLA).

Methods: Pts included: ALL CR2 pts who relapsed <36 mos from diagnosis and ALL CR1 pts with ≥1 high-risk feature (unfavorable karyotype, poor response to induction, age <1 yr, WBC >100,000 at diagnosis). 25% of CR1 pts in both groups had ≥2 high-risk features. Cytoreduction (same in both groups): Pts received TBI 150 cGy × 8 (d −10 to −7); VP-16 1 g/m^2/day (d −6 to −5); cyclophosphamide 60 mg/kg/day (d −4 to −2). GVHD prophylaxis: CSA, short-course MTX, and ATG d +1, +3, +5, +7 (for UCB). Grafts were not T-cell depleted.

Results: There were 23 matched-sibling (20 BM/3 PBSC) and 26 UCB recipients. Both groups had equivalent high-risk factors. Engraftment took longer in UCB recipients. TRM and GVHD were equal in both groups. 3 yr EFS is 60% in both groups. Age, gender, degree of HLA-matching for UCB, acute/chronic GVHD did not affect EFS.

Conclusions: In pediatric pts with high-risk ALL in need of HSCT, outcome of matched-sibling HSCT and UCB transplant is equivalent with regards to TRM, GVHD, and EFS. UCB should be considered a standard stem cell source to use in this group when a matched sibling is not available.

Table 1.

	Matched-sibling (n = 23)	UCB (n = 26)	p
Age diagnosis (yrs)*	2.5 (0.3-15.4)	3.9 (0.3-11.9)	0.63
Status at HSCT (CR1)	11 (47.8%)	10 (38.5%)	0.34
Age <1 yr	7 (30.4%)	6 (23.1%)	0.56
Karyotype (unfavorable)	8 (34.8%)	11 (42.3%)	0.79
Neutrophil recovery (d)*	16 (13-21)	29 (21-35)	<0.001
Platelet recovery (d)*	24 (17-35)	51 (32-59)	0.011
100d TRM†	3 [13% (3-34)]	5 [19% (7-39)]	0.71
aGVHD (2-4)†	5 [22% (7-44)]	5 [19% (7-39)]	0.83
CGVHD (in at risk)†	8 [40% (19-64)]	7 [33% (15-57)]	0.66
Relapse at 3 yrs†	5 [22% (7-44)]	4 [15% (4-35)]	0.72
3 yr EFS†	60% (40-80)	61% (42-80)	0.72

*Median (range); †% (95% CI).

24

TOTAL BODY IRRADIATION, FLUDARABINE, MELPHALAN AND ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION FOR ADVANCED PEDIATRIC HEMATOLOGIC MALIGNANCIES

Petropoulos, D. M.D. Anderson Cancer Center, Houston, TX

The Fludarabine (F)-Melphalan (M) reduced-intensity preparative regimen has been successfully used in adults for allogeneic hematopoietic stem cell transplant (HSCT). We evaluated the efficacy and toxicity of adding 9 Gy of total body irradiation (TBI), in three single daily fractions of 3 Gy, to the reduced intensity regimen of fludarabine 30 mg/m^2 i.v. × 4 days and melphalan 140 mg/m^2 i.v. × 1 day in advanced pediatric hematologic malignancies. GVHD prophylaxis consisted of tacrolimus and mini-methotrexate. No anti-thymocyte globulin was used. Twenty-two acute lymphoblastic leukemia (ALL), 6 acute myeloid leukemia (AML), and 1 anaplastic large-cell lymphoma patients were transplanted. Thirteen of these were beyond second remission, and five had prior HSCT. Twenty-one donors were unrelated: 1-2 antigen mismatched cord blood (CB) for 19 patients, bone marrow in one and peripheral blood stem cells (PBSC) in one. Three of the 8 related donors were genotypically disparate. Oral mucositis and diarrhea were the most common side effects seen. Twenty-seven patients achieved neutrophil engraftment at a median of 16 days (range 11-35), and 23 had platelet engraftment (median 42 days, range 14-200). One patient had primary graft failure. Seven patients (all with ALL) died of non-relapse causes in the first 100 days. Six of 27 evaluable patients developed grade III-IV acute GVHD and three chronic GVHD. Nine patients (7 with ALL) relapsed at a median of 8 months post-transplant (range 2-54). With a median follow-up of 55 (range 25-88) months, 7 of 22 ALL, 5 of 6 AML, 1 of 1 lymphoma patients are alive and in remission. This includes eight of the 19 CBT recipients. The regimen of TBI, F and M allows the engraftment of allogeneic HSC (including mismatched unrelated