Gene therapy reduces HIV levels in small trials

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(Medical Xpress) -- This weekend at the Interscience Conference on Antimicrobial Agents and Chemotherapy in Chicago, Illinois, researchers from two different study groups, one on the east coast and one on the west coast, reported promising results from studies being conducted in gene therapy for the treatment of HIV.

In the last year, HIV patient Timothy Brown appeared to be cured from his HIV after receiving a blood transfusion from a patient who carried a mutated receptor known as CCR5 on the T cells that the HIV virus uses. These new studies are based on this case and the receptor CCR5.

The two studies included a total of 15 HIV-infected patients. The researcher removed T cells from the blood of the HIV patients and modified them with an enzyme engineered by Sangamo BioSciences in California. This enzyme disables the CCR5 receptor. The patients were then infused with 10 billion modified cells.

The patients in the study were originally taking antiretroviral therapy when the study began. Within four weeks, six of the participants stopped taking their medication for a 12 week period. During this time, three of the patients saw a decrease in viral load and one of the patient's viral loads dropped to an undetectable level. This patient had an advantage at the beginning however. When it comes to genes, each person has two copies, one from the mother and one from the father. This patient already had one copied that carried a naturally occurring mutation. It is estimated that as many as five to 10 percent of HIV patients have a genetic form of this receptor already.

With an estimated 33 million people worldwide diagnosed with HIV, the hope of this research is to create what they call a "functional cure" for AIDS and reduce the need for antiretroviral therapy. More studies are needed to determine the level of gene modification that would provide a complete decrease in the HIV viral load. The goal is patients would still carry the virus but no longer need drugs to control it and prevent disease.