

CAT SCRATCH DISEASE

Cat scratch disease (also known as Cat scratch fever) is an infection by a bacterium called *Bartonella henselae*, which is spread by fleas. Classically, cats transmit the organism when they are parasitized by fleas, scratch themselves, and get infected flea dirt (digested host's blood excreted by fleas) in their claws, and scratch a person or another cat with their dirty claws.

The Human Disease

Infection with *Bartonella henselae* in the immunocompetent person leads to cat scratch disease. The inoculation site (a scratch from a claw containing bits of flea dirt) develops a small red bump called a papule. About 2 to 3 weeks following contact with the infected cat, the lymph node in the area of the contact will swell and become painful and a fever develops. These signs generally resolve on their own and the condition is minor.

If the patient does not have a competent immune system, one of several much more serious syndromes can result. The infection goes deeper into the body causing spleen enlargement, and potentially encephalitis, heart valve infection, and other conditions. These syndromes may be observed rarely in people who are immunocompetent.

For more detail on the cat scratch disease in humans we recommend:

<http://www.cdc.gov/healthypets/diseases/catscratch.htm>

How Likely is it for a Cat to be Infected?

Since fleas carry the bacteria, cats with insufficient flea control are at highest risk. This means cats living in climates that are warm and humid (conditions fleas thrive best in) are most likely to be infected. If conditions are right, up to 40% of cats in an area may be infected. If a person is diagnosed with cat scratch disease, there is a 90% chance that the cats they own will be found infected as well.

This sounds somewhat concerning for the cat-owners in a flea area but it is important to realize that an infected cat cannot transmit the infection without a claw full of flea dirt. If the fleas are removed from the infected cat, there will be no flea dirt in the coat and no risk of disease transmission.

Do Infected Cats get Sick?

This is a highly controversial question. It was only relatively recently discovered (1992) that cats were more than simple carriers of *Bartonella henselae* and that they could actually become infected themselves. Several illnesses seem to have been associated with *Bartonella* infection (fever, deep eye inflammation, lymph node enlargement, muscle pain, reproductive failure, and bacterial heart valve deposits called endocarditis.)

There is some evidence that *Bartonella henselae* infection may be one cause of the progressive oral disease of cats called plasma cell stomatitis. This is unproven and controversy remains. It seems that cats infected with both *Bartonella henselae* and the feline immunodeficiency virus have an increased incidence of this condition compared to what would be expected from either infection alone.

It has been suggested that *Bartonella* infection may be at the root of numerous chronic inflammatory conditions of cats. With such regionally high numbers of infected cats (up to 40%), it is going to be difficult to prove one way or the other whether there is a real association or just coincidence.

Many cats with plasma cell stomatitis test strongly positive for *Bartonella henselae* but this may simply reflect a high incidence of exposure in the community. Some cats show tremendous improvement in their oral disease with antibiotics focused on eradication of *Bartonella*; however, since secondary infections are common with plasma cell stomatitis, antibiotic response is common. The jury is still out and the controversy rages on, but there is certainly nothing harmful in treating a cat with plasma cell stomatitis for *Bartonella*, though the medication (azithromycin) is somewhat expensive.

Can Dogs get Infected?

The short answer is: yes although the species of *Bartonella* they get is not *henselae*. As with cats, fleas may carry the infection, and it appears that ticks may also be carriers. Since there are numerous infectious agents spread by ticks and it is not unusual for a dog to have multiple tick-borne infections, it is difficult to determine which infection is causing which signs.

Is my Cat Infected?

There are five tests available to detect *Bartonella henselae*: ELISA, IFA, PCR, Culture, and Western Blot. All the tests have pros and cons and no method seems to shine above the others.

The ELISA, IFA, and Western Blot tests are tests for antibody detection, the idea being that if antibodies against *Bartonella* are there then *Bartonella* must be there as well. For most diseases where antibody levels are used to establish a diagnosis, a minimum titer or antibody amount is considered necessary to say “yes, this patient is infected.” The problem for *Bartonella* is that no such guidelines have been established. Making matters worse, we know that up to 11% of cats who have *Bartonella* organisms happily circulating in their bloodstreams will not make antibodies and will thus test negative. At least this means that when the test is negative there is an 89% or greater chance that the cat is truly negative.

The most reliable test is the blood culture; however, several consecutive cultures are needed as the organism tends to only circulate intermittently. A positive culture is proof of infection though a negative culture may simply not have been taken at the time when organism is circulating.

PCR is a sensitive DNA test for *Bartonella* DNA but because the organism only intermittently circulates, this may not offer much advantage over culture, except that results can be obtained slightly sooner.

In humans, a delayed hypersensitivity skin test is used as part of the diagnostic criteria for cat scratch disease but this test has not been useful in cats. In this test, similar to the tuberculosis test most of us are familiar with, a scratch on the skin is made and a reaction to the introduced antigens may occur either right away or in approximately 48 hours (delayed hypersensitivity reaction). Cats are poor delayed hypersensitivity responders.

Treatment for Cats

Right now the most reliable treatment seems to be Azithromycin, which clears 83% of infected cats. The course of treatment is approximately 3 weeks. Other antibiotics have been less promising.

Prevention of Human Infection: Guidelines from the Centers For Disease Control

Prevention of Exposure

HIV-infected persons, particularly those who are severely immunosuppressed, are at unusually high risk for developing relatively severe disease due to infection with *Bartonella*, which can be transmitted from cats. These persons should consider the potential risks of cat ownership. Persons who acquire a cat should adopt or purchase an animal aged greater than 1 year that is in good health.

Although declawing is not generally advised, HIV-infected persons should avoid rough play with cats and situations in which scratches are likely. Any cat-associated wound should be washed promptly. Cats should not be allowed to lick open wounds or cuts of HIV-infected persons.

Care of cats should include flea control.

No evidence indicates any benefits to cats or their owners from routine culture or serologic testing of the pet for *Bartonella* infection.

Prevention of Disease

No data support chemoprophylaxis (i.e. preventive drug treatment) for *Bartonella*-associated disease. In simpler terms, if a suspicious cat scratch has occurred, there is no point in using medication to prevent infection.