

# Canine Viral Diseases

## Canine Parvovirus (CPV) \*\*

Canine Parvovirus has a special affinity for attacking rapidly reproducing cells – such as those lining the gastrointestinal tract, bone marrow, lymph nodes, and the heart. This highly contagious virus is transmitted from one dog to another via contaminated droplets and feces. It can be carried on the dog's hair and feet, as well as on contaminated cages, shoes, and other objects. Dogs of all ages are affected, but the highest mortality occurs among puppies less than five months old.

### Symptoms

There are two main syndromes that are recognized:

**Enteritis:** Symptoms occur generally after an incubation period of 10 to 14 days. Symptoms include severe depression, loss of appetite, vomiting, dehydration, fever, and diarrhea that is often bloody. The dog appears to be in great pain, with a tucked up abdomen. Stomatitis (mouth inflammation) can occur.

**Myocarditis:** This form of CPV affects the muscle of the heart, most commonly in puppies under 3 months old. Puppies will stop nursing, cry out and gasp for breath. Death can occur suddenly or within days. Puppies that recover risk developing a chronic form of congestive heart failure that can lead to sudden death within weeks or months.

### Treatment

In almost all but mild cases hospitalization is essential. However, if symptoms are caught early, intensive home treatment can be very beneficial. Home treatment of CPV includes fluid and electrolyte replacement (Pedialyte), medication to control diarrhea and vomiting (Pepto Bismol) and administration of broad spectrum antibiotics to prevent post secondary infection (Amoxicillin).

The quarters of an infected dog must be cleaned and thoroughly disinfected. The Parvo virus is extremely hardy and is resistant to most household cleaners. The best disinfectant is Javex (one part to thirty parts water).

CPV can be prevented by an appropriate vaccination schedule. Note that in puppies between six and twenty six weeks of age there is a one- to four- week interval when they are susceptible to infection despite diligent vaccination.

## Canine Distemper \*\*

Distemper is a highly contagious disease that is caused by a virus. Worldwide it is the leading cause of infectious disease deaths in dogs. The distemper virus can live for many years in a cold state. It is most common in unvaccinated puppies three to eight months of

age; however, any unvaccinated dog can acquire the disease. Among infected dogs only about half show signs of illness.

The distemper virus has a special affinity for attacking epithelial cells. These are the cells that line the surfaces of the body including the skin, conjunctival membranes of the eye, breathing tubes and mucus membranes of the intestinal tract. The brain can also be severely affected.

### **Symptoms**

The disease takes a variety of forms. Secondary infections and complications are common and can sometimes be the cause of death.

Typically, the signs of first stage distemper appear three to fifteen days after exposure.

**First stage:** Symptoms begin with fever, loss of appetite, lethargy and watery discharge from the eyes and nose. Within days the discharge changes from watery to thick and yellow and is often accompanied by a pronounced dry cough. Pus blisters may appear on the abdomen and diarrhea and dehydration are a frequent problem. For the next few weeks the dog will appear at time to get better and then get worse again.

**Second stage:** Two or three weeks after the onset of the disease some dogs develop signs of brain involvement, which includes brief attacks of slobbering, head shaking, chewing movements, epileptic like seizures, running around in circles, falling over, kicking all four feet wildly, appearing confused and shy, and wandering aimlessly. These are all symptoms of *encephalitis*.

Another sign of brain involvement is *chorea*, characterized by rhythmic jerks or twitches that affect any part of the body but commonly the head. They are first seen when the dog is relaxed or sleeping, and gradually become continuous. Pain accompanies the chorea and dogs whine and cry, especially at night.

Dogs with brain involvement typically do not survive.

### **Treatment**

Because of the complexity of the disease, treatment should be under veterinary supervision. There is no antibiotic effective against the distemper virus. Antibiotics (Amoxicillin) are indicated to avoid secondary infections. Fluid and electrolyte replacement (Pedialyte) are used to correct dehydration. Diarrhea should be controlled with appropriate drugs (Pepto Bismol). Anticonvulsants and sedatives help to manage seizures. The success of the treatment depends on how soon the disease is realized. Distemper vaccinations must be kept current in all dogs.

### **Infectious Canine Hepatitis (CAV-1) \***

Infectious canine hepatitis (Canine Adenovirus-1) is a highly contagious viral disease transmitted only to dogs. Primarily it affects the liver, kidneys and lining of the blood vessels. The virus presents a variety of signs and symptoms that range from those of a mild or subclinical infection at one extreme to a rapidly fatal infection at the other. At times it is difficult to distinguish the disease from distemper.

A few days after a dog is exposed, the virus multiplies in the dogs tissues and is shed in its stool, saliva, and urine. At this stage, the disease is most contagious. It is spread to other dogs coming into contact with the sick dog or its urine, stool and saliva. Convalescent dogs may shed the virus in its urine, sometimes for months.

The most severe cases occur in puppies during the first few months of life, but dogs of all ages are susceptible.

### **Symptoms**

**Fatal Fulminating form:** The dog suddenly becomes ill, develops bloody diarrhea, collapses and dies. Puppies may die suddenly without obvious illness.

**Acute form:** The dog runs a fever, passes bloody diarrhea, may vomit blood and refuses to eat. The dog appears in pain and has a “tucked-up” belly, which is caused by painful swelling of the liver. The dogs eyes become sensitive to light and may squint and tear. Tonsillitis, bleeding beneath the gums and under the skin, and jaundice may occur.

**Mild or Subclinical form:** The dog simply appears lethargic or below a normally good condition. There is a loss of appetite.

After acute symptoms have subsided, about 25% of dogs develop a characteristic clouding of the cornea of one or both eyes, called *blue eye*. In most dog it clears spontaneously in a few days. If it persists, it should be treated by a veterinarian. Blue eye can occur after vaccination against infectious hepatitis if the vaccine contains CAV-1 instead of CAV-2. This happens to only a small percentage of dogs.

### **Treatment**

Infectious hepatitis is usually recognized by the typical clinical depiction. It is confirmed by blood tests. Acute cases should be hospitalized for intensive veterinary care.

The disease can be prevented by proper vaccination. These vaccinations must be kept current in all dogs.

### **Rabies**

Rabies is a fatal disease that occurs in nearly all warm-blooded animals. In North America, vaccination programs for dogs and other domestic animals have all but eliminated the risk of rabies in both pets and their owners. The major reservoir for rabies is now the skunk, resulting in about 40% of cases. However raccoons, bats, foxes, and other wild carnivores can carry the disease, thereby accounting for sporadic cases.

Any strange animal that allows you to approach it without running away from you is acting abnormally. Do not pet or handle such an animal as rabies should be suspected. Outside of North America, the main source of infection for humans remains a bite from an infected dog or cat.

The rabies virus, which is present in infected saliva, usually enters at the site of a bite. Saliva on an open wound or mucus membrane also constitutes exposure to a bite. Animals suspected of rabies should be handled with great care- preferably not at all!

The average incubation period in dogs is three to eight weeks, but can be as short as a week or as long as a year. The virus travels to the brain along nerve networks. The further the bite is from the brain, the longer the incubation period. The virus then travel back along nerves to the mouth where it enters the saliva.

### **Symptoms**

The signs and symptoms of rabies are caused by encephalitis (inflammation of the brain). The first signs are quite subtle and consist of personality changes. Affectionate and sociable pets may become irritable and aggressive. Shy and less outgoing pets may become overly affectionate. Soon the animal becomes withdrawn and stares off into space. The animal will avoid light, which hurts the eyes (photophobia), and will seek seclusion. Finally, the animal will resist handling. Fever, vomiting, and diarrhea are common.

There are two characteristic forms of encephalitis. One is the so-called furious form and the other is the paralytic form. A rabid animal may show signs of one or a combination of both forms.

**Furious form:** Referred to as “mad dog” form of rabies. Here the animal becomes frenzied and vicious, attacking anything that moves. The muscles of the face are in spasm, drawing the lips back to expose the teeth. When running loose, the animal shows no fear and snaps and bites at any person or animal along the way.

**Paralytic form:** The muscles of the head become paralyzed, causing the mouth to drop open and the tongue to hang out. The swallowing muscles become paralyzed, which causes drooling, coughing spells, and pawing at the mouth. As encephalitis progresses, the animal loses control of movement, staggers about, collapses and is unable to get up.

Once symptoms develop, the disease in dogs and humans is invariably fatal.

*If there is the slightest possibility that a dog or cat is rabid, and if there has been any sort of human contact, impound the animal immediately and consult your physician and veterinarian. This holds true even if the animal is known to have been vaccinated for rabies.*

### **Treatment**

There is *no* effective treatment for dogs. Be sure that all dogs are vaccinated at three to four months of age, then follow the procedure of your veterinarian to keep vaccinations current.

## **Tracheobronchitis (Kennel Cough) \*\***

Kennel cough is a highly contagious respiratory infection in dogs. Its name comes from the fact that dogs often catch it while boarding at a kennel, where they are exposed to other dogs that either have the disease or are carriers of it. Several viruses and bacteria, alone or in combination, are the causative agents. The most common ones are canine adenovirus 2 (CAV-2), canine parainfluenza virus (CPI) and the bacteria *Bordetella bronchiseptica*.

### **Symptoms**

A harsh, dry, spastic cough is the characteristic sign of this illness. Otherwise, the dog looks bright and alert, eats relatively well and seems to maintain an overall good condition. Most cases are mild. Given rest and proper care, these dogs often recover in two weeks.

In puppies, kennel cough is a more serious illness. It may be accompanied by nasal congestion. The narrow airways of youngsters are prone to obstruction. Puppies may need intensive support to loosen thick secretions, improve breathing and prevent pneumonia. This is also true of toy breeds.

### **Treatment**

Dogs suspected of having kennel cough should be isolated so as not to affect others. The dog's temperature should be taken every day, as a fever indicates a complication. Rest and proper humidification of the atmosphere are important items in the treatment of bronchitis. Confine the dog in a warm room and use a vaporizer. Daily exercise or a *moderate* nature is beneficial, as it assists in bronchial drainage.

Coughing helps to clear the bronchial tree, but excessive spasms of dry, unproductive cough can cause greater irritation and lead to exhaustion. Cough suppressants (Children's Benalyn) may be indicated, especially if the dog is unable to rest. Antibiotics (Ampicillin or Chloromycetin) are used to prevent secondary bacterial invaders and to treat *B. bronchiseptica* when it is suspected. They have no effect on viruses.

Vaccines effective against some of the kennel cough viruses are available. They will not prevent all cases.

## **Canine Coronavirus \*\***

The distribution of this virus is worldwide. While the virus affects dogs of all ages, it is particularly devastating to young puppies and individuals that have been subjected to environmental stress and concurrent infection, especially parvovirus.

The disease is transmitted by contact with infected oral and fecal secretions. Signs and symptoms can vary from unapparent infection (the usual situation) to rapid death. Outbreaks typically occur in a kennel of dogs.

### **Symptoms**

The early signs are depression and a loss of appetite, followed by vomiting that may contain blood. Fever is not common. A moderate to severe diarrhea ensues. Characteristically, the stool is yellow-orange in color, foul-smelling, watery and sometimes bloody. Dehydration, loss of weight and death can occur. Dogs that appear to recover may suffer a relapse three to four weeks later.

### **Treatment**

It is the same as that for parvovirus. Antibiotics usually are not indicated because of the mild nature of most infections.

Killed virus vaccines are available for the prevention of the coronavirus infection. Vaccination is recommended for dogs that have frequent contact with other dogs, such as show dogs, or dogs living in a kennel where new dogs are moving in and out. If one dog in a household or kennel becomes infected, all dogs should be vaccinated.

## **Canine Bacterial Diseases**

### **Leptospirosis \***

Canine leptospirosis is a disease caused by a bacteria called a *spirochete*. The disease is spread in the urine of an infected animal. Spirochetes enter a dog's system through a break in the skin or via the alimentary route when a dog drinks water or eats food contaminated by infected urine. Most cases are mild or subclinical.

### **Symptoms**

Signs of illness appear within five to fifteen days. Fever is present in the early stage of the disease. It is accompanied by listlessness, loss of appetite and depression.

Leptospirosis affects many symptoms, but mainly the kidneys. Symptoms include a "hunched-up" gait because of pain on the kidney area, the formation of ulcers on the mucus membranes of the mouth and tongue, the appearance of a thick brown coating on the tongue, bleeding from the mouth or the passage of bloody stools and severe thirst with increased urination.

The whites of the eyes may turn yellow. This indicates liver involvement. Persistent vomiting and diarrhea are common. Dogs have difficulty eating and swallowing because of sores in the mouth.

### **Treatment**

A presumptive diagnosis can be made on the basis of the dog's clinical signs and physical findings. This can be confirmed by finding spirochetes in its urine or blood, and by blood tests.

Severely ill dogs should be hospitalized for public health reasons and to provide intensive care. Antibiotic combinations are effective. Supportive measures include control of vomiting and diarrhea (Pepto Bismol), replacement of fluids and maintenance of nutrition.

Some dogs develop chronic progressive kidney failure. They become “carriers” and shed bacteria in their urine for up to a year.

It is advisable to vaccinate dogs in areas where leptospirosis is a problem.

## **Lyme Disease**

Lyme disease is a tick-borne illness caused by the bacteria *Borrelia burgorferi*. It is now regarded as the most common tick-borne disease in North America. The white-tailed deer and the white-footed mouse are the reservoir for the disease, but a wide variety of wild and domestic animals and birds can harbour the infection. Lyme disease typically occurs from May through August, peaking in the month of July.

### **Symptoms**

The disease in dogs is typified by the sudden onset of lameness caused by tender swollen joints that are painful to the touch. The dog appears weak and runs a fever. The lameness may last a few days but can recur for several months. Serological blood tests will confirm the diagnosis.

### **Treatment**

Antibiotics are effective. Ampicillin, erythromycin or tetracycline are the drugs of choice. A vaccine is available for the prevention of disease in dogs.

## **Protozoan Diseases**

### **Giardiasis**

Protozoans are one-celled animals. They are not visible to the naked eye but may be seen under the microscope. A fresh stool specimen is required to find the parasites. They are responsible for seven major infectious diseases in dogs.

The life cycle of protozoans is complicated. Basically, infection usually results from the ingestion of the cyst form (oocyst). Cysts invade the lining of the bowel where they mature into adult form and are shed in the feces. Under favorable conditions they develop into the infective form.

This illness is caused by a protozoan of the *Giardia* species. Most giardial infections in dogs are asymptomatic; but when giardia does cause infection, usually it is immature dogs that are affected.

### **Symptoms**

The principle sign is diarrhea, occasionally mixed with mucus and blood. Diagnosis is made by finding the protozoan in saline smears of fresh stool, or by finding characteristic cysts in the stool. Smears from rectal swabs are satisfactory for this purpose. However, a negative smear does not exclude the diagnosis; affected dogs can shed the cysts intermittently. It takes negative smears for three consecutive days to rule out the diagnosis.

### **Treatment**

Giardiasis responds well to Flagyl (metronidazole). It should not be used in pregnant bitches because it can cause fetal damage. Other drugs are available.

## **Parasites**

### **Fleas**

The ordinary cat flea (*C. felis*) is the leading cause of skin problems in dogs. All dogs are affected except those living at higher elevations. Fleas do not live above 5000 ft. They occur year round in pets living indoors.

Fleas survive by feeding on blood. In many dogs the bites cause only a mild itch, but a heavy infestation can cause severe anemia and even death. Fleas are also an intermediate host of the dog tapeworm. Some dogs experience a marked hypersensitivity reaction to the saliva of the flea.

### **Symptoms**

Flea infestation can be diagnosed by finding fleas on the dog or seeing salt and pepper like black and white grains of about the size of sand grains in the coat. These particles are flea feces and flea eggs. Fecal material is made up of digested blood. When brushed onto a wet paper, it turns a reddish brown.

Look for fleas on your dogs back and around the tail and hind quarters. They are sometimes found in the groin. Itching is most severe in these areas.

The adult flea is a small dark brown insect that can be seen with the naked eye. Although the flea has no wings and cannot fly it does have powerful back legs and can jump great distances. Fleas can move through hair rapidly and are difficult to catch.

### **Treatment**

A number of insecticide products are available for killing fleas on the dog, including shampoos, sprays, and powders.

## **Lice (Pediculosis)**

Lice are not very common. They occur primarily in dogs that are run down and poorly kept. Lice are often found beneath matted hair and are around the ears, head, neck, shoulders, and anal area. The usual picture is intense itching because of the constant irritation. Bare spots may be seen where the hair has been rubbed off.

### **Symptoms**

There are two types of lice. *Biting* lice feed on skin scales. *Sucking* lice feed on the dog's blood and can cause severe anemia. Adult lice are pale coloured insects about two or three millimeters long. They lay eggs called nits, which look like white grains of sand and are found attached to the hairs. They are difficult to brush off. Nits may look something like dandruff (seborrhea); but dogs with seborrhea do not itch as they do with lice.

Inspection with a magnifying glass makes differentiation easy as nits are well formed rounded eggs attached to hair shafts.

### **Treatment**

Lice do not show much resistance to insecticides and do not live long off of the dog. They can be killed by giving a thorough bath followed by an insecticide dip affective against fleas. Three to four dips must be given at ten day intervals. In between, dust the dog with a 5% Seven powder. Infected bedding should be destroyed and the dogs sleeping quarters disinfected.

Severely anemic dogs may require a blood transfusion or a build up of vitamins, iron, and a high protein diet.

## **Ticks**

The male tick is a small flat insect about the size of a match head. A "Blood" tick is a female tick feeding on the dog. She may swell up to the size of a pea. Males and females mate at this time and the female feeds on the host. When you see a puffed up tick look for a small male tick nearby.

There are several species of ticks that live on the dog. The brown dog tick is most common. All are capable of transmitting diseases. Rocky mountain spotted fever, canine ehrlichiosis, canine babesiosis, canine hepatozoonosis, tularemia and Lyme Disease are some of the illnesses transmitted by ticks. Ticks are capable of secreting a toxin that causes paralysis in dogs.

Ticks are usually found on the ears, neck, head, and between the toes. A dog might be found with hundreds of ticks all over the body.

## **Treatment**

If the dog has only a few ticks, the easiest thing to do is try to remove them. First, kill the tick by applying alcohol, gin, ether or fingernail polish directly to the tick by means of a cotton-tipped applicator. After a few moments, grasp the dead tick as close to the skin as possible with tweezers and apply steady traction until it releases its hold. The blood of ticks can carry diseases dangerous to people. Therefore, do not crush or squeeze the tick with your bare fingers.

If the dog has numerous ticks, you will have to resort to a commercial insecticide preparation such as 4% malathion powder, or a dip such as Paramite or Kem Dip. Contact a veterinarian to find out what product should be used.