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Feline Leukemia Virus (FeLV)

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Feline leukemia virus, a retrovirus, is a common infection of cats. It is the cause of more cat deaths, directly or indirectly, than any other organism and is widespread in the cat population.


Photo by Dr. Teri Ann Oursler

Disease Transmission

FeLV transmission most commonly occurs through close, social contact. Contact with saliva from infected cats is a primary mode of transmission, because the concentration of virus is high in saliva. But virus is also shed in blood, urine, feces, nasal secretions, and milk. Sharing food and water dishes, using the same litterbox, mutual grooming, and bite wounds are all possible methods of transmission. Infected queens can infect fetuses during pregnancy. Infected queens can infect neonates when the babies drink the infected milk. Transmission can also happen via blood transfusions or contaminated needles/instruments.

Disease

There are four separate classes of infection: abortive, regressive, latent, and progressive.

- **Abortive infections** are those in which the exposed cat produces an effective and early immune response. This prevents viral replication and eliminates virus-infected cells. These cats are negative for circulating viral antigen and viral genetic material.

- **Regressive infections** are those in which viral replication is limited, but a small population of virus infected cells remain. These cats are antigen negative, but the virus can be detected in a small percentage of blood cells by polymerase chain reaction (PCR), a type of blood test. These cats may go on to eliminate the virus completely. These infected cats are not viremic (and therefore not contagious), but may be infectious through blood transfusion.

- **Latent infection** refers to the cats in which a moderate amount of infected cells remain. These cats are antigen negative, but PCR positive. The latently infected cells do have the potential for the virus to re-activate, but the cats are not

contagious as long as the infection remains latent.

- **Progressive infections** are those in which virus replication is not eliminated; both viral antigen and genetic material can be detected in the blood of these cats, The cats are actively shedding virus (primarily in saliva and feces). These cats are likely to become ill with FeLV-related disease.

Diagnostic Tests

Necessary diagnostic tests may include blood chemistry, hematology, radiography, bone marrow aspiration, ophthalmoscopy, and specialized antibody tests.

Treatment

There is no effective treatment for the myeloproliferative (bone marrow) form of leukemia. Treatment is mainly supportive, and may require blood transfusions, prednisone, and anabolic steroids.

FeLV cancer (lymphoma) has a better response to therapy than the myeloproliferative diseases do. Treatment may include chemotherapy, glucocorticoids, interferon, Protein A, and supportive treatment.

Prognosis

The prognosis for infected cats is highly variable. It depends upon the specific disease the cat gets during the course of infection and the availability of supportive treatment for secondary infections. A small percentage of FeLV-positive cats may remain healthy for several years, but the prognosis for persistently FeLV-positive cats is poor, as most of the infected cats living within cluster households will die within three years from the time of diagnosis.

Prevention Of FeLV

There are several preventive measures that can be taken to decrease the risk of contracting FeLV. Routine testing, as well as vaccination of cats determined to be at risk, are key factors in FeLV prevention.

- Adult cats can be FeLV tested, and then vaccinated if they are negative. FeLV vaccination of infected cats does not affect the carrier state, the capacity to infect other cats, or the development of disease in the infected cats. Booster vaccinations are generally used in adult cats only if they have continuing risk of exposure.

- Cats are most vulnerable to the virus as kittens. Kittens should be vaccinated with a recombinant vaccine. Leukemia is almost-entirely preventable with just two kitten vaccines and a booster one year later. After that, even if the cat is exposed, the vaccines will help protect it -- plus the cat will naturally be more resistant to infection because of its age. Kittens may be tested at any age. However, infection in newborn kittens may not be detected until weeks to months after birth. Therefore, several FeLV tests during the first six months of life may be necessary to feel completely "safe" about a negative test result.

- All kittens or adult cats that test negative by the first ELISA screening test, but with a known or suspected exposure to FeLV, should be retested. Although the majority of cats will test positive within several weeks, final retest of negative cats should be no

sooner than 90 days post-exposure.

- In large catteries, a test and removal program can be instituted.
- Multi-cat households with FeLV positive cats should be maintained as a closed colony. (No new cats should be brought into the household to prevent the spread of infection to the new arrivals.)
- Healthy FeLV-infected cats should be housed indoors and kept away from other cats to limit the risk of disease transmission; veterinary checks should be performed at least every six months.

The prognosis for infected cats is highly variable, depending on the specific disease manifested during the course of infection and the availability of supportive treatment for secondary infections. Although a small percentage of FeLV-positive cats may remain healthy for several years, the prognosis for persistently FeLV-positive cats is poor. Most persistently infected cats living within cluster households are expected to die within three years from the time of diagnosis.

Notes

Retroviruses are unstable, live for only minutes outside the cat's body, and are readily destroyed by most disinfectants.

Because the feline leukemia virus is so unstable, a new, healthy cat can be brought safely into a "contaminated" house within days of the departure of an FeLV-infected cat.

Public Health Implications

FeLV has been the subject of many studies. Although human infection with FeLV might be possible, no human has ever been known to become infected with FeLV. Also, no human leukemia ever been traced back to FeLV infection. Currently, FeLV in cats is not regarded as a human health hazard.