

## Autologous stem cell transplant safe, effective for HIV-associated lymphoma patients

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New research published online today in *Blood* Journal of the American Society of Hematology (ASH), challenges the generally held belief that individuals with HIV and aggressive lymphoma are not candidates for standard treatment.

According to researchers, people with HIV-associated lymphoma who receive autologous stem cell transplant have similar survival rates and are no more at risk of serious complications compared to those without HIV receiving this therapy.

People living with human immunodeficiency virus, or HIV--even those whose infection is well controlled with modern combination antiretroviral therapy--remain at significant risk of cancer. The risk of non-Hodgkin lymphoma alone is up to 25-fold greater for people with HIV than for those without the infection, and malignancies have quickly become a leading cause of death as people with HIV live longer.

Autologous hematopoietic cell transplant (AHCT)--a procedure in which healthy cells are taken from the patient's own blood or bone marrow and administered to help them recover after high-dose chemotherapy--has become the standard of care for treating relapsed and treatment-resistant Hodgkin and non-Hodgkin lymphoma; however, its use in HIV-infected patients is largely limited to centers with HIV-specific expertise.

Clinicians have historically been hesitant to treat HIV patients with stem cell transplant due to concerns that their immune systems would not effectively recover after intensive chemotherapy or that the procedure would cause excessive toxicities or infections post-transplant. However, in this Phase II clinical trial, designed to prospectively evaluate the safety and effectiveness of ACHT for patients with HIV-related lymphoma, researchers discovered that this population had no greater likelihood of developing these complications compared to those without the virus.

"Overall survival for patients with HIV infection after transplant is comparable to that seen in people who were not HIV-infected," said lead author Joseph Alvarnas, MD, associate clinical professor in the department of hematology and director of value-based analytics at the City of Hope National Medical Center in Duarte, CA.

The data also show that transplant-related toxicities in these patients are comparable to those observed in patients without HIV.

"These findings are remarkably important for a group of patients who, up until now, have been inconsistently treated," Dr. Alvarnas said. "Transplantation allows clinicians to treat the cancer most effectively by using more intense doses of chemotherapy than can typically be given, while avoiding fears of wiping out the bone marrow. Based on our data, autologous stem cell transplant should be considered the standard of care for patients with HIV-related lymphomas for the same indications and under the same circumstances that we would use it in patients without HIV infection."

In this study, prior to giving intensive BEAM chemotherapy (which uses carmustine, etoposide, cytarabine, and melphalan), researchers collected stem cells from each patient's blood. These stem cells are frozen and then later administered to the patient intravenously to rescue the patient after therapy.

A total of 43 patients with treatable HIV infection who had chemotherapy-sensitive relapsed/treatment-resistant non-Hodgkin or Hodgkin lymphoma were enrolled in this trial between April 2010 and March 2013; 40 received AHCT at 16 centers. Three patients did not receive a transplant due to disease progression. Patients underwent frequent lab testing and received supportive care post-AHCT based on institutional standards. Disease status was assessed before AHCT, at day 100, and at one year post-transplantation. Researchers then compared patients in the trial to 151 similar patients who did not have HIV but received the same treatment for their lymphoma using data reported to the Center for International Blood & Marrow Transplant Research (CIBMTR).

After a median follow-up of 25 months, overall survival at one year and two years post-transplant was 87.3 and 82 percent, respectively. This was comparable to those without HIV, whose overall survival at one year was 87.7 percent. The probability of two-year progression-free survival among those with HIV was 79.8 percent. One-year transplant-related death was 5.2 percent and resulted from recurrence/persistence of the lymphoma, fungal

infection, and cardiac arrest, which was comparable to the non-HIV patients. Median time to white blood cell and platelet recovery was 11 and 18 days, respectively. Within one year of AHCT, 15 patients developed severe toxicities and 17 had at least one infection. Moreover, patients with HIV infection remained in good control over their disease post-transplant; most patients (82 percent) still had undetectable levels of the virus after one year.

"When you look at people's recovery - recovery of their T-cells and CD4+ and suppression of viral load - we don't see people losing control of HIV infection, nor do they have evidence of additional immunological deficits following transplant. I think that's very reassuring," said Dr. Alvarnas, who adds the trial was sufficiently powered to make these conclusions.

Historically, it has also been a challenge to manage antiretroviral therapy in patients undergoing chemotherapy due to potential drug-drug interactions. According to the author, this study is unique in that researchers used a consistent algorithm for treating HIV infection, including avoiding certain drugs and having a planned interruption in antiretroviral therapy that took place from initiation of chemotherapy until completion of the preparative regimen or following recovery from transplant-related gastrointestinal toxicities (roughly one week).

"This is an important study because we need to better understand the long-term effects of HIV infection to ensure that patients are equitably treated in a way that respects their medical regimens and the biology of their HIV infection," he said.

Clinical trial research is also ongoing to evaluate the safety of allogeneic hematopoietic cell transplantation--using cells taken from healthy donor tissue--for HIV-infected patients with blood cancers.

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