

Medicine by John Grauerholz, M.D.

New AIDS virus found in cats

The "FTLV" virus is much more closely related to the human AIDS virus than lentiviruses found in sheep, cattle, and horses.

A new T-lymphotropic retrovirus isolated from cats may provide important new insights into the problem of Acquired Immune Deficiency Syndrome in humans. This virus is much more closely related to the human AIDS virus, HIV, than the lentiviruses of cattle, sheep, and horses, which do not infect T-lymphocytes and do not produce immune suppression, as HIV does.

The new virus was discovered during investigation of an unusual outbreak of disease in a colony of cats in California. The results were reported in the Feb. 13 issue of *Science* magazine. The cattery contained a total of 43 cats ranging from 6 months to 13 years of age, most of whom were homeless prior to entering the cattery.

All of the cats had been repeatedly tested for feline leukemia virus, FELV, a retrovirus which causes a large number of diseases in cats, including tumors, leukemia, and an immunodeficiency syndrome similar to human AIDS, called FAIDS or Feline Acquired Immunodeficiency Syndrome. No cats testing positive for FELV had been allowed in the cattery and periodic retesting was done to ensure the FELV-free status of the animals. The cats were assigned to one of five outdoor pens, or to the house.

As a result of these precautions, and routine immunizations, disease problems in the cattery were very low from 1968 to 1982, and few animals died. Such diseases as did occur were mild: diarrheas, upper respiratory infections, ear mites, ringworm, intes-

tinal parasites, fleas, and some mouth and urinary tract disease.

All this changed in 1982, after the admission of a four-month-old female kitten to the colony. Three months later, this animal began having bouts of diarrhea, developed chronic eye and nose infections, and aborted a litter of kittens. Over the next two years she became thin and anemic, developed nervous system symptoms consisting of compulsive roaming and constant movements of the mouth and tongue, and lost most of her teeth from chronic gum infections. She ultimately died in spite of medical treatment, including many blood transfusions.

In the meantime, nine other cats sharing the same pen became sick and died from 1982 to 1986, while only one cat from the other pens died during this period.

Because it appeared to be an infectious disease, researchers from the Department of Medicine of the School of Veterinary Medicine at the University of California at Davis, attempted to transmit the disease to uninfected kittens. Two kittens were infected with whole blood, and cell free plasma from sick cats. Both kittens developed swollen lymph glands, fevers, and low white blood cell counts.

White blood cells from both experimentally infected kittens were then examined for the presence of retroviruses. Cytotoxic changes were seen in T-lymphocytes from these kittens which were similar to changes seen in HIV-infected human T-cells. When tested for the presence of the retrovi-

rus enzyme, reverse transcriptase, a similar enzyme to that of HIV was found. Finally virus particles very similar to those of HIV were seen budding from infected cells under the electron microscope.

Using infected white blood cells as a test chemical, the researchers did a serologic study of the cattery and found antibodies to the virus in 10 of 25 sick cats, but only 1 of 18 healthy cats. In addition, almost all the sick cats were from the same pen. The 10 seropositive sick cats showed symptoms of excessive thinness, anemia, and chronic runny noses, and a number of other infectious problems, including a type of bladder infection rare in cats.

Later, a study of cats admitted to the Veterinary Teaching Hospital of the School of Veterinary Medicine has shown that the virus is present in cats from many different regions of northern California.

The new virus has been designated FTLV, feline T-cell lymphotropic virus. It is antigenically distinct from HIV in humans and there is no evidence yet of human-to-cat or cat-to-human transmission. It is very interesting that the first recognized clinical case appeared within a year or so of the first clinically recognized human AIDS cases in California. Preliminary studies indicate that the virus is widespread and if its disease potential in the general cat population is as great as in the cattery, then indeed the house cat may join man as a threatened species.

From a more positive standpoint, the close biologic similarity of the new cat virus to the human and simian T-lymphotropic retroviruses, may make it an ideal research model for AIDS, since cats are much easier to obtain, and more abundant than primates. This could be critical for accelerated animal trials of potential AIDS vaccines.