

Haemobartonellosis, *Haemobartonella* infection.

Haemobartonella, *Haemobart.*, *feline infectious anemia*.

Affected Animals:

Essentially all cats have the potential to be infected with *Haemobartonella felis*. Cats infected with feline leukemia virus appear to be at higher risk for infection and are likely to have more severe signs of illness.

Overview:

Haemobartonellosis, or feline infectious anemia, is a parasitic disease caused by *Haemobartonella felis*. The disease process begins when *H. felis* organisms attach themselves to the red blood cells of infected cats. *H. felis* may be spread by a number of routes, although fleabites are thought to be the major mode of transmission. While some infected cats have no symptoms, others may develop severe anemia and illness. The infection is diagnosed microscopically when the organisms are found on the surface of red blood cells in a blood smear. However, since the organisms may not always be present, treatment is often initiated in an anemic cat if there is no other explanation for the anemia. Specific treatment for feline infectious anemia includes tetracycline antibiotics and prednisone. Patients may require supportive care, including blood transfusion. Although treatment does not eliminate the infection completely, cats that survive are thought to have a good long-term outlook.

Clinical Signs:

The severity of clinical signs associated with *Haemobartonella* infection usually corresponds to the degree of anemia present, or the speed with which it develops. Cats with mild anemia may show no overt signs of illness. In severely anemic cats, or in cats that rapidly become anemic, signs can include depression, lethargy, inappetance, pallor, jaundice and splenomegaly. The temperature may be elevated, but in cats with life-threatening anemia, the body temperature is often subnormal.

Symptoms:

Cats with mild, *Haemobartonella*-induced anemia may not show any symptoms of disease. In cats with severe anemia, or in cases where the anemia develops quickly, symptoms include weakness, depression, reduced appetite, decreased activity, and pale or jaundiced mucous membranes. Cats that are severely ill may be in shock, with below normal body temperature.

Description:

Feline infectious anemia is caused by the organism *Haemobartonella felis*. This organism may be spread by fleabites, cat bites, blood transfusion, and by mothers to their kittens. Some cats infected with *Haemobartonella* have no symptoms, while others can develop life-threatening anemia. Cats that are also infected with feline leukemia virus are expected to have more severe signs of illness. Symptoms can include fever, depression, and loss of appetite. Signs of anemia may include lethargy, weakness, pale or jaundiced mucous membranes, and increased respiratory rate and effort. Severely affected cats may appear to be prostrate and depressed, or in shock. They can die suddenly with no apparent warning.

The anemia arises as infected red blood cells are attacked and destroyed by the immune system. The spleen is one of the major sites of red blood cell destruction. If the hemolytic process is severe, pigments from red blood cell breakdown may accumulate in the blood stream, resulting in jaundice. *Haemobartonella* should be considered as a possibility in any anemic cat or any cat with evidence of hemolysis. The diagnosis is based on microscopic identification of *H. felis* on a blood smear. Since the appearance of *H. felis* on red blood cells is cyclical, the organisms may not be present all the time. In many cases, treatment is begun even if the diagnosis is only suspected and not confirmed.

Treatment of haemobartonellosis includes tetracycline antibiotics and prednisone. Blood transfusions may be required in patients with severe anemia. In cats that recover, a chronic carrier state develops. These chronic infections may persist for the life of the cat. Without treatment, as many as one out of every three cats with haemobartonellosis will die from the disease. Although they may be carriers of the organism, successfully treated cats have a good long-term outlook. Control of flea and tick infestations may help prevent re-infection with *Haemobartonella*.

Diagnosis:

The confirmation of *H. felis* infection rests on the microscopic identification of the organisms on the surface of red blood cells on a blood smear. It is easy to confuse the organisms with other red blood cell changes. The presence of the organisms in an otherwise normal cat may be an incidental finding. The absence of the organism in an anemic cat does not rule out the disease, since their appearance in circulation appears to be cyclical. Furthermore, the parasites clear rapidly upon treatment with antibiotics, making detection difficult. Special laboratory stains may be helpful in identifying the organism microscopically. A sophisticated test called polymerase chain reaction, or PCR, may also help establish the diagnosis. This test looks for genetic material unique to *H. felis*.

Prognosis:

With successful treatment, the outcome for cats with feline infectious anemia appears to be good. Successful treatment does not completely eliminate the organism, and previously affected cats may serve as carriers. Some authorities

have suggested that carrier cats can relapse if their body defenses are weakened. However, no clinical evidence exists to support this concept.

Transmission or Cause:

The cause of Haemobartonellosis is an organism called *Haemobartonella felis*, a parasite that attaches to the surface of red blood cells in infected cats. Fleabites may be the primary means of spread. The organism can be passed from mother cats to their kittens, but it is not known whether this spread occurs prior to birth, during birth, or through nursing. The organisms may be passed via blood transfusion. Some authors suggest that cat bites may also transmit the organisms.

Treatment:

Treatment for haemobartonellosis includes blood transfusion, antibiotics, and prednisone. Blood transfusions are used to temporarily stabilize severely anemic cats, replenishing the number of red blood cells. The need for transfusion is based on the cat's overall condition.

Tetracycline antibiotics are employed to eradicate as many *H. felis* organisms as possible. Doxycycline is probably the most frequently prescribed antibiotic in this class because it usually causes fewer side effects than other tetracyclines. Suppression of appetite, nausea or vomiting are common signs of adverse drug reaction. The drugs do not completely eliminate the infection, but they appear to lessen the severity of the disease.

Prednisone is frequently prescribed in cases of feline infectious anemia. This corticosteroid medication is used to help block immune system-mediated red blood cell destruction.

Haemobartonellosis remains one of the few specifically treatable causes of severe anemia in cats. In many circumstances, treatment is started when the disease is suspected, even if the organisms are not identified.

Prevention:

Careful attention to elimination of fleas and the prevention of flea infestation should reduce the possibility of flea-borne spread of *H.felis*. Screening of donor cats to be sure they do not harbor the *Haemobartonella* organism may prevent spread via blood transfusion.