

## FELINE INFECTIOUS PERITONITIS

Feline infectious peritonitis (FIP) is a disease of cats caused by a type of virus called a coronavirus. Many cats are infected with feline coronavirus and never develop FIP. Most infections with feline coronaviruses produce either no symptoms or cause transient diarrhea. Feline coronavirus normally only replicates in the intestines and does not infect the rest of the body. In some cases, we believe the virus mutates after infecting the cat and is then capable of infecting the rest of the body. The body then produces antibodies to the virus resulting in virus/antibody immune complexes which produce many of the symptoms of the disease. So the disease is at least partly complicated by the body's immune response to the virus.

Although this is not a very common disease, once signs of FIP occur, disease cannot be effectively treated or cured. In almost all cases, FIP is fatal. As explained above, exposure to the virus may or may not result in FIP. Although symptoms vary widely, certain signs are characteristic of FIP.

### *Clinical Signs*

First, FIP is a poor name for this disease. The name indicates that it causes inflammation of the lining of the abdomen, called the peritoneum. But in reality, most of the organs of the body are affected.

In the most dramatic form the FIP, called wet FIP, the cat's abdomen swells with fluid, thus the name of the disease. Fluid may also accumulate in the chest cavity, causing breathing difficulty. Other signs include fever, discharge from the eyes and/or nose, loss of appetite, weight loss, and depression.

The more prolonged form of FIP is called dry FIP, because little fluid accumulates in the abdomen or chest. The most common signs of dry FIP are central nervous system abnormalities, including incoordination and partial or complete paralysis of the hind legs, convulsions, and personality changes as well as eye disease. Other nonspecific signs include general illness, fever, weight loss, and anemia.

As you can see, except for the fluid accumulation which greatly helps in the diagnosis of FIP, most of the other symptoms are very nonspecific for this disease, making diagnosis difficult. Diagnosis is made even more complicated by the fact that we have no specific test for the disease. There are tests available for feline coronavirus, but since the virus is so widespread, most cats will test positive at some point in their lives. And since the virus that actually causes FIP mutates after infecting the cat and each mutation is different, it has been impossible to develop a viral detection test specific for the disease. Certain lab criteria have been proposed to make a diagnosis of FIP likely, but those criteria themselves have been controversial. Therefore, a diagnosis of FIP is often speculative at best and rarely can be positively confirmed prior to death. Microscopic examination of affected organs after death is the only way for a positive diagnosis to be made.

### *Cats at Risk*

Cats with the highest risk of developing FIP include:

- those raised in catteries or multi-cat households (due to the likely constant shedding of coronavirus by numerous cats),
- Those that are stressed from malnutrition, overcrowding (catteries), or other infections,
- cats with compromised immune systems--young cats with less developed immune systems, cats infected with Feline Leukemia Virus or Feline Immunodeficiency Virus, and cats treated with immunosuppressive drugs.

FIP occurs most frequently in cats 6-12 months of age with some up to 5 years of age. It is also more common in cats over 13 years of age in appropriate conditions for infection, likely due to decreasing immune system function. It is seen more frequently in purebreds, because of the predisposition of acquiring infection in catteries.

### *Transmission*

The natural route of feline coronavirus infection is through the mouth or nose. It is shed from infected cats through feces and oral and nasal secretions. However, once a cat develops FIP, transmission of the virus probably does not occur, so there is not a special risk of another cat in the household of developing FIP--i.e. if you have more than one cat and one develops FIP, it is not likely your other cat or cats will develop FIP. It is a sporadic disease and unpredictable as to which particular cat will develop it.

Coronaviruses may survive for a up to a few months in the environment, but are easily killed by most disinfectants.

### *Treatment*

There is really no effective treatment and virtually all cats with FIP will die. The goal of confirming FIP as best as possible is to rule out other potentially treatable diseases. Euthanasia is often the best option. Since FIP is at least partially caused by the body's immune system response, immunosuppressive doses of cortisone is sometimes helpful to temporarily slow the progression of the disease. Removing fluid from the chest or abdomen may make the cat more comfortable, again only temporarily.

### *Prevention*

The only way to definitely prevent FIP is to prevent exposure to any feline coronavirus from birth--which in real life is virtually impossible. Avoiding overcrowding of cats, avoiding stress and other sources of immunosuppression in susceptible cats are the best ways to help prevent FIP. A vaccine for FIP has been available for several years but has not proved to be very helpful in the prevention of the disease and is no longer recommended, except in a very few limited circumstances where it may be useful.