

Bartonella henselae

When nice kitties go bad



Jay Hardy, CLS, SM (NRCM)

Jay Hardy is the founder and president of Hardy Diagnostics. He began his career in microbiology as a Medical Technologist in Santa Barbara, California.

In 1980, he began manufacturing culture media for the local hospitals. Today, Hardy Diagnostics is the third largest media manufacturer in the U.S.

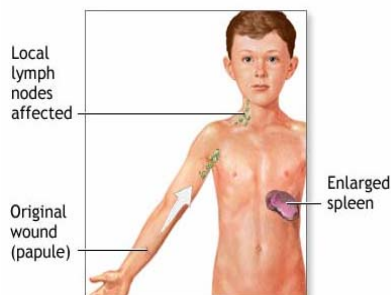
To ensure rapid and reliable turn around time, Hardy Diagnostics maintains six distribution centers, and produces over 2,800 products used in clinical and industrial microbiology laboratories throughout the world.

Well I don't know
where they come
from, but they
sure do come. . .

*They give me cat scratch
fever”*

- Ted Nugent (lyrics
to “Cat Scratch Fever”)

Cat Scratch Disease (CSD) is an infectious illness caused by the bacteria *Bartonella* (formerly *Rochalimaea*) *henselae*. It has been estimated that there are over 20,000 cases of CSD in people in the United States each year. The usual mode of transmission is by cat scratches and bites. It can also be transmitted by contact of cat saliva on broken skin or the sclera of the eye. Chronic lymph node swelling in children is often due to CSD.



Symptoms

A person who has had contact with a cat may show common symptoms, including:

- Bump (papule) or blister (pustule) at site of injury (usually the first sign within 10 days)
- Lymph node swelling near the scratch or bite (about 2-3 weeks after initial infection, occurs in 90% of cases)
- Fever (in some patients)
- Fatigue, malaise
- Overall discomfort
- Chills
- Headache



Figure 1: The original site of infection is usually followed by swollen lymph nodes within two to three weeks.

Less common symptoms may include:

- Loss of appetite
- Weight loss
- Enlarged spleen
- Sore throat
- Draining lymph nodes

Most cases resolve within one month with or without treatment, however lymphadenopathy may persist for several months.

Diagnosis

A scratch or injury and a history of contact with a cat indicate that cat scratch disease is a possible cause of the lymph node swelling. In some cases, physical examination also shows an enlarged spleen (splenomegaly).



Figure 2: Papules or pustules (blisters) usually follow within 10 days of the bite or scratch.

The disease often goes unrecognized because of the difficulty in testing. However, the *Bartonella henselae* IFA test is highly sensitive and specific for the detection of this infection. Sometimes a lymph node biopsy is

performed to rule out a more serious disease.

Culture is possible, but not routinely performed. Specimens could include blood, lymph node biopsies, and aspirates. Enriched media such as Chocolate Agar could be used. Incubation in CO₂ is required, as is a long incubation time of at least 21 days. See Koneman's "Color Atlas and Textbook of Diagnostic Microbiology" for more information.

The testing of cats for CSD is usually futile, since the organism is present in the blood stream only intermittently. For this reason the treatment of cats with antibiotics is usually not effective either.

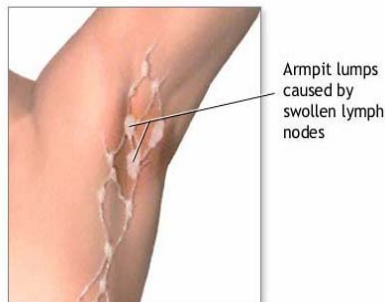


Figure 3: Lymphadenopathy usually disappears within one month for non-complicated cases, with or without treatment.

Treatment

In most cases, cat scratch disease is not serious and does not require treatment. However, in AIDS patients

and in other people who have suppressed immune systems, cat scratch disease is of greater concern, and treatment with antibiotics is recommended. Gentamicin, azithromycin, ciprofloxacin, and doxycycline have been used successfully.

Prognosis

In children with normal immune systems, full recovery without treatment is the norm. In immunocompromised patients, treatment with antibiotics generally leads to recovery.

In immunocompromised or HIV/AIDS patients, the infection can lead to an abnormal growth of blood vessels that form tumor-like masses, a condition called bacillary angiomatosis. This condition can cause severe inflammation of multiple organs including the brain, spleen, liver, lungs, and bone marrow. Untreated, the disease can be fatal.

Further complications would include bacillary angiomatosis and Parinaud's oculolymphatic syndrome. Intraocular inflammation and retinitis, at times leading to a loss of vision, has been rarely associated with CSD.

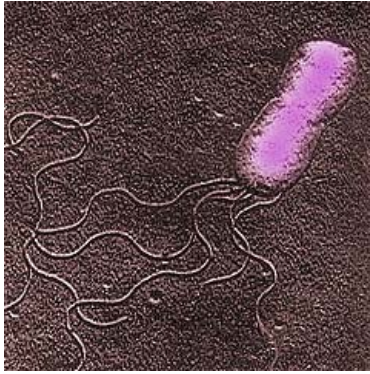


Figure 4: *Bartonella henselae*, a gram negative rod, is the etiologic agent of CSD as shown here in an electron micrograph.

Vectors and Transmission

“The first time that I got it I was just ten years old. I got it from some kitty next door. I went and see the Dr. and he gave me the cure.

I think I got it some more. They give me cat scratch fever”

- Ted Nugent, from the song “Cat Scratch Fever”

The cat flea, *Ctenocephalides felis*, has been found to contain *Bartonella henselae* in their feces. Cats can become infected from the flea feces.

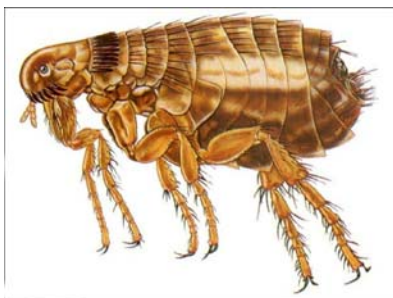


Figure 5: The cat flea is the responsible carrier of CSD through their feces. However, *B. henselae* has also been found in dog fleas (*Ctenocephalides canis*).

It has also been proposed that humans become infected by a scratch that is exposed to the bacteria containing flea feces. There is no evidence that a flea bite in humans can cause CSD.

Sometimes people who get cat scratch disease do not recall ever being scratched or bitten by a cat. Simply petting a cat, then the rubbing of eyes could cause infection due to the presence of the flea feces.

The reason is not known, but kittens are more likely to carry the bacteria in their blood, and may therefore be more likely to transmit the disease than are adult cats. About 40% of cats carry *B. henselae* at some time in their lives and will remain completely asymptomatic.

Another possible vector would be infected ticks. CSD is often overlooked as a diagnosis, due to the similarity of symptoms to Lyme disease (fatigue and headaches).

Prevention

Avoiding contact with cats prevents the disease. Where this is not reasonable, good hand-washing after playing with a cat, avoiding scratches and bites from rough play, and avoiding cat saliva will lessen the risk of infection.

Never force your attentions on a cat that does not welcome them. Most importantly, always do what is necessary to control fleas.



History

Cat Scratch Disease (CSD) also known as Cat Scratch Fever, was first discovered in 1889 by Henri Parinaud. The cat was recognized as the natural reservoir of the disease in 1950.

The causative organism was first thought to be *Afipia felis*, but this was disproved by immunological studies demonstrating that CSD patients developed antibodies to two other organisms, *Bartonella henselae* and *Bartonella clarridgeiae*, which are rod-shaped Gram negative bacteria.

In conclusion, we must remember to maintain a healthy respect for all animals even if they happen to be our beloved pets.

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