

STATEMENT

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SCIENTISTS FIND AIDS VIRUS IN TEARDROPS OF AIDS PATIENTS

Scientists at the National Institutes of Health have isolated the virus believed to cause Acquired Immune Deficiency Syndrome (AIDS) from the teardrops of a woman suffering from the disease.

Dr. Leslie S. Fujikawa of the National Eye Institute (NEI) and S. Zaki Salahuddin of the National Cancer Institute (NCI) reported that the 33-year-old female AIDS patient, who had had several bouts of opportunistic infections, had no eye complaints and her eye examination appeared normal. Yet, the AIDS virus was clearly detectable in her tears.

Three other AIDS patients were found to have lower amounts of the virus in their tears, but they too were found to have healthy appearing eyes. Meanwhile, the virus was not found in the samples of healthy volunteers, the scientists said.

The findings were published in the September 7, 1985 issue of The Lancet, a British medical journal. The authors on the paper are Leslie S. Fujikawa, M.D., NEI; S. Zaki Salahuddin, NCI; Alan G. Palestine, M.D., NEI; Henry Masur, M.D., NIH Clinical Center; Robert B. Nussenblatt, M.D., NEI; and Robert C. Gallo, M.D., NCI.

The scientist's believe it is theoretically possible to spread the virus by way of tears, although there is no evidence to suggest that this has actually occurred. The researchers said that health professionals should take precautions to minimize direct contact with the tears of AIDS patients by using gloves and sterile techniques during routine ophthalmologic procedures. In addition, instruments used for glaucoma testing and soft contact lens fitting should be thoroughly cleaned.

(More)

The Centers for Disease Control published guidelines for preventing possible transmission of the AIDS virus from tears in the August 30, 1985 issue of Morbidity and Mortality Weekly Report (see attachment).

In this study, tear samples from the eyes of 12 persons were obtained and studied for the presence of HTLV-III. Six samples were from patients with AIDS; one sample was from a patient with the AIDS-related complex (ARC); and five samples were taken from normal healthy individuals (employees of the National Institutes of Health between the ages of 29 and 40 years with no known risk factors for the development of AIDS).

The tear samples were obtained by the use of a Schirmer's filter paper strip, a painless and routine tear function test given by ophthalmologists to diagnose dry eyes. The freshly obtained tear samples on the filter paper were then cultured in tubes containing white blood cells. After allowing a period of time for the white blood cells to grow, the scientists tested for the presence of HTLV-III.

Tears are the eye's first line of defense to protect the eye from serious infections and contain lysozyme and immunoglobulin A (IgA), which are destructive to bacteria.

Our tears comprise three liquid components. The first component is oily and sebaceous and lubricates and protects the inner lids. The tears in this component are produced from the meibomian glands, the sebaceous glands of Zeis, and the sweat glands of Moll. If it were not for this component, our tears would evaporate.

The second component is watery in texture. This component is produced by the main lacrimal gland. The third component comes from the conjunctival goblet cells and secretes mucin over the surface of the eye, which protects and lubricates the cornea and allows the tears to spread smoothly.

At the corner of our eyes (nearest the nose) is the naso-lacrimal duct. At the lower lid are several drainage holes (puncti) that connect to this duct. (4,5)

Cellular components in the tears include mostly desquamated conjunctival and corneal epithelial cells. There are few white blood cells present in normal tears, although these cells occur in tears when the eye is inflamed.

(More)

Previously, researchers at the NCI's Laboratory of Tumor Cell Biology (headed by Dr. Robert C. Gallo) had documented that HTLV-III can be found in lymph nodes, saliva, semen and blood plasma of both AIDS patients and healthy individuals. (1,2,3)

AIDS, first recognized as a mysterious new disease in 1981, attacks the body's immune system rendering its victims vulnerable to a host of potentially deadly infections and cancer. The disease chiefly infects and kills a T-cell subset known as the T4 or "helper" lymphocytes, a type of white blood cell involved in immune function.

HTLV is scientific shorthand for human T-cell lymphotropic virus. It is the genetic name researchers gave to the first human retroviruses, viruses whose genetic information is in the form of the chemical ribonucleic acid (RNA). These viruses contain an enzyme, reverse transcriptase, that enables them to convert their RNA to deoxyribonucleic acid (DNA), the molecule of life comprising the genes of human and animal cells.

In so doing, retroviruses use the genetic machinery of the cells they infect to make the proteins they need for survival. In the process, retroviruses can cause a variety of ailments, including depressed immune functions.

The AIDS virus is only 110 nanometers in diameter. A nanometer is 1 billionth of a meter, or 1 billionth of 39.37 inches. It can be seen outside a cell only with an electron microscope, magnified at 30,000 times.

Leslie S. Fujikawa is a 34-year-old research ophthalmologist at the National Eye Institute, headed by Dr. Carl Kupfer. She has been involved in AIDS research and the clinical care of eye problems associated with AIDS since 1981 when these patients were first being identified in San Francisco. She was trained in immunology, immunopathology and ophthalmology at Harvard Medical School in Boston, Pacific Medical Center in San Francisco, and UCLA-Harbor Hospital in Los Angeles. Dr. Fujikawa is the principal and

co-author of more than 20 scientific papers and is a member of The Association for Research in Vision and Ophthalmology and The American Academy of Ophthalmology.

S. Zaki Salahuddin is a 44-year-old researcher in the National Cancer Institute's Laboratory of Tumor Cell Biology. In 1984, he was one of the scientists who isolated the AIDS virus in Dr. Gallo's laboratory. He is trained in zoology, cytology and in microbiology at The University of Dacca in Bangladesh, George Washington University Medical School and The Walter Reed U.S. Army Institute of Research in Washington, D.C. He is the principal and co-author of more than 47 scientific papers and is a member of The American Society for Microbiology.

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