The Animal Medical Clinic

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Parvovirus Infection in Dogs

Canine parvovirus (CPV) infection (sometimes called "parvo") is a relatively new disease that struck the canine population in 1978. The classic signs are vomiting and bloody diarrhea. Because of the severity of the disease and its rapid spread through the canine population, CPV has aroused a great deal of public interest. The virus that causes it is very similar to feline distemper, and the two diseases are almost identical. Therefore, it has been speculated that the canine virus is a mutation of the feline virus. However, that has never been proven.

The virus has a selective effect on the most rapidly dividing cells of the body. For this reason, the lining of the small intestine and the cells of the bone marrow are most severely affected.

Contributing Factors

Several factors contribute to the clinical course of parvovirus infection in dogs. These include stress, vaccination history, age of the dog, concurrent infection with other diseases or parasites, and breed of the dog. Various studies have reported the breeds thought to be at increased risk for parvovirus; these breeds include the Rottweiler, Doberman pinscher, black Labrador Retriever, American Pit Bull Terrier, and the German Shepherd dog.

Parvoviral enteritis (intestinal inflammation) may affect dogs of all ages, but is most common in dogs less than one year of age. Young puppies less than five months of age are often the most severely affected and the most difficult to treat.

CPV has been regarded as reaching peak incidence in the spring and summer months, when puppies are losing the natural immunity conferred from the mother. A 1996 study of 283 dogs with CPV found the highest incidence in July, August, and September. Intact (non-neutered) male dogs were more likely to contract CPV than female dogs.

Prevalence

Canine parvovirus has been reported to exist in approximately 50 different countries.

Causes/Transmission

The causative agent of CPV disease is a very hearty virus. Unlike most other viruses, CPV is stable in the environment and is resistant to the effects of heat, detergents, and alcohol. CPV has been recovered from dog feces even after three months at room temperature. Since the virus is so resistant to decay, it can survive for long periods and be transmitted to any dog by simple contact with a contaminated object (called a "fomite"). Examples of fomites include shoes, clothing, play toys, insects, and feet of the infected dog.

Feces of the infected dog contain millions of viral particles. Susceptible dogs become infected by ingesting (swallowing) the virus. There does not have to be direct contact between the two dogs. Dogs that become infected with the virus and show clinical signs will usually become ill within 7-10 days of the initial infection.

Clinical Signs

In a large percentage of dogs, there may be no signs at all; this is called an inapparent infection. These dogs are capable of shedding the virus in the feces.

When signs are present, they may be variable, but generally take the form of severe vomiting and bloody diarrhea. Vomiting is usually the first sign to develop after infection. Diarrhea usually begins about 24 hours later and may or may not contain blood. Some dogs exhibit anorexia, depression, and fever.

Diagnosis

The clinical signs of CPV infection can mimic other diseases causing vomiting and diarrhea; consequently, the diagnosis of CPV is sometimes a challenge for the veterinarian. The positive confirmation of CPV infection requires the demonstration of the virus in the stool or the detection of anti-CPV antibodies in the blood serum. The detection of virus in the stool is easily done and takes just a few minutes. This test can be performed in the veterinarian's office. Occasionally, a dog will have parvovirus but test negative for virus in the stool; fortunately, this is not a common occurrence.

A presumptive diagnosis may be based on the presence of a reduced white blood cell count (leukopenia). If further confirmation is needed, stool or blood can be submitted to a veterinary laboratory for the other tests. The absence of a leukopenia does not mean that the dog cannot have CPV infection. Some dogs that become clinically ill may not necessarily be leukopenic.

Treatment

Unfortunately, there is no specific antiviral therapy that will kill the virus once it infects a dog. The most appropriate therapy focuses on treating the damage done by the virus. Since the lining of the intestine is compromised, diarrhea results. This can lead to severe dehydration, loss of sodium and potassium, and may provide intestinal bacteria with access to the blood stream (septicemia). Therefore, treatment involves intravenous fluid replacement, attention to electrolytes, and prevention of septicemia.

Additional therapies can include administration of immune serum (serum from a dog who has recently recovered from parvovirus), anti-endotoxin serum (to bind to bacterial toxins), and a drug to increase the white blood cell count.

Prognosis

Most dogs with CPV infection recover if aggressive treatment is used and if therapy is begun before severe septicemia and dehydration occur. Prognosis is more guarded in the breeds listed above as "at risk."

Transmission to Humans

There is no documented evidence to suggest that humans may become infected with CPV.

Prevention

Proper vaccination offers the best protection against CPV. Puppies receive a parvo vaccination as part of their multiple-agent vaccine given at 8, 12, and 16 weeks of age. In some situations, veterinarians will give an additional booster at 18 to 20 weeks of age. After the puppy series of vaccinations, all dogs should be boostered at least once a year. Dogs in high exposure situations (i.e., kennels, dog shows, field trials, etc.) may be better protected with a booster every six months. Pregnant bitches should be boostered within two weeks of whelping in order to transfer protective antibodies to the puppies. The final decision about a proper vaccination schedule should be made by your veterinarian.

The stability of the CPV in the environment makes it important to properly disinfect contaminated areas. This is best accomplished by cleaning food bowls, water bowls, and other contaminated items with a solution of one cup of chlorine bleach in a gallon of water (500 ml in 4 liters of water). It is important that chlorine bleach be used because most "virucidal" disinfectants will not kill the canine parvovirus.