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Canine Ehrlichiosis

What is Ehrlichia?

Ehrlichia are a group of bacteria that infect and live in the white blood cells of the host. There are many different types of *Ehrlichia* and they live within different types of white blood cells. These bacteria are spread by tick bites and are difficult to clear because the bacteria live inside of the cells. Different types of ticks spread different species of *Ehrlichia*.

What are the signs of Ehrlichia?

There are three phases of illness with *Ehrlichiosis*: acute, subclinical, and chronic.

Acute Phase: This is generally a very mild phase and occurs 1 to 3 weeks after the host is bitten by the tick. The *Ehrlichia* organism is replicated in this time period and attaching to white blood cell membranes. During this time the platelet count will drop and an immune-mediated platelet destruction will occur. The dog will be listless, off food, and may have enlarged lymph nodes. There may be fever as well but rarely does this phase cause death in a dog. Most clear the organism on their own but some will go on to the next phase.

Subclinical Phase: In this phase the dog appears normal. The organism has sequestered in the spleen and is essentially hiding out there. Dogs can stay in this phase for months or even years. The only hint that *Ehrlichia* is hiding, is a somewhat reduced platelet count and/or elevated globulin level on a blood test. Blood protein is divided into albumin (an important carrier protein) and globulins (every other blood protein including antibodies). Long term stimulation of the immune system will elevate globulins.

Chronic Phase: In this phase the dog gets sick again. Up to 60% of dogs infected with *Ehrlichia canis* will have abnormal bleeding due to reduced platelet numbers. Deep inflammation in the eyes called uveitis may occur as a result of the long term immune stimulation. Neurologic effects may also be seen. Glomerulonephritis, resulting in serious urinary protein loss, can also result. Increased globulin levels are almost always seen in this stage, albumin is often low. Most dogs in the U.S. do not show the full pancytopenia (literally, reduction in all blood cell lines).

Infections with *Ehrlichia ewingii* tend to produce arthritis in addition to the above scenario.

How do you diagnose Ehrlichia?

When a dog has clinical signs consistent with *Ehrlichia* such as those listed below, a blood test can be performed to look for *Ehrlichia* antibodies.

* A dog with fever, enlarged lymph nodes, bleeding, or arthritis in multiple joints.
* Low platelet numbers, high globulin levels, and mild anemia on blood testing.

A positive test indicates that the dog has been exposed to *Ehrlichia* and does not imply active current infection. A negative titer does not fully rule out *Ehrlichia*, as a very sick patient will be too sick to produce antibodies and an early case may not yet have started to produce antibodies. Further tests to determine if your dog is infected may include an IFA (immunofluorescent antibody) or by ELISA (enzyme-linked immunosorbent assay). The ELISA test is included in an in-house test kit from IDEXX labs (the snap 4DX test) that also includes a Lyme disease test, Anaplasmosis, and a heartworm test. Recently PCR (polymerase chain reaction) testing for the actual presence of *Ehrlichia* organisms has become available. In rare cases the organism can be seen on blood smears.

Some dogs may show no clinical signs and test positive on the snap 4DX test.

How do you treat Ehrlichia?

Ehrlichia is treated with antibiotics in the tetracycline family such as doxycycline. Other medications, supportive care, or hospitalization may also be needed depending on the severity of the dog's symptoms.

To help reduce the likelihood of reinfection, using good quality tick prevention is recommended. Our top two recommended products are Nexgard and Frontline Gold.

My dog is positive for Ehrlichia, now what?

Your dog is antibody positive on the SNAP test for *Ehrlichia*. This means that your dog has been exposed to this bacteria through a tick bite at some time. It does not necessarily mean that your dog has *Ehrlichiosis*. Once your dog has a positive *Ehrlichia* SNAP test he/she will most likely remain positive in subsequent years.

In order to determine if your dog is currently being affected by this bacteria, further testing may be recommended, such as a complete blood count (CBC) and possibly a chemistry profile. Recommendations for further treatment will depend on blood test results as well as the physical examination of your dog. Since your dog will remain positive on the SNAP test, this test cannot be used to monitor treatment. Repeat CBC's may be recommended every 6-12 months to monitor for changes in the red cell and platelet count. Treatment with doxycycline to help clear any active organisms that may be present is also recommended.