

Ehrlichiosis and Anaplasmosis in Dogs

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BASIC INFORMATION

Description

Ehrlichiosis and anaplasmosis are systemic diseases caused by rickettsial bacteria that are transmitted by ticks.

Causes

Ehrlichiosis may be caused by *Ehrlichia canis*, *Ehrlichia chaffeensis*, or *Ehrlichia ewingii*. Anaplasmosis may be caused by *Anaplasma phagocytophilum* or *Anaplasma platys*. The clinical manifestations of infection with these agents have many similarities, so they are discussed here as a group. It is important to consider that any animal bitten by a tick may develop clinical signs as a result of infection with one or more of these rickettsia. Many animals are bitten by more than one tick, and ticks may carry more than one infectious agent.

Clinical Signs

Acute (recent) infection with any of these agents may cause clinical signs. However, some rickettsia cause chronic, asymptomatic infections, with clinical signs developing months to years after the original infection.

Clinical signs vary widely, depending on whether the animal was recently infected or has a chronic infection. Many organ systems may be affected. A list of potential signs follows:

- Fever, lethargy, decreased appetite, and possible weight loss
- Enlarged lymph nodes and spleen, as well as areas of bruising or bleeding under the skin, in the mouth, or from the nose
- Inflammation and hemorrhages within the eye, retinal detachments, vision abnormalities
- Joint and muscle pain, joint swelling, lameness (possibly shifting from leg to leg)
- Central nervous system signs, such as seizures, neck pain, uncoordinated movement (ataxia), head tilt, falling, and others
- Increased thirst and urination that may indicate kidney disease

Diagnostic Tests

Diagnosis often involves comprehensive laboratory testing and other diagnostic procedures:

- A complete blood cell count may show low numbers of platelets, certain white blood cells, and red blood cells (anemia).
- A biochemistry profile may show abnormally high protein levels, elevated liver tests, and evidence of decreased kidney function.
- X-rays of the abdomen and chest, as well as an abdominal ultrasound, may be recommended, depending on the signs.
- Computed tomography (CT scan) or magnetic resonance imaging (MRI) and a spinal tap for collection of cerebrospinal fluid may be considered when neurologic signs are present.

- X-rays of affected joints and joint taps to collect fluid for analysis are commonly done when joints are swollen and inflamed.
- Two blood tests for antibodies to *Ehrlichia* and *Anaplasma* species are commonly done 2-3 weeks apart to determine whether the antibody levels are increasing. Several different tests may be requested for the various species that could be involved.

TREATMENT AND FOLLOW-UP

Treatment Options

Doxycycline antibiotic is often administered for at least 4 weeks. Other tetracycline-type antibiotics (oxytetracycline, tetracycline) may also be considered. Because these drugs can cause gastrointestinal tract upset (decreased appetite, vomiting, diarrhea), they are often given with food.

If doxycycline does not appear to be effective, treatment with imidocarb dipropionate may be recommended. Other appropriate treatments are often needed, depending on the clinical signs. Nonsteroidal anti-inflammatory drugs (NSAIDs) may be given for arthritis. (See also the handout on **Immune-Mediated Arthritis**.) Steroid drugs are sometimes recommended but must be used with caution. Steroids should not be used with NSAIDs, because the combination can cause severe gastrointestinal damage, such as bleeding ulcers and intestinal perforation.

Follow-up Care

Improvement of clinical signs often occurs within 48-72 hours of starting antibiotic therapy. Follow-up examinations and repeated laboratory tests are commonly used to monitor response to treatment and may be continued for 4 weeks after completion of the antibiotics. The frequency of visits depends on the severity and clinical manifestations of the disease. A good tick control program must be instituted for all infected animals.

Prognosis

Prognosis is generally good for animals that do not have severe disease. Prognosis is guarded (uncertain) for animals that are seriously ill, especially those with severe central nervous system signs, anemia, or kidney disease.

Public Health Information

Ehrlichiosis and anaplasmosis are considered zoonotic; that is, they can be transmitted from animals to humans. Transmission does not occur directly from animals to people but takes place through a vector (intermediate host), such as a tick. If an animal is suspected of having ehrlichiosis or anaplasmosis, people in contact with the animal should take precautions to prevent tick bites.