

# Acquired Immune Deficiency Syndrome

---

By Raif Geha

---

Acquired immune deficiency disease has been described in the Western world for the last 6 years. This disease is now known to be caused by a lymphotropic virus which is called human T cell leukaemia virus type 3. This virus has been discovered simultaneously at the Pasteur Institute in Paris and at the National Institute of Health in the United States.

By definition AIDS is a disease of sudden onset in previously healthy individuals characterised by opportunistic infections and by the occurrence of malignancy usually of rare forms such as Kaposi's Sarcoma but also including non-Hodgkin's lymphoma. The opportunistic infections in this disease are caused by *Pneumocystis carinii*, *Candida*, cytomegalo virus and other fungal and parasitic organisms. Kaposi's Sarcoma is a rare endothelial cell tumor which normally occurs in older individuals above age 60 and in young adults in Subsaharan, Africa. So far in the Western world AIDS has occurred in special high risk groups. These include homosexuals, transfusion recipients, drug abusers, prostitutes, and children of mothers at high risk who acquire the virus transplacentally. A high incident has also been reported in people from Haiti. Because the disease is spread by intimate contact the disease can occur in heterosexuals due to sexual exposure. Thus this disease may not remain limited in the Western world to the above cited high risk groups. Indeed in Africa it does affect heterosexuals quite commonly.

The AIDS virus causes a spectrum of clinical abnormalities. At one end of the spectrum is the AIDS syndrome which has a very high mortality rate. In the middle of the spectrum is the AIDS related complex (ARC) which consists of persistent lymphadenopathy, sweat, fever, weight loss. 10% of these cases over a 2 year period progress to full blown syndrome. At the far end of the spectrum are patients who carry the virus but are totally asymptomatic. Some of the patients may later on develop the ARC complex and could develop the full blown syndrome.

The virus that causes the disease belongs to a family of retro viruses which infect the human lymphocytes. The other well known member of this family HUTLV-I causes a special form of adult T cell leukemia which involves the T helper cells which express the T4 surface antigen. This disease is endemic in Southern Japan and in the Carribean. The type III virus which causes AIDS also infects helper T cells and the other cells which carry the T4 marker because the T4 antigen is used for viral entry into the cell. Instead of causing proliferation like the type I virus and subsequent malignancy, the AIDS virus causes destruction of T4 cells. This results in very poor T cell immunity. Despite high level of immunoglobulin the antibody response of newly encountered bacterial and viral and parasitic antigens which is helper T cell dependent, is very poor in AIDS patients.

The AIDS virus is transmitted by saliva, blood and by semen. There is also vertical transmission through the placenta. The virus has been frequently transmitted to individuals with haemophilia who have received blood products from a very large number of donors. The AIDS virus is extremely susceptible to physical chemical agents and some new preparations on the market that are given to haemophiliacs and have been treated with mild heat seem to be fairly safe. Gammaglobulin that is used for replacement for immunodeficiencies appears not to be contaminated by the virus probably because the virus is destroyed during the purification procedure.

Currently there is no treatment for this disease once it occurs. Several experimental drugs are being tried which are antiviral in nature. A two pronged approach using such drugs as well as restorative measures for the immune system is probably needed. So far bone marrow transplantation and agents that boost up the immune system such as interleukin 2 have not met with success.

Kit tests are now available to test blood donors for the presence of antibody to this virus. The simplest of these tests currently used by many blood banks is the ELISA test. This test has a high degree of false positive (15%) and a few false negatives (3%). If a specimen is tested positive it should be re-run in a more sensitive but more time consuming blotting method.

Prevention of this disease is by modifying sexual behavior towards monogamy. Sharing of needles or body fluids should be avoided. Finally a vaccine for this disease is being developed now that the gene structure of the virus has been discovered.

#### **Editorial Note**

Recently in the United States of America, the State of Texas has passed a law that any AIDS sufferer known to be committing the sexual act now faces a term of imprisonment if caught. The State of New York has imposed certain restrictions and inspections of all clubs, brothels and communities where unrestricted sexual activities are common.