

NON-TECHNICAL ABSTRACT:

Autologous bone marrow transplantation is a technique which makes safe the very high doses of chemotherapy and radiation which are required to eradicate some populations of leukemia cells. The marrow is removed from the hip bones of the patient at the time of remission and stored induced by conventional dose chemotherapy, and re-infused into the patient after intensive therapy in order to restore marrow function. Peripheral blood will also be used for the restoration of hematopoietic function following bone marrow transplantation. We will compare peripheral blood with marrow with respect to their ability to promote hematopoietic recovery. It is impossible to determine if relapse arises from residual leukemia cells infused with the autologous stem cells or if residual leukemia cells present in systemic circulation after intensive therapy contribute to the relapse. Molecules called "marking vectors" can be used to resolve this question, and to compare the relative contribution of the peripheral blood with the marrow which contribute to hematopoietic recovery of normal cells. A portion of the bone marrow and peripheral blood cells stored from patients will be incubated with the marking vector. This vector will introduce a new genetic marker into these leukemia cells. If the leukemia cells appearing at relapse contain the marker, then the relapse arose from cells infused with the autologous transplantation. If this is the case, more thorough procedures must be undertaken to cleanse the marrow of leukemia cells. If no markers appear at the time of relapse in the leukemia cells, then the relapse arose from the systemic circulation. In this case, the therapy used to eradicate leukemia from the circulation before transplant must be intensified. In this study, marking molecules, called LNL6 and G1Na, will be used to tag the leukemic blast cells of each patient infused to regenerate marrow function after intensive therapy. The vectors LNL6 and G1Na will also be used to tag the normal marrow and peripheral blood cells respectively. The results of this study will be used to improve the therapy given to patients. It is not designed to benefit the patients themselves.