O-2-09

COMPARISON OF PERIPHERAL BLOOD STEM CELLS (PBSCS) MOBILIZED WITH GRANULOCYTE COLONY-STIMULATING FACTOR (G-CSF) AFTER HIGH DOSE SINGLE-AGENT CHEMOTHERAPY WITH PBSCS MOBILIZED WITH G-CSF ALONE

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Twenty-two patients with malignancy underwent peripheral blood stem cell (PBSC) harvest between July 1992 and August 1995. PBSCs were mobilized with 100μg/m^2 of granulocyte colony-stimulating factor (G-CSF) alone in 12 patients (steady-state group). In 10 patients, PBSCs were mobilized with 50μg/m^2 of G-CSF after treatment with a single cytotoxic agent (Ara C, VP-16, or cyclophosphamide) (chemotherapy group). In both groups, one course of PBSC harvest comprised two-days leukaphereses using a Fenwall CS3000. Medians of processed blood volume were 18 liters in both groups. Median mono-nuclear cells harvested were 21.0x10^9 and 23.5x10^9 cells, respectively. Median CD34$^+$ cells were 2.4x10^6/kg and 3.7x10^6/kg and median CFU-GM were 0.32x10^5/kg and 0.73x10^5/kg. The chemotherapy group showed high efficiency to obtain stem cells than the steady-state group. However, these results indicate that both methods are useful to obtain stem cells for PBSC transplantation.

O-2-10

Kinetics of CD34$^+$ cells or Colony forming-units for granulocyte/macrophage (CFU-GM) in Children Undergoing Apheresis

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A total of 50 aphereses (AP) was performed in 24 patients (age, 10 mo to 17 yr, median 5 yr) with a various type of malignancies [13 ALL, 5 neuroblstoma, 3 brain tumor, 1 non-Hodgkin's lymphoma, 1 yolk sac tumor, 1 pulmonary sarcoma]. In this study, collection efficiency (CE) of PBSC with a Fenwal CS3000 Plus was evaluated using the number of CD34$^+$ cells as a backbone parameter and CFU-GM in selected 26 AP. CE was calculated as follows: [Total number of target cells collected by AP]/[Pre-AP number of target cells (/L blood) x processed volume of blood (L)]. AP were performed during marrow recovery phase after chemotherapy followed by G-CSF (75-300 μg/m^2/day) for 5 days. In 20 collections, serial evaluation of cell levels was performed at each 50 mL/kg or 2000 mL of blood processed. The median CE was 81% (range; 15-389) with CD34$^+$ cell parameter and this was 87% (range; 5-447) with CFU-GM, with no essential difference. When simultanious study was performed (n=26), a significant correlation ($p<0.01$) was found between CE analysis with CD34$^+$ cells and CFU-GM. In infants aged <1 yr, prompt increases in cell levels were induced by the initial AP, which were not observed in subsequent course of AP, while number of CD34$^+$ cells continued to decrease during AP in older children aged >10 yr. The results in children aged 1 to 10 yr were variable. Both number of CD34$^+$ cells and CFU-GM can be a reliable parameter for efficient collection. The kinetics of hematopoietic progenitor during AP is age-dependent. There is a possibility that the decrease in cell yield at 2nd or subsequent AP is attributed to a decrease in mobilization efficiency by AP itself.

O-3-11

A 1995. YEAR WITH MANUAL APHERESIS PROCEDURES

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During last several years, all the apheresis procedures performed at our department were manual. We used bottles and double blood bags. Till the end of October 1995. year we performed 198 apheresis procedures, out of which: 24 were erythropheresis(done by one or two double blood bags), 7 were plateletpheresis (done by two double blood bags), 8 were leukapheresis(done by 4 bottles each time) and the rest of 159 apheresis procedures were manual plasmapheresis (done by two double blood bags each time). The amount of plasma removed by one manual plasmapheresis varied from 570 ml to 900 ml. We treated achild who was three years old and those over 60 years old. Plasmapheresis was used for all kinds of neurological, immunological, nephrological and other diseases, both in critical care and as a supportive therapy. The amount of platelets removed by one plateletpheresis was 310-350 ml. Leukapheresis was done to only one patient suffered from blastic transformation. The amount of Lkcy removed was around 500 ml per procedure. We also had several transplanted (kidney) patients, where we performed erythropheresis, as well as, some with tetralogia fallot and polycitaemia rubra vera. We removed 350-500 ml of RBC by a single procedure. In most of the cases the benefitial effect was evident, especialy with plasmapheresis and RBC removal, whilst leukapheresis only prolonged the agony. This is our reality.

O-3-12

SURFACE TREATED CATHETERS FOR BLOOD ACCESS FOR APHERESIS METHODS

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Infection. thrombosis and stenosis are among the most common complications of blood-contacting catheters and are caused by surface properties of the catheter materials. Ion beam-based processes such as ion implantation and ion beam-assisted deposition affect only the outer micron of the treated surface. These processes were therefore used on common catheter materials.to create an infection resistant "actively sterile" coating. This coating is bactericidal on contact.and thrombusresistant.

Large bore catheters as acute (AC) or long term catheter (LTC) for blood access in apheresis methods without and with treated surface of silver or silicone (Spi-Silicone.Spi Argent I and II) were investigated after removal with a scanning electron microscope and for bacterial colonization. In 94 large bore catheters (51 pat..in situ time x=21.4 d.in AC. 169.5 d.in LTC) of different materials deposits of fibrin. protein and blood cells on the inner and outer surface were seen. This second laver covered the entire surface after 3 days and increased to a thickness of 3 to 90 um during the following days. Bacterial colonisation was observed in 40.0 %.

In contrast to these results the 138 catheters (89 pat.) with the treated outer surface (AC: Spi silicone n=28. in situ time x=29.4: Spi-Argent I n=54. x=31.2. Spi-Argent II n=12. x=33.5: LTC:Spi-Argent I n=40. x=162.4. Spi-Argent II n=4. x=208.8 d.) showed a very low thrombogenecitv and in regard of the in situ time.if at all.only small deposits. The infection rate was with 9.6 % significant lower than in the untreated catheters. These surface treatment processes can be readily applied to blood contacting catheters to make them thrombus and infection resistant.