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Feline Immunodeficiency Virus (FIV)

History:

Feline Immunodeficiency Virus represents a serious health hazard for cats. It was first discovered in cats that were suffering from an immunodeficiency syndrome similar to human AIDS. Clinical signs observed in these animals include weight loss, dry skin and dull coat, and chronic inflammatory conditions of the mouth and gums, skin, digestive tract, and respiratory tract. A small number of cats also exhibit neurologic abnormalities resembling those seen in human AIDS patients. Although FIV and human AIDS are similar diseases, and symptoms and the way the syndromes affect the immune system in both cats and humans have much in common, FIV cannot be transmitted from cat to owner. Likewise, the human AIDS virus can not be passed from a person suffering from the disease to his or her cat.

Transmission:

Feline Immunodeficiency Virus most commonly affects older male cats that spend the majority of their time outdoors. In infected animals the virus is present in the blood and in salivary secretions, and is usually spread through cat bites inflicted during fighting. Casual, nonaggressive contact, such as sharing food and water bowls and social grooming practices, does not appear to be an efficient means of infection but has not been confirmed by any studies.

In the United States, it is estimated that 1 to 3% of normal, healthy cats and 10 to 15% of cats with chronic infections are infected with FIV. Infections have also been reported in several other countries. In Japan, rates of infection appear to be higher (12% of healthy cats and 43% of clinically ill cats) than in any other part of the world.

FIV Infection and Disease:

After a cat has been infected, the virus is carried to the local lymph nodes, where it may replicated in a sub-population of white blood cells known as T lymphocytes or T cells. The disease then spreads to the lymph nodes throughout the body, resulting in a generalized lymphadenopathy (any disease of the lymph nodes). This stage of the virus usually passes unnoticed by the owner unless the lymph nodes are markedly swollen. Sometime later -- perhaps days but possibly weeks to months later -- the cat may develop a fever accompanied by a temporary drop in the leukocyte count. Anemia (low red blood cell count) may follow in some cases. The cause of these drops in blood cell counts is unknown, but most likely is due to a loss of precursor cells in the bone marrow.

Many FIV-infected cats also are also infected with Feline Leukemia Virus (FeLV). The prognosis of dually infected cats is poor as they become ill more quickly and suffer more serious effects of both FIV and FeLV.

Clinical Signs of Infection:

Most cats will produce antibodies to FIV within 2 to 8 weeks after infection. Cats frequently develop generalized lymphadenopathy during this period, followed closely by a transient fever. The swelling of the lymph nodes may persist of 3 to 6 months, after which time most cats (unless they are co-infected with FeLV) appear to remain healthy for at least 2 or 3 years. Although the cat may seem to be well during this time, progressive degenerative changes are occurring within its immune system that will eventually make the animal susceptible to secondary, opportunistic infections.

The clinical signs associated with FIV vary because of the many different secondary infections that may occur. General unthriftiness and poor coat condition are often the only outward signs of illness and fever is often present in the later stages of disease. Loss of appetite or evidence of pain when eating (due to infections of the mouth) may be the first signs of illness noticed by owners. Periodontitis, tooth loss, and chronic or recurrent infections of the skin, urinary bladder, and upper respiratory tract also are seen, as well as persistent diarrhea and seizures and other neurologic disorders.

Diagnosis:

While your veterinarian may suspect FIV based on the signs described above, he or she will seek to confirm or deny such a suspicion by performing a test in the clinic for the presence of antibodies to FIV in a blood sample. Should this test come back positive, FIV is assumed to be present in the cat. The test that most veterinarians use for "in-house" diagnosis unfortunately is affected by antibodies from the FIV vaccine. If we are unsure of the vaccine history of a particular patient, a blood sample can be sent off to the lab to differentiate between viral antibodies and vaccine antibodies.

Treatment and Control:

Treatment for illnesses resulting from FIV infection is based on the clinical signs. Antimicrobial therapy for secondary bacterial or fungal infections is often successful in improving a cat's condition but must be continued on a long-term basis or reinstated as new infections arise. Supportive measures such as intravenous fluid therapy, blood transfusions, and feeding high-caloric dietary supplements may be necessary. The use of corticosteroids or other drugs may be indicated in some cases to control inflammatory disease processes.

While the various illnesses that result from an FIV infection can be treated, no safe and effective antiviral drug to combat the virus itself has been discovered. Zidovudine (also known as azidothymidine, or AZT), which has been found useful in human AIDS therapy, may be somewhat effective against FIV but its side-effects in cats appear to be even more severe than those seen in people.

Drugs designed to enhance or modify the immune response, such as the interferons, may someday prove to be valuable in treating FIV infections. Currently, cat owners can protect their pets through a vaccine given after 9 weeks of age. Pets kept indoors and away from free-roaming cats are highly unlikely to contract the FIV infection. Owners of catteries and multiple cat households should ensure an antibody-negative status in all their cats by having their pets tested for FIV and then removing or isolating all positive animals. Once an all-negative status has been achieved, prospective additions should test antibody-negative prior to introduction to the household.

Prospects for Immunization:

There is a new vaccine on the market, which is 70 % effective at preventing FIV infection. This vaccine is given after 9 weeks of age and is boosted every 2 weeks for 3 shots, then annually. All owners who wish for their pet to receive this vaccine should be aware that a blood test is recommended beforehand to check for a negative status for the FIV virus. Once your cat has received an FIV vaccine, this blood test will pick up the antibodies the vaccine is made up of, therefore creating a false-positive on the test results. An outside lab can run a Pet ELISA profile to differentiate between the antibodies of the vaccine and the virus if needed, but this test is costly.

Viruses of the immune system tend to undergo what scientists refer to as "frequent molecular variation," which results in the immune system constantly having to re-adapt itself to suppress infection. In addition, a portion of the FIV virus known as lentiviruses are able to avoid an immune response altogether by "hiding" within cells and spreading directly from one cell to another. As if this were not enough, lentiviruses infect some of the cell types that are most important in the immunity against viruses. Taken together, all of these mechanisms play a role in "protecting" the virus from the immunization methods.

Public Health Significance:

While FIV is structurally similar to HIV and causes an AIDS-like illness in cats, it appears to be highly species-restricted. Feline cells alone have been found to support its growth in laboratory culture, and there is no immunologic cross-reactivity between the two viruses. In addition, initial studies of humans who have had close contact with FIV-infected cats show absolutely no evidence of FIV infection. Therefore, it is not possible for a human to catch FIV and for a cat to catch HIV. This eliminates a serious health concern people have for the disease.

What we must remember is that FIV does not have a cure. Once a cat becomes infected with the virus, there is no hope to eradicate the virus from the body. We can only treat the symptoms and keep the pet comfortable. Thus, it is EXTREMELY important to consider the vaccine for any outdoor cats, or cats that have access to the outdoors. Multi-cat households should also consider the vaccine. We can only hope that by preventing the vaccine in our pets, we can decrease the incidence of FIV in our area and worldwide.