

Canine Distemper Neurologic Disease

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BASIC INFORMATION

Description

Canine distemper is a contagious viral infection of dogs that may cause respiratory, urogenital, gastrointestinal, ocular (eye), and central nervous system (brain and spinal cord) signs. The routine use of vaccines against canine distemper has greatly reduced the incidence of this disease in North America, but it still commonly occurs in many other parts of the world.

Causes

Canine distemper virus (CDV) is transmitted between dogs primarily through infected respiratory secretions. The virus multiplies within the lymph nodes (glands) of the head and throat. Infected white blood cells leave the lymph nodes and spread the infection throughout the body. Within 1 week, infection may involve the eyes, nose, intestinal and respiratory tracts, and the nervous system.

Unvaccinated puppies are most susceptible to CDV infection; however, older dogs may also become infected. The infection weakens (suppresses) the immune system, making the animal more susceptible to other diseases. Although vaccination is extremely effective for preventing CDV infection, occasionally animals become infected despite having been vaccinated.

Clinical Signs

Clinical signs are variable and depend on the strength of the dog's immune system. Vaccinated dogs with a strong immune system typically clear the virus and do not develop clinical signs. Dogs with a weak immune system, such as puppies, are often unable to fight off the infection and may develop severe clinical signs. Since it is not possible to determine the strength of a dog's immune system, care should be taken to prevent exposure of potentially susceptible dogs.

Some affected dogs only develop generalized (systemic) signs, whereas others have only nervous system signs. Initially, signs of a respiratory infection may occur, with severe ocular and nasal discharge, cough, and fever. The respiratory infection can progress to pneumonia in some animals. Additional signs include loss of appetite, vomiting, and diarrhea.

Nervous system signs include mental dullness, lethargy, unresponsiveness, disorientation, blindness, imbalance, and seizures. Affected dogs may stumble as they walk and some act as if they are in pain.

Telltale physical findings can indicate a previous infection, such as abnormal enamel on the teeth, thickened skin on the nose and footpads (hyperkeratosis), and involuntary, rhythmic jerking of one or more muscles (myoclonus). Typically, myoclonus is confined to a single limb. The muscles of the head can be affected,

however, and the animal may rhythmically clench its teeth. Myoclonus may persist even when the animal is sleeping.

Diagnostic Tests

Routine laboratory tests are usually recommended to search for evidence of an infection and other organ involvement. CDV can cause a decrease in the white blood cell count. X-rays of the chest may reveal pneumonia.

Many tests can be used to diagnose CDV infection, but no single test is 100% diagnostic, so multiple tests are often needed. Samples that can be tested for CDV include the conjunctiva (tissue lining of the inside of the eyelids), skin biopsies, blood, cerebrospinal fluid (CSF, taken by spinal tap), and urine. Blood can also be tested for antibodies to CDV (canine distemper titer); however, this test can be difficult to interpret, because most animals produce antibodies after they are vaccinated.

Analysis of CSF may indicate evidence of inflammation in the nervous system of some dogs, but these changes are not specific for CDV infection and may not be seen in the early stages of the disease. Magnetic resonance imaging (MRI) can show multiple abnormal areas in the brain that are consistent with CDV infection.

TREATMENT AND FOLLOW-UP

Treatment Options

There is no specific treatment for distemper infection. Supportive care is important for animals that are systemically ill. Anticonvulsant medications may be given for seizures, but the seizures can be difficult to control. (See also the handout on **Canine Distemper Virus**.) Affected dogs must be kept isolated from other dogs, because the disease is contagious.

Follow-up Care

Many dogs require hospitalization for supportive care. Laboratory tests and x-rays may be repeated to monitor response to treatments. Recovery time can be prolonged, and recheck visits are often needed following discharge from the hospital. If the animal survives the acute infection, late-developing signs may still occur.

Prognosis

Prognosis is poor if the clinical signs are severe or worsen despite supportive care. CDV causes severe debilitation and death in many dogs; however, the disease is not fatal to all dogs. Dogs that develop neurologic signs have a worse prognosis. Neurologic signs, such as seizures, blindness, and myoclonus, may persist after recovery from infection. The disease is best prevented with appropriate vaccination.