Oncology Issues

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ISSN: 1046-3356 (Print) 2573-1777 (Online) Journal homepage: https://www.tandfonline.com/loi/uacc20

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To cite this article: Lilian Delmonte (1994) Cytokine Combinations Facilitate Outpatient BMT, Oncology Issues, 9:1, 26-26, DOI: 10.1080/10463356.1994.11904451

To link to this article: https://doi.org/10.1080/10463356.1994.11904451

Published online: 18 Oct 2017.

Cytokine Combinations Facilitate Outpatient BMT

by Lilian Delmonte, D.Sc.

Over the past 18 months, clinicians at the Bone Marrow Transplant Program of Duke University Medical Center in Durham, North Carolina, have been using a high-dose chemotherapy regimen with autologous hemopoietic stem cell rescue for patients with poor-prognosis breast cancer (premenopausal women with estrogen-insensitive metastatic disease). What's remarkable is that the program takes place largely in an *outpatient* setting. The program has achieved a high rate of complete response (60-70 percent). About 25 percent of complete responders have had disease-free survival in excess of six years. Impressive results, especially since patients with this type of cancer rarely achieve long-term, disease-free survival with standard-dose therapies. Key to the program's success is the use of cytokine combinations before and after autologous bone marrow transplantation (ABMT) for the treatment of the breast cancer.

At the recent meeting of the Society for Biologic Therapy, William P. Peters, M.D., Ph.D., outlined the Duke program for these cancer patients. According to Peters, who designed Duke's Outpatient Transplant Clinic Program, the protocol:

1) gives the patient two FDA-approved growth factors (G-CSF or GM-CSF) for five days

2) collects and stores cytokine-mobilized autologous peripheral blood stem cells (PBSC) in a single six-hour procedure

3) harvests and stores the bone marrow

4) waits for five to ten days and then gives high-dose chemotherapy

5) returns the stored bone marrow on day one post-chemotherapy and the stored PBSC on days one to three post-chemotherapy

6) gives more G-CSF or GM-CSF to drive the hemopoietic recovery engine.

Except for five in-hospital days for chemotherapy, the entire protocol, including the marrow harvest and transplantation, is done in the outpatient clinic.

PBSC, initially used as a "quick fix" to provide functional blood cells until the transplanted marrow "takes" or until hemopoiesis recovers, are being used at a number of transplant centers. In the future, PBSC may prove to be a viable alternative to ABMT, especially for patients with defective or cancer-infiltrated marrow.

Before and after chemotherapy at the Duke program, patients stay at a hotel and pay daily visits to the outpatient clinic to see their doctor, have blood tests and X-rays, and receive routine supportive therapy, including growth factors, electrolytes, antibiotics, and platelet and red cell transfusions. The outpatient strategy virtually eliminates periods of neutropenia severe enough to cause major problems with infection. Potential infectious problems are further minimized by routine use of prophylactic oral antibiotics given once daily.

The outpatient transplant protocol has enormous cost-saving potential, because the hospital room (including supportive care) accounts for most of the cost. A day in the hospital at Duke costs $1,645, whereas a day in the nearby hotel costs only $50. Slashing the median duration of hospitalization by 32 days (5 compared with 37) and slashing the overall cost of treatment by one-half ($65,900 compared with $140,000) bring the overall median cost of chemotherapy with ABMT rescue down to a level more accessible to the patient and more palatable to the third-party insurer.

Lilian Delmonte, D.Sc., is a medical writer in New York City.