transfusion-free autologous stem cell transplantation protocol. **Methods:** Seven patients were enrolled with malignancies that would be treated with high dose chemotherapy. Four patients had lymphoma, 1 patient had Ph+ acute lymphocytic leukemia, 1 patient had progressive CNS germinoma, and 1 patient had multiple myeloma. All patients underwent autologous stem cell transplantation when in partial or complete remission. Patients entered the study 8 weeks before anticipated stem cell transplantation and received a regimen of recombinant erythropoietin, 40,000 U once or twice weekly with the aim of achieving a hemoglobin level of 15 g/dL. G-CSF 10 μg/kg was given for 5 days for stem cell mobilization. High-dose therapy was disease-specific. **Results:** All patients suffered significant pancytopenia, with no major side effects in 6 of the 7 patients enrolled. One patient with progressive CNS germinoma died from cerebral hemorrhage shortly after stem cell infusion, but her platelet count was 31 $\times$ 10^9/L and hemoglobin level was 16.4 g/dL before death. It is unlikely that her intracranial hemorrhage was due purely to thrombocytopenia, but it may have reflected tumor necrosis secondary to chemotherapy. The other patients all remain in complete remission to date. They are now 45+, 36+, 24+, 9+, 5+, and 1+ months status posttransplantation. **Conclusion:** Autologous stem cell transplantation is a feasible treatment option for Jehovah's Witness patients. Refusal of blood product support should not be considered an absolute contraindication for high-dose chemotherapy and autologous stem cell transplantation.

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HPC IN PERIPHERAL BLOOD PREDICTS CFU ACTIVITY AND TIME TO ENGRAFTMENT IN AUTOLOGOUS APHERESIS PBSC PRODUCTS AS EFFECTIVELY AS CD34 CELL COUNT

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In autologous PBSC products collected after growth factor mobilization, previous studies have shown that measurements of HPC correlate with CD34 cell count in peripheral blood (PB) before apheresis collection. Because CFU activity in the final product is expected to be a standard measure of HSC/HPC content, we compared the HPC and CD34 counts in PB before collection with CFU in the final product, to determine the utility of preapheresis HPC in identifying patients likely to produce a suitable product. By measuring CD34 and total MNC cell content in PB before collection, midway through collection, and in the final product, we found that the ratio of CD34/MNC remained constant. This demonstrates that recovery of progenitor cells and MNC is identical throughout collection and processing. This observation allows calculation of expected CFU content in the final product based on preapheresis HPC and CD34 measurements. Using the observed product ratio of CFU/CD34 (0.192 $\pm$ 0.102) and the expected product ratio of CFU/HPC (0.113 $\pm$ 0.060) (n = 25 for both values), we compared the predicted product CFU content based on observed HPC and CD34 cell count in preapheresis peripheral blood with the actual CFU content recovered in the final product. **Results:** Autologous products (n = 12) from 10 patients were compared between CFU (10^6) predicted by peripheral blood HPC (median, 21; range, 0–416) and CD34 (median, 11; range, 0–165) with actual CFU (median, 23; range, 4–131) obtained on the final product (P =.08; Freidman test). A strong linear association was noted between actual CFU and preaphersis HPC (Spearman rank correlation = 0.84). **Conclusion:** This pilot study suggests that HPC in peripheral blood predicts CFU content as effectively as CD34. For 75% of the samples, the observed CFU and the CFU predicted by HPC was higher than the CFU predicted by CD34, possibly indicating a CD34 fraction that is capable of colony formation and that can be measured by the HPC parameter.

GRAFT PROCESSING

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EXPERIENCES OF PERIPHERAL BLOOD STEM CELLS COLLECTION FROM RADIAL ARTERY FOR UNRELATED DONOR TRANSPLANTATION

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Many donors with inadequate peripheral venous access were encountered in our center. Central venous access was an alternative method of peripheral blood stem cell (PBSC) collection but posed significant risks to donors. Although the frequency of progenitor cells in the radial arteries was reduced in comparison to that in the central veins, probably associated with pulmonary PBSC trapping, the impact on clinical PBSC transplantation may be negligible. The experiences of 27 PBSC unrelated donors who had inadequate peripheral venous access and were collected from radial arterial line are reported. There were 18 males and 9 females, ranging in age from 23 to 52 years (median, 29 years). The body weight of donors ranged from 50 to 106.5 kg (median, 63 kg); that of recipients, from 20 to 103 kg (median, 62 kg). All donors were treated with 4–5 days of filgramstim at an approximate dose of 10 mg/kg/day and underwent 1–2 days of apheresis with a continuous-flow blood cell separator. Preapheresis white cell and platelet counts were 37.5 $\pm$ 8.9 $\times$ 10^9/mL and 196 $\pm$ 36 $\times$ 10^9/mL, respectively. Calcium gluconate replacement was administered while the patients complained of numbness. A total of 19.2 $\pm$ 6.6 L of blood was processed per donor. Collection took 5.9 $\pm$ 2.1 hours per donor. A total of 501 $\pm$ 155 $\times$ 10^8 nucleated cells and 347 $\pm$ 188 $\times$ 10^6 CD34+ cells per donor were collected. These yielded 8.7 $\pm$ 3.6 $\times$ 10^8 total nucleated cells and 6.0 $\pm$ 3.5 $\times$ 10^6 CD34+ cells/kg of the recipient weight. None of PBSC donors was noted to have laboratory hypocalcemia. The platelet count ranged from 95 to 179 $\times$ 10^9/mL (median, 132) immediately postapheresis, which corresponded to a decrease of 55 $\pm$ 27 $\times$ 10^9/mL. Two donors still experienced anorexia, headache, malaise, or myalgia 1 week postapheresis, but none did 1 month postapheresis. The white cell count, lymphocyte count, and platelet count 1 month postapheresis was 5.5 $\pm$ 1.5 $\times$ 10^9/mL, 1.7 $\pm$ 0.4 $\times$ 10^9/mL, and 227 $\pm$ 45 $\times$ 10^9/mL, respectively. Engraftment rate of recipients was 100% after exclusion of 2 early deaths (1 before and another 6 days after PBSC infusion). PBSC collection from a radial arterial line might be acceptable for unrelated donor transplantation when the donor has inadequate peripheral venous access.

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EFFECT OF THE NUMBER OF DAYS REQUIRED FOR COLLECTION OF ALLOGENEIC PERIPHERAL BLOOD STEM CELLS ON ENGRAFTMENT

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The use of peripheral blood stem cells (PBSCs) for allogeneic transplantation continues to increase. The relationship between ease of mobilization of PBSC and engraftment after transplantation has not been extensively studied. We retrospectively analyzed the relationship between days of collection by apheresis (categorized as 1, 2, and > 2) and engraftment in 109 matched sibling donor/recipient pairs who underwent collection between March 1995 and November 2003. All donors recieved G-CSF at 10 μg/kg for 4 days, with collection started on the fifth day. Daily G-CSF administration and collection were continued until a minimum of 3 $\times$ 10^6 CD34+ cells/kg per recipient had been collected. Cells were frozen and stored in DMSO until infusion. All grafts were unmanipulated, and all recipients received G-CSF posttransplantation. Fifty-one donors (47%) required 1 day to collect an adequate graft, 52 donors (48%) required 2 days, and 6 donors (6%) required > 2 days. Females were more likely to require > 1 day of collection (P = .01). Donors who required > 2 days for collection were older than donors who required only 1 or 2 days (P = .015). There was no association between days required for collection and