donor cells in blood vessels throughout the heart (63% of total cells enumerated). Rarer donor cells were also found through the myocardium in cells with patterns exhibiting the cross-striations of striated muscle. Donor cells stained positive for Troponin I-C (specific for cardiac muscle Troponin I) and for myosin heavy chain (1-2 cells per 10-20 high power fields). Conclusion: We documented engraftment and differentiation of donor UCB cells into cardiac myocytes in a child transplanted for MPS III. It is possible that donor cells may selectively homed to damaged myocardium and subsequently differentiated in situ. After engraftment, differentiation into myocardial cells may improve cardiac function and subsequently diminish the likelihood of progressive heart failure with its attendant morbidity and mortality in patients with MPS syndromes.

SUPPORTIVE CARE

230 LOWER POST-TRANSPLANT SERUM ALBUMIN LEVELS PREDICT SIGNIFICANTLY POORER SURVIVAL AFTER ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION

Low serum albumin is a non-specific but powerful indicator of poorer outcome in elderly and hospitalized patients, after surgery, and in several other circumstances including on routine testing (Goldwasser Feldman, J Clin Epidemiol 1997;50:693-703). Based upon the observation that patients with significant complications after transplantation usually have lower albumin levels and those with higher albumin levels are usually well, we analyzed the relationship between post-transplant albumin levels and overall survival in recipients of non-myoablative allogeneic transplantation (NMAT). Overall survival (OS) was chosen as an endpoint rather than disease-free survival because a number of patients relapsing than disease-free survival because a number of patients relapsing after NMAT attain remission again and survive long-term, and a higher albumin level after relapse may be a predictor of better outcome too. 47 consecutive NMAT recipients with hematologic malignancies (27-66 years; median 51) were studied. The conditioning regimen was 100 mg/m2 melphalan on day -1 (< 50 mg/kg cyclophosphamide if no prior autograft), cyclosporine (84 mg/kg/day for first 3 days as adequate evidence of engraftment. The first day with ANC £ 0.5 can be considered the day of engraftment in autograft recipients (Bone Marrow Transplant 2002;30:749-752). We have shown this in 78 autograft recipients too (Rihn et al. ASH 2002). However, the allograft study was limited by the fact that most patients had received G-CSF post-transplant, and the stem cell source was not uniform. We have now studied 49 patients allografted using blood stem cells who did not receive post-transplant G-CSF to see if the tempo of myeloid recovery was sustained. The conditioning regimen, 100 mg/m2 melphalan (+ 50 mg/kg cyclophosphamide if no prior autograft), induced severe neutropenia (ANC < 0.1) in all patients. The CD34+ cell dose was 1.4-11.8 × 106/kg (median 5.0). The time to ANC ≥ 0.5 was 10-23 days (median 13). Potentially acceptable evidence of engraftment, ANC on the 2 days following an initial value of £ 0.5, was available in 46 (94%). The remaining 3 patients had ANC ≥ 0.5 for the first and second days but died after that (n = 2) or did not have a differential count available (n = 1). ANC increased from day 1 to 2 in 41 of 46 patients, and declined in 5 (p=0.5 in 2, 0.05 in 3 of 2. The latter had ANC ≥ 0.5 the next day). ANC increased from day 2 to 3 in 44 of 46 patients, and declined in 2 (p=0.05 in both). ANC increased from day 1 to 3 in 45 of 46 patients; declining below 0.5 in 1 patient. Thus, in 43 of 46 patients, the first day with ANC ≥ 0.5 was also the first of 3 consecutive days with ANC ≥ 0.5. These data support our previous observations that in the majority of allografted patients, ANC does not decline significantly immediately after recovering to ≥ 0.5 whether or not myeloid growth factors are administered post-transplant. Therefore, it is not essential to obtain WBC counts on 3 consecutive days to define myeloid engraftment. The first day with ANC ≥ 0.5 should be considered the day of myeloid engraftment in allograft as well as autograft recipients. This simple change in definition and practice has significant potential impact on convenience (unnecessary clinic visits for patients; particularly out-patient mini-allografts), cost (blood counts, home health visits, ancillary charges), and compliance (acceptable definition of engraftment by HSCT registries and FACT).

Table.

Change from
Day 1 (%) Day 2 (%) Day 3 (%)

ANC <0.5
(n) 0 3 (7%) 1 (2%)

ANC (10^3/L) 0.74 (0.53-2.10) 1.43 (0.36-10.94) 2.46 (0.46-30.74)

231 TEMPO OF NEUTROPHIL RECOVERY AND THE DEFINITION OF MYELOID ENGRAFTMENT AFTER ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION (HSCT) IN PATIENTS NOT RECEIVING GROWTH FACTORS POST-TRANSPLANT

Time to myeloid recovery after HSCT is usually defined as the first of 3 consecutive days with an absolute neutrophil count (ANC) of 0.5 × 10^9/L, HSCT registries and FACT require ANC ≥ 0.5 for 3 days as adequate evidence of engraftment. The first day with ANC ≥ 0.5 can be considered the day of engraftment in autograft recipients (Bone Marrow Transplant 2002;30:749-752). We have shown this in 78 autograft recipients too (Rihn et al. ASH 2002).

Interaction between donor type and CMV serostatus on mortality after allogeneic HSCT: Do preemptive approaches work equally for all?
Nichols, W.G., Gooley, T.A., Buckh, M. Fred Hutchinson Cancer Research Center, Seattle, WA

Background: In the current era of effective preemptive antiviral approaches, cytomegalovirus (CMV) is now a rare cause of early mortality after hematopoietic stem cell transplantation (HSCT). Though the direct effects of CMV (such as CMV pneumonia) have been largely eliminated, many recent cohort studies (reviewed in
Boechk M, Nichols WG et al (BBMT 2003) have demonstrated that at least some CMV seropositive transplant recipients appear to have a persistent mortality disadvantage when compared to their seronegative counterparts. The specific transplant characteristics that underlie this relationship remain unclear, but most studies have focused on the impact of serostatus on mortality after T-cell depleted transplantation. We tested the hypothesis that CMV serostatus influences mortality among recipients of T-cell-replete transplants from mismatched or unrelated donors (MM/URD, n = 1001) but not matched sibling donors (MSD, n = 749) in the preemptive era. Methods: The impact of CMV serostatus (+ or −) of the donor (D) and recipient (R) on overall mortality was assessed among 1750 consecutive allogeneic HSCT recipients at our center by means of multivariable regression models. Supportive care for this cohort included preemptive ganciclovir, which was applied for any level of pp65 antigenemia and continued until day 100 after transplant. Results: Among recipients of transplants from matched sibling donors, overall mortality among R+ and D+/R-patients was comparable to that of D-/R-patients after adjusting for patient/donor age, underlying disease and disease-specific risk, conditioning regimen, cell source, GVHD prophylaxis, cell dose, and year of transplant (Table). Overall mortality was significantly higher, however, among both seropositive recipients and D+/R-patients when compared to D-/R-patients in the setting of mismatched sibling or unrelated donor (MM/URD) transplantation. Formal tests for interaction according to donor type yielded suggestive trends for the D-/R+ and D-/R-groups (p = 0.13 and 0.16, respectively). Conclusions: Preemptive strategies appear to be effective for recipients of MSD HSCT, yet fail to eliminate the mortality associated with CMV seropositivity among recipients of mismatched or unrelated donor transplants. New drugs and new approaches (including possible re-examination of antiviral prophylaxis) are clearly needed for these high-risk patients.

<table>
<thead>
<tr>
<th>Donor/Recipient CMV Serostatus</th>
<th>MSD (n = 749)</th>
<th>MM/URD (n = 1001)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D−/R− (n = 628)</td>
<td>1.0 (ref)</td>
<td>1.0 (ref)</td>
</tr>
<tr>
<td>D+/R− (n = 467)</td>
<td>1.07 (0.81-1.42)</td>
<td>1.26 (1.01-1.58)</td>
</tr>
<tr>
<td>D−/R+ (n = 393)</td>
<td>0.90 (0.65-1.24)</td>
<td>1.29 (1.04-1.60)</td>
</tr>
<tr>
<td>D+/R+ (n = 262)</td>
<td>0.98 (0.70-1.38)</td>
<td>1.36 (1.06-1.74)</td>
</tr>
</tbody>
</table>

Abbreviations: MSD, matched sibling donor; MM/URD, mismatched or unrelated donor.

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SOURCE OF DONOR STEM CELLS IMPACTS INCIDENCE OF BLEEDING AND PLATELET AND RBC TRANSFUSION REQUIREMENTS DURING STEM CELL TRANSPLANTATION (SCT): RESULTS OF THE PHASE III SPRI NT TRIAL OF INTERCEPT PATHOGEN INACTIVATED PLATELETS


Background: INTERCEPT Platelets (IP) are prepared with Helimax® technology (amotosalen HCl and UVA) to inactivate a broad range of viruses, bacteria, and protozoa, as well as WBCs which can cause transfusion reactions and TA-GVHD. Methods: A double-blind, parallel group Phase III trial (SPRINT) randomized patients (pts) with malignancy undergoing chemotherapy only (CTX) (19%) or SCT (78%) to treatment with IP or Reference (RP) platelet (plt) transfusions (tx) for up to 28 days. The prophylactic tx threshold, selected by the treating physician, was 10x10^9/L in 61% and 20x10^9/L in 26% of pts. Results: 645 pts were tx’d (318 IP vs 327 RP). The primary endpoint, equivalence of IP to RP in the control of moderate and severe (WHO Grade 2 and higher) bleeding, was demonstrated. Diagnosis (dx) and anti-neoplastic regimen (SCT vs CTX) were well balanced between IP and RP. 65% of SCT were autologous (auto) and 35% were allogeneic (allo); 70% were peripheral blood (PB) and 26% bone marrow (BM), 86% of PBSC and 18% of BMT were auto. There were significant differences in dx, plt tx threshold, duration of plt support, no. of plt and RBC tx, and incidence and duration of Grade 2 or higher bleeding among auto SCT, allo SCT, and CTX pts (all p-values < 0.01). Leukemia was more common in allo than auto SCT; lymphoma, plasma cell dyscrasia, and solid tumor were more common in auto than allo SCT; acute leukemia was the most common dx for CTX pts (p < 0.001). Pts receiving auto SCT had the lowest tx threshold, shortest duration of plt support, fewest plt and RBC tx, and the lowest incidence and duration of Grade 2 or higher bleeding. Allo SCT were on the other extreme, and CTX pts were intermediate. No difference in incidence or duration of bleeding was observed between IP and RP for SCT pts. Conclusions: Allo SCT was associated with a longer duration of plt support, more plt and RBC tx, and a higher incidence and duration of significant bleeding than auto SCT or CTX. INTERCEPT Platelets were as effective as Reference platelets in control of Grade 2 and higher bleeding regardless of dx, anti-neoplastic tx, or stem cell source.

Table. Study Endpoints for SCT Patients

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Auto SCT</th>
<th>Allo SCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP (N = 154)</td>
<td>105</td>
<td>109</td>
</tr>
<tr>
<td>RP (N = 171)</td>
<td>118</td>
<td>126</td>
</tr>
<tr>
<td>P Value</td>
<td>0.68</td>
<td>0.58</td>
</tr>
</tbody>
</table>

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LONG-TERM, APERESIS/HEMODIALYSIS CATHETERS DECREASE THE INCIDENCE OF CATHETER-RELATED BLOOD STREAM INFECTIONS (CRB-SI) AND VENOUS THROMBOSIS (VT) IN PATIENTS WITH AL AMYLOIDOSIS (ALA) UNDERGOING HIGH-DOSE MELPHALAN AND AUTOGLOUS STEM CELL TRANSPLANT (AUSCT)

Finn, K., Sanchorawala, V., Selden, D., Knez, R., Quillen, K. Boston Medical Center, Boston, MA

Reported catheter-related complications (CRC) during AuSCT include blood stream infections (BSI), non-patent catheters, catheter site bleeding and VT. ALA patients with nephrotic syndrome have a greater risk of infection and VT. We performed a retrospective review of CRC in 196 ALA patients receiving either a 12 fr non-tunneled catheter (NTC) or a 14 fr tunneled/cuffed catheter (TC). Catheters were intended to be used from stem cell collection through chemotherapy and re-engraftment, were in-serted by interventional radiology, and were cared for with the same catheter care regimen. The majority of the NTC’s (n = 103) were inserted on the left side and the TC (n = 93) were inserted on the right side. The NTC group had 6 CR-BSI and 5 VT, and the TC group had none. Line patency problems occurred in the NTC group but not with TC: they were resolved in the NTC group after the catheter instillation policy was changed from a heparin diluted with saline solution to approximately 3000U/cc to an undiluted heparin concentration of 5000U/cc. Bleeding around the catheter

Poster Session II