

## Canine parvovirus

Welcome In this video we will discuss a viral disease of high prevalence in the canine population around the world since it appeared in 1978: Parvovirus infection.

It is a highly contagious infection that affects the gastrointestinal tract and the heart. This disease can even cause death of individuals of all ages, being particularly severe in non-vaccinated puppies.

It is typical of domestic and wild Canids although some variants of the virus can affect the domestic cat. Fortunately it is not transmitted to humans.

Parvovirus is caused by the species Canine Parvovirus type 2, a virus with single-stranded DNA, which presents icosahedral morphology, non-enveloped, and very small, hence its name: "parvo" means small in Latin.

The viral particle is very resistant from the physical-chemical point of view and it can remain infective in environmental conditions for over one year, especially if it is protected by organic matter, for example in faeces.

Now well, its main feature is that to complete its replication it requires the presence of cellular factors expressed during cell division. This determines that the target cells, must be those which divide quickly, such as embryonic cells, enterocytes or haematopoietic cells.

It is transmitted through the fecal-oral route since infected dogs eliminate viruses in faeces, which are readily transmitted to another animal, which after an intestinal infection becomes a carrier i.e., a seemingly healthy animal, but it is infected and is a source of contagion. We must comment that the mother-foetus transmission may be possible.

The first replication of the virus occurs in the lymphoid tissue associated with the pharynx, where it infects lymphocytes. The viral progeny, is transported by blood and by the lymphatic circulation, and quickly reaches organs with fast division cells.

- In lymphoid organs, such as the thymus the spleen, or the bone marrow, it infects the precursor cells of the immune cells, causing immunosuppression.
- In the small intestine it destroys the epithelial cells of the Crypts, inducing a syndrome of malabsorption of nutrients, and diarrhoea. In addition, and as a result of the destruction of these cells, it ruptures the epithelial barrier which separates the intestinal bacteria from the blood circulation and may derive into concomitant septicaemia.
- On the other hand and during the first eight weeks of the puppy's life, parvoviruses can cause death of the cells of the myocardium still under development.

According to the signs and lesions there are two clinical forms: Enteric and myocardial.

- The enteric form is acute in nature and affects puppies and a small number of adults. The clinical signs are:
  - At the beginning: prostration, severe depression and occasionally vomiting.
  - A few hours later: mucous or haemorrhagic diarrhoea, rapid loss of body condition and severe dehydration.
- The myocardial form is an uncommon pathology and occurs in puppies from mothers who have no immunity.
  - Puppies often die after a short period of respiratory distress, crying and retching.

As for many viral diseases in the Parvovirus infection it is better to prevent than to cure.

- The treatment must be applied quickly and requires the hospitalization of the animal usually for more than one week. It includes the administration of intravenous fluid therapy to reverse the dehydration and prevent shock, and it is recommended to include antibiotics, antiemetic and anti-secretor drugs.
- An important issue to remember: PARVOVIRUS IS PREVENTABLE. In fact, this disease is included in all vaccination protocols of dogs, achieving a strong and lasting immunity.

In the table you can see the recommended vaccination protocol for Parvovirus established by the European Union. It indicates the type of vaccine and doses for puppies and adults. As in other videos we recommend that you perform a self-assessment, and to expand your knowledge, check out a brief literature review shown in the additional material.

Thank you for your attention.