No survival advantage with peripheral blood stem cells versus bone marrow

October 19 2012

(Medical Xpress)—Claudio Anasetti, M.D., chair of the Department of Blood & Marrow Transplant at Moffitt Cancer Center, and colleagues from 47 research sites in the Blood and Marrow Transplant Clinical Trials Network conducted a two-year clinical trial comparing two-year survival probabilities for patients transplanted with peripheral blood stem cells or bone marrow stem cells from unrelated donors. The goal was to determine whether graft source, peripheral blood stem cells or bone marrow, affects outcomes in unrelated donor transplants for patients with leukemia or other hematologic malignancies.

Fifty transplant centers in the United States and Canada participated in this phase III study, which randomized 278 patients to receive bone marrow and 273 patients to receive peripheral blood stem cells as the graft source for transplant. The results of the study are in the Oct. 18 issue of *The New England Journal of Medicine*.

According to the trial analyses, there were no observed differences in overall survival, relapse, non-relapse mortality, or acute graft-versus-host disease (GHVD) between the patients receiving peripheral blood stem cells or bone marrow stem cells from unrelated donors. GVHD is a serious and often deadly post-transplant complication that occurs when the newly transplanted donor cells attack the transplant recipient's body. While engraftment was faster in patients receiving peripheral blood stem cells, there was a higher incidence of overall chronic GVHD in these patients (53 percent) than in those transplanted with bone marrow stem cells (40 percent). Patients receiving transplants of peripheral blood stem

cells from unrelated donors also had a higher incidence of chronic GVHD affecting multiple organs (46 percent) than patients who received bone marrow stem cells (31 percent).

"Although peripheral blood stem cells from related donors have demonstrated clinical benefits, our trial demonstrates that when these stem cells originate from unrelated donors, they are not superior to bone marrow stem cells in terms of patient survival, and they increase the risk for chronic GVHD," said Anasetti, lead study author. "More effective strategies to prevent GVHD are needed to improve outcomes for all patients receiving unrelated donor transplants."

Peripheral blood stem cells are stem cells originally found in the bone marrow that have been moved into the blood stream by a special regimen of drugs. Unlike bone marrow stem cells, which must be extracted from the bones in an operating room, peripheral blood stem cells are more easily obtained through apheresis, a process similar to regular blood donation, which collects the peripheral blood stem cells through a tube inserted in a vein. A critical step before the transplant involves finding a donor that is tissue matched to the recipient.

About one-third of patients who need a peripheral blood stem cell or bone marrow transplant for treatment of leukemia or another blood disease are able to secure a related donor. According to the National Marrow Donor Program, for the 70 percent who cannot find a donor within their family, most will be able to find an unrelated donor. Because the majority of transplant patients need cells from unrelated donors, it's necessary to better understand the risks associated with transplants of unrelated donor cells.

Clinical trials on related donor transplants have demonstrated that peripheral blood stem cell transplants in patients with leukemia and other blood diseases result in better engraftment, lower relapse rates, and

increased survival compared with transplants with bone marrow stem cells. However, those trials also found that peripheral blood stem cell transplants carry an increased risk of GVHD. Patients who survive early post-transplant may develop chronic GVHD, a disabling condition managed with long-term immunosuppressant therapy.

Many transplant centers are increasingly using peripheral blood stem cells as a source for adult stem cells because of their superiority in clinical trials that have directly compared outcomes between peripheral blood stem cells and bone marrow stem cells from related donors. However, there has not been a comparative study of the two transplant sources that has prospectively analyzed patient outcomes in unrelated donor transplants.

More information: Paper: www.nejm.org/doi/pdf/10.1056/NEJMoa1203517

See also: medicalxpress.com/news/2012-10 … ert-significant.html

Provided by H. Lee Moffitt Cancer Center & Research Institute