cell loss after processing. One method of minimizing cell loss during processing is to deplete plasma (PD) but not red blood cells. Average loss of less than 0.1% nucleated cells was found in the discarded plasma fraction after PD UCB processing (n = 27). Eighteen thousand racially diverse PD UCB units are now available on stem cell registries; however, clinical outcome for HSCT using PD UCB products is unavailable. A retrospective analysis of all patients with engraftment or survival data up to April 2005 was performed on 118 HSCT using PD UCB ("All"). When patients with prior transplants or transplanted during relapse were excluded in the engraftment and survival analysis, this subset had 98 remission first transplant patients ("Remission Patients"). The characteristics for the 118 transplants were: median age 8 years old, range 0.3–55, 31 transplants >16 years old (26%); median weight 26 kg, range 4.5–103, 36 transplants >50 kg (31%); male 61%; median no. HLA ABDR matches 4.0; median TNC dose 5.6×10^7/kg (n = 118); transplant center reported median post-thaw TNC dose 5.2×10^7/kg (n = 68); median CD34 dose 1.8×10^5/kg; malignant indications 75%; transplants outside U.S. 35%; double transplant 16%; and non-myeloablative 8%. The incidence of grade III-IV acute GVHD and extensive chronic GVHD among all patients were 15% and 13%, respectively. For all patients, the median time to engraftment for ANC 500 (n = 87), platelet 20 K (n = 72) and 50 K (n = 68) were 22.0 (range 7–64), 49.5 (range 13–95), and 58.5 days (range 21–132), respectively. Unadjusted cumulative incidence of ANC500 and platelet 20 K and 50 K engraftment were 90 ± 3%, 77 ± 5%, and 75 ± 5%, respectively for all patients, and 94 ± 3%, 81 ± 5%, and 80 ± 5%, respectively, for the 98 remission patients. Relapse rate for malignancies were 25 ± 6% for all patients (n = 85) and 20 ± 6% for remission patients (n = 70), and TRM were 26 ± 4% (n = 118) and 20 ± 4% (n = 98), respectively, for the two groups at 1 year. With a median follow-up of 268 days (range 50–1263 days), the Kaplan-Meier estimates of 1-year survival (n = 118) and relapse free survival (n = 86 malignant subjects) for all patients are 65 ± 5% and 50 ± 7%, respectively, and 73 ± 5% (n = 98) and 59 ± 6% (n = 70 malignant subjects), respectively, for the remission patients. These results demonstrate that HSCT using PD UCB are safe and effective.

290

CORD BLOOD TRANSPLANTATION SUPPORTED BY CO-INFUSION OF CD133-POSITIVE HEMATOPOIETIC STEM CELLS FROM A THIRD PARTY DONOR: PRELIMINARY RESULTS

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We have reported early sustained neutrophil recovery (ANC > 500 uL) after single unit CBT in adults by co-infusion of low number of T-depleted mobilized hematopoietic stem cells (MHSC) from a third party donor (TPD), selected as CD34+. TPD MHSC engraft early to be progressively replaced by CB. We are attempting further improvement of hematopoietic reconstitution by using TPD MHSC selected as CD133+. We report our results in 9 patients (6/3 M/F, median age 35, range 19–56) with high risk hematological disease. We have used increasing proportions (25–100%) of TPD MHSC selected as CD133+, so both CD34+ and CD133+ selections were done in 4 cases and only CD133+ in 5. Selections were done from mononuclear cells apheresed after G-CSF (Clinimacs inmmunomagnetic method, Miltenyi); 6 products were processed after collection and 3 next morning. HSC were cryopreserved and then thawed and infused on the day of CBT. Median CD133+ cell recovery was 46.7 % (37–71) (&app;10% lower when both selections were performed). CD3 depletion was adequate (4.7 logs). Mean CD3 dose was 0.53×10^4/kg (0.15–1.5). CD133 selection takes &app;1 hour longer than CD34 selection. Patients received a mean TPD MHSC cell dose of 2.7×10^6/kg (2.2–3.9) (selected as CD133+ plus CD34+ or CD133+ cells). CD133+CD34− cells in the final product cannot be measured by flow fluorometry. Sustained ANC > 500/uL was achieved by all patients (maximum cumulative incidence (MCI) 1, median 10 days, range 9–15). CB-ANC > 500/uL was reached at 15–41 days (median 21, MCI 1). Median time to stable platelet count >20.000/mL was 27 days (range 14–45, MCI 0.778, 95% CI 0.55–1); 40 days to >50.000/mL (range 29–59, MCI 0.56, 95% CI 0.31–1). All patients but one, who died on day +27, reached full CB chimerism at 15–49 days (median 28, MCI 0.89, 95% CI 0.71–1). No cases of TPD-related GvHD, delayed CB engraftment, or other adverse effects related to the use of CD133+ cells were observed. Compared to cases receiving only TPD CD34 + HSC, neutrophil recovery is similar (with no major neutropenic infections). Time to platelet recovery may be shorter but data are not enough for statistical evaluation. CD133 positive selection yields enough cells with adequate CD3+ cell depletion to ensure engraftment without GVHD. Compared to CD34 selection, the procedure is longer and the recovery lower. Factors influencing yields include high number of total cells in the initial product, low proportion of target cells, and delayed processing. (Grants PI04/2794 and Allostem).

291

MOBILIZATION, HARVESTING, AND SELECTION OF PERIPHERAL BLOOD STEM CELLS IN PATIENTS WITH AUTOIMMUNE DISEASES UNDERGOING NON-MYELOABLATIVE AUTOLOGOUS HEMATOPOIETIC STEM CELL TRANSPLANTATION

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We have studied the properties of peripheral blood stem cell (PBSC) mobilization, harvesting, and selection in 128 patients with severe autoimmune diseases undergoing non-myeloablative autologous hematopoietic stem cell transplantation (HSCT). Fifty patients had a diagnosis of systemic lupus erythematosus (SLE), 43—multiple sclerosis (MS), 15—Crohn's disease (CD), 8—scleroderma (Scl), and 12—others. Female/male ratio and mean age (range) were 90/38 patients, and 34 (14–59) years old, respectively. Mobilization regimen included cyclophosphamide $2g/m^2$ and G-CSF 5–10 mcg/kg/day. Baxter CS300 was used for stem cell collection in 41 patients, Spectra in 78 patients, and in 9 patients both apheresis machines were utilized. The mean number of aphereses was 1.8 (range 1–10). Patients with SLE required the largest number of apheresis sessions (mean 2.4), compared to patients with CD (mean 1.9), Scl (mean 1.4), MS (mean 1.3). Five patients additionally required bone marrow harvest for collection of adequate numbers of stem cells. One patient failed to reach CD34+ cell number of 1.0×10^6/kg, and therefore did not proceed to HSCT. The mean number of CD34+ cells in each apheresis unit was $6.07 \pm 6.96 \times 10^6$/kg (the highest of $9.22 \pm 8.52 \times 10^6$/kg was attained in patients with MS and the lowest of $3.93 \pm 4.48 \times 10^6$/kg, in patients with SLE). Ninety-eight patients underwent stem cell selection with CEPRATE SC (n = 18), Isolex 300iv1.12 (N = 2) or Isolex 300iv2.5 (N = 78) stem cell concentrator. The mean purity of selected products was 74.3%; mean recovery of CD34+ cells was 61.2%. T cell reduction by average of 3.7 logs was achieved. The mean number of infused CD34+ cells was $7.24 \pm 5.5 \times 10^6$/kg. We observed a moderate positive correlation between peripheral blood (PB) CD34+ cells/ul and PB WBC/ul ($R = 0.34$, $P < .05$), PB platelets/ul ($R = 0.51$, $P < .05$) and a strong positive correlation between PB CD34+ cells/ul and the number of CD34+ cells/kg/apheresis ($R = 0.67$, $P < .05$). A weak positive correlation was seen between the number of infused CD34+cells/kg and faster WBC engraftment (ANC > 500) and platelet engraftment (platelet count > 20 K). There was no observed toxicity except for 1 patient with SLE who died of disseminated mucormycosis 1 week after stem cell collection. Mobilization, harvesting, and selection of PBSC in patients with severe autoimmune diseases undergoing non-myeloablative autologous HSCT are safe and efficient.