

HHS NEWS

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Office of Cancer Communications
National Cancer Institute

Scientists from the National Cancer Institute and Harvard University today reported in three papers in Science that some patients with Acquired Immune Deficiency Syndrome have been infected with a virus associated with an unusual form of adult leukemia and lymphoma.

A fourth paper, from the Pasteur Institute in Paris, reported the virus infection in a homosexual patient with a series of infections and persistent lymph node enlargement, who may be at risk of developing AIDS.

The virus is a member of a family of rare viruses called human T-cell leukemia/lymphoma viruses, or HTLV.

"Taken together, these studies demonstrate a relationship between HTLV and AIDS, not that the virus causes AIDS," said Dr. Vincent T. DeVita, Jr., director of NCI.

He added that HTLV, one of several viruses seen in AIDS patients, may be simply a passenger, or part of the pattern of opportunistic infections that characterize people with the disorder.

In addition, he said, scientists believe HTLV is not easily transmissible, apparently requiring prolonged and intimate contact for transmission between individuals.

AIDS is a recently recognized, often fatal condition that leads to a breakdown of the body's immune function. Resulting AIDS disorders include Kaposi's sarcoma, a rare tumor that starts in cells of blood vessel walls, Pneumocystis carinii pneumonia, and other opportunistic infections. Cases of AIDS have been reported primarily among homosexual men, intravenous drug abusers, recent Haitian immigrants and hemophiliacs.

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The data in these reports, when supplemented by further research, should contribute to a better understanding of AIDS, Dr. DeVita said.

"Using a wide variety of studies, we hope to find answers to the pressing questions remaining about the exact role of HTLV in the development of AIDS," Dr. DeVita said.

Answers may come relatively quickly, he said, because scientists can easily grow the T-cells that are targets of the HTLV infection. "A great deal of work now can be done."

A big question, he said, is whether the research on HTLV will lead to ways to prevent or control AIDS.

Other questions he identified include: Are there important differences between the viruses isolated from the adult T-cell leukemia and lymphoma patients compared to the AIDS patients? Is the virus detectable in other tissues or fluids? How does the virus spread in such an apparently limited way?

In addition, he said, scientists need to look for HTLV viruses in blood samples stored for long periods to determine whether the viruses are new or simply newly identified.

One Science paper,¹ by Dr. Robert C. Gallo, chief of the NCI Laboratory of Tumor Cell Biology, and his colleagues, in collaboration with the New York Veterans Administration Hospital (affiliated with New York University), reports the isolation of an HTLV virus from T-cells of a patient with AIDS. The paper also reports that two other AIDS patients had T-cells with proteins from the core of the virus, suggesting that they also were infected.

In a second paper² in Science from Dr. Gallo's laboratory, Dr. Edward Gelmann and laboratory and clinical colleagues at NIH and at the New York Veterans Administration Hospital and New York University, reported that two of

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33 patients with AIDS had the genetic sequences of an HTLV virus in the DNA of their T-cells. This indicates those cells were infected by the virus. When tested at a later time, the patients' T-cells showed no evidence of the virus.

However, the scientists detected antibodies in the patients' blood to core proteins of the virus. Antibodies to core proteins are found only when the virus is actively reproducing in the target cells. The precise meaning of these findings is not understood yet, Dr. Gallo said.

In a third paper³ in Science, Dr. Max Essex and other scientists from the Harvard School of Public Health and the Centers for Disease Control provide the first report of a striking increase in HTLV-related cell surface antibodies in AIDS patients.

A group of homosexuals with lymphadenopathy but not AIDS also had relatively high levels of HTLV antibodies. It is not known whether lymphadenopathy is an early stage of disease that may lead to AIDS. The antibody levels of both groups were compared to matched healthy homosexuals, whose tests for these HTLV-related antibodies were essentially negative.

Also in the same issue of Science, Dr. Luc Montagnier and coworkers at the Pasteur Institute and two hospitals in Paris reported isolation of an HTLV-related virus from a homosexual patient with persistent multiple lymphadenopathies and evidence of infections who may be at risk of developing AIDS.⁴

Dr. Gallo directed the research that led to the first isolation of a human retrovirus in 1980. This is the virus called HTLV. Since then, the virus has been reisolated several times by Dr. Gallo and his colleagues, and by other investigators in this country and abroad.

HTLV was found in certain rare forms of human leukemia and lymphoma of adults involving the T-cell, a type of white blood cell with immune system

functions that circulates in the blood. Extensive studies in collaboration with NCI epidemiologists Drs. William Blattner and Douglas Blayney and coworkers to search for antibodies to HTLV in human blood sera have linked the virus clearly with clusters of these forms of cancer in some areas of the world.

Only about 20 cases of HTLV-associated T-cell leukemias or lymphomas have been identified in the United States. About 2,200 adult patients with T-cell leukemias and lymphomas are diagnosed each year in the United States. Less than 1 percent of the U.S. population may have HTLV infections, according to recent estimates.

HTLV viruses and their associated leukemias and lymphomas have been found to be more prevalent in other regions, particularly the island of Kyushu in southern Japan and the Caribbean.

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1. R. C. Gallo, P. S. Sarin, E. P. Gelmann, M. Robert-Guroff, E. Richardson, Laboratory of Tumor Cell Biology, National Cancer Institute; V. S. Kalyanaraman, Department of Cell Biology, Litton Bionetics, Inc.; D. Mann, Laboratory of Human Carcinogenesis, National Cancer Institute; G. D. Sidhu, R. E. Stahl, and S. Zolla-Pazner, Department of Pathology, New York Veterans Administration Hospital; J. Leibowitch, Department of Immunology, Hopital Raymond Poincare, France; and M. Popovic, Laboratory of Tumor Cell Biology, National Cancer Institute. "Isolation of Human T-Cell Leukemia Virus in Acquired Immune-Deficiency Syndrome (AIDS)."

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3. M. Essex, M. F. McLane, T. H. Lee, L. Falk, C. W. S. Howe, and J. I. Mullins, Department of Cancer Biology, Harvard University School of Public Health; C. Cabradilla and D. P. Francis, Centers for Disease Control. "Antibodies to Cell Membrane Antigens Associated with Human T-Cell Leukemia Virus in Patients with AIDS."

4. F. Barre-Sinoussi, J. C. Chermann, F. Rey, M. T. Nugeyre, S. Chamaret, J. Gruest, C. Dauguet, C. Axler-Blin, Institut Pasteur, Department of Virology, Paris; F. Vezinet-Brun and C. Rouzioux, Hopital Claude Bernard, Paris; W. Rozenbaum, La Pitie-Salpetriere Hospital, Department of Public Health and Tropical Medicine, Paris; and L. Montagnier, Institut Pasteur, Department of Virology, Paris. "Isolation of a T-Lymphotropic Retrovirus from a Patient at Risk for Acquired Immunodeficiency Syndrome (AIDS)."