



FELINE BARTONELLA

Ted Nugent made Cat Scratch Fever (actually called “Cat Scratch Disease”) nearly a household name with his song but most people still know very little about this infection other than it involves a fever spread by cat scratches. In fact, it involves 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. Cats can also harbor *Bartonella* in their mouths and transmit the infection via bites or groom their feet and self-infect their claws.

THE HUMAN DISEASE

Infection with *Bartonella henselae* in the immunocompetent person leads to “cat scratch disease.” The inoculation site (a bite or scratch) develops a small red bump (a “papule.”) About 2-3 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.

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.

DO INFECTED CATS GET SICK?

This is a highly controversial question as there is some evidence that *Bartonella henselae* infection may be one cause of the progressive oral disease of the cat called Plasma Cell Stomatitis. It has been suggested that *Bartonella* infection may be at the root of numerous chronic inflammatory conditions of the cat. With such high numbers of infected cats present 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. These cats often show tremendous improvement in their oral disease with antibiotics focussed 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.

Other than this controversy over chronic illnesses, if there are symptoms of infection they are mild, transient, and similar to those of humans: fever, swollen lymph nodes, muscle pain.

CAN DOGS GET INFECTED?

The short answer is: yes. Fleas may carry the infection as they do for cats plus it appears that ticks may also be carriers. As with cats, dogs are not believed to get sick from this infection except for the minor flu-like symptoms described above.

IS MY CAT INFECTED?

There are 5 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 problems for *Bartonella* is that no such guidelines have been established. Making matters worse, we know that up to 11% of cats with *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 very sensitive DNA test for the presence of *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 OF THE CAT

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 CENTER FOR DISEASE CONTROL

Infection with Bartonella Prevention of Exposure

1. 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.
2. 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.
3. Care of cats should include flea control.
4. 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

5. No data support chemoprophylaxis (i.e. preventive drug treatment) for Bartonella-associated disease.

Prevention of Recurrence

6. Relapse or reinfection with Bartonella has sometimes followed a course of primary treatment. Although no firm recommendation can be made regarding prophylaxis in this situation, long-term suppression of infection with erythromycin or doxycycline should be considered.