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Dendritic Cell Count May Predict Cancer Survival

Dendritic cells normally initiate the body's response to infections or disease by mobilizing the body's natural immunity. When dendritic cells are produced in large quantities, such as after blood stem cell transplantations, they appear to ensure the body's fight against any returning bloodborne cancers without attacking healthy tissues.

Researchers have evaluated the use of dendritic cells in developing cancer vaccines and assessing their effectiveness in helping the immune system to fight prostate, breast, and other cancers.

In a study by Reddy et al. (2004), physicians took blood samples from 50 patients within two to four weeks after they received a bone marrow or peripheral blood stem cell transplant from a donor. Most of the patients were being treated for leukemia, lymphoma, or multiple myeloma. Patients with low dendritic cell counts were nearly 12 times more prone to cancer relapses during the study's 1.5-year time frame. They also were more than three times as likely to develop graft-versus-host disease and nearly four times more likely to die.

Although researchers were unsure why some patients had higher levels of dendritic cells, they believed that the study findings will help other researchers understand how allogeneic transplantations control relapses.

Reddy, V., Iturraspe, J.A., Tzolas, A.C., Meier-Kriesche, H., Schold, J., & Wingard, J.R. (2004). Low dendritic cell count after allogeneic hematopoietic stem cell transplantation predicts relapse, death, and acute graft-versus-host disease. *Blood, 103,* 4330–4335.

Modified Blood Product Offers Alternative to Blood Transfusions

PolyHeme® (Northfield Laboratories, Inc., Evanston, IL) is a new blood product that is made from chemically modified hemoglobin derived from human blood. Currently, it is being tested in randomly selected patients at 20 hospitals in the United States.

Northfield purchases blood from the American Red Cross and Blood Centers of America and then separates, filtrates, and chemically modifies the blood to produce PolyHeme. First, hemoglobin is extracted and filtered to remove impurities; then, the hemoglobin is chemically modified into a polymerized form that does not cause side effects normally related to hemoglobin-based blood products (e.g., vasoconstriction, kidney and liver disfunction, gastrointestinal distress). The modified hemoglobin is mixed into a solution that can be infused as a blood alternative. One unit of PolyHeme contains 50 g of modified hemoglobin, which is comparable to one unit of blood.

PolyHeme is intended for treatment of acute blood loss, usually from elective surgery or nonelective emergency surgery. The product has a shelf life of approximately 12 months under refrigerated conditions. The chemical modifications make it universally compatible, meaning that it can be administered to any patient regardless of blood type. Northfield believes that PolyHeme will provide new options to people who prefer not to receive blood transfusions or who are unable to receive transfusions because of religious beliefs.

Testicular Cancer Treatment May Increase Risk for Death From Other Factors

Patients who were treated with orchiectomy and radiation therapy for testicular seminoma are at a greater risk for death from heart disease or secondary cancer, according to a study by researchers at the University of Texas M.D. Anderson Cancer Center in Houston.

Because men develop testicular seminoma at a young age and because the cure rate for the disease is around 95%, men are living longer after treatment for the disease. This longevity, however, may be adversely affected by treatment.

Researchers followed 453 survivors of stage I or II testicular seminoma treated from 1951–1999 who did not experience recurrence. One hundred two patients died during the study period.

Fifteen years after treatment, the survival for these patients was significantly lower than for the general population after adjusting for age and race. Overall mortality was 1.85 times higher, and death from cardiac disease or secondary cancer was 1.95 and 2.02 times higher, respectively.

The researchers noted, however, that without treatment, 20% of patients with stage I disease and all patients with stage II disease would have died quickly, so the mortality reported in the study is quite low compared to this. To reduce long-term mortality, they suggested that patients with stage I disease should receive orchiectomy plus either a lower radiation dose, carboplatin chemotherapy, or surveillance. Patients with stage II disease should still receive orchiectomy plus radiation.

Horwich, A. (2004). Radiotherapy in stage I seminoma of the testis. *Journal of Clinical Oncology, 22,* 585–588.

Zagars, G.K., Ballo, M.T., Lee, A.K., & Strom, S.S. (2004). Mortality after cure of testicular seminoma. *Journal of Clinical Oncology, 22,* 640–647.

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