

Viral diseases in cats

Welcome! This time we're going to plunge into the viral diseases of the cat.

The traditional history of the domestic cat (*Felis catus*) begins 4000 years ago, in ancient Egypt, where these animals were considered sacred. Currently, the global population of cats exceeds 500 million individuals and, without a doubt, it is one of the most popular pets all over the world.

To date virologists have identified 25 species of virus that can infect cats, grouped into 16 different viral families depending on, as you well know, if they present or not an envelope, and the type of nucleic acid (DNA or RNA) they have. The most numerous are those with an RNA genome.

Fortunately, all of them have the cat as a natural host. Only rabies virus, of the family *Rhabdoviridae*, is the only species that can be transmitted to humans.

We will describe three of the most important feline viral diseases.

First we will discuss feline leukaemia.

Feline leukaemia is caused by a retrovirus, therefore an enveloped RNA virus. You know that the presence of an envelope makes viruses more labile.

- The infection is transmitted by close and prolonged contact among animals, by grooming, or by sharing feeders and water dishes. In fact, the disease is known as the "friendly cat disease".
- Infection can develop in different ways:
 - Abortive infection, when the animal produces an effective immune response that eliminates the virus.
 - Latent infection, in which viruses hide in different tissues (mainly bone marrow) without replicating.
 - Progressive infection, in which after a few months or a few years of latent infection, the virus is expressed massively, and is characterized by a great viral replication in the oropharynx, the bone marrow and the mucous membranes. Death usually occurs within months or a few years after the onset of clinical signs. Finally,
 - Atypical infection, in which there is a replication of the virus in the mammary gland, bladder, the eyes, etc. This form can evolve to progressive.
- Two clinical forms may occur:
 - Neoplastic form, with the presence of lymphomas and leukaemias, both lymphoid and myeloid.
 - Non-neoplastic form with symptoms of immunodeficiency, anaemias, and reproductive, neurological and haematological disorders.
- Treatment includes
 - antibiotics to avoid secondary bacterial infections,
 - and establishing cycles of interferon to limit viral replication.
- With regard to the prevention and control, there are commercial vaccines available, but currently they are not fully effective.

The following disease that we will talk about is feline panleukopenia. It is a highly contagious disease that is transmitted orally, although it can also be via uterus.

- It is caused by a parvovirus, which are naked very small and resistant viruses, with single-stranded DNA.
- There are two clinical forms:

- Enteric form, in which there is vomiting, diarrhoea and rapid dehydration. Death is usually due to concurrent infections, because the animal has not been treated, or because it has not responded to treatment, and by shock.
- Reproductive form, since the virus is able to cross the placenta, it may produce infertility, miscarriages, expulsion of mummified foetuses or the birth of kittens with serious neurological disorders.
- We must emphasize two important facts:
 - Infection in adults may go unnoticed.
 - And the establishment of vaccination plans has reduced the prevalence of the disease.

Finally, the feline infectious peritonitis. This disease is very common in catteries, in stressful situations, in some breeds (Persian) and in cats less than one year old.

- It is caused by a coronavirus, therefore, a single-stranded positive sense RNA virus, with envelope, which is usually in the intestine of cats.
- It is transmitted from an animal to another orally and occasionally via inhalation.
- For reasons not well known, these coronaviruses can cross the intestinal wall and become virulent, causing the clinical outcome.
- Two clinical forms may occur:
 - Effusive (wet) form, where 90% of animals suffer from peritonitis and between 25 and 40% of the cases have pleurisy. It's an incurable form that produces suffering and that causes death between 3 and 6 months after the appearance of symptoms.
 - The second is the non-effusive (dry) form. It is a slower process, but also fatal featuring nerve alterations, hepatic and renal insufficiency, pancreatic disease and eye disorders.
- Unfortunately, although there is a commercial vaccine, it is currently not recommended for the majority of the animals.

Finally, we know that that there is no specific therapy for viral diseases, and therefore here we show the vaccination guidelines recommended for cats according to their age.

Thank you very much for your attention, and paraphrasing Leonardo Da Vinci we can say that: The smallest feline is a masterpiece