



BARTONELLOSIS- EMERGING INFECTION AN ZONOTIC DISEASES

KEYWORDS

Carrion's disease, B. Bacilliformis, cat scratch disease, B. Henselae, trench fever, B. Quintana

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ABSTRACT *Bartonella* bacteria cause several diseases in humans. It is a group of emerging infectious diseases caused by bacteria belonging to the *Bartonella* genus. *Bartonella* includes at least 22 named species of bacteria that are mainly transmitted by carriers (vectors), including fleas, lice, or sandflies. The three most common are cat scratch disease, caused by *B. henselae*; trench fever, caused by *B. quintana*; and Carrion's disease, caused by *B. bacilliformis*.

INTRODUCTION

Bartonellosis is a group of emerging infectious diseases caused by bacteria belonging to the *Bartonella* genus. Both domestic and wild animals can be infected with *Bartonella* species (*Bartonella* spp) by these vectors. Among the *Bartonella* spp, at least 14 have been implicated in diseases that can be transmitted from animals to people (zoonotic disease). Of these zoonotic species, several may be transmitted to humans by companion animals (dogs and cats), typically through a bite or scratch.

Human diseases that have been identified to be caused by one of the *Bartonella* spp bacteria include

- Carrion's disease, caused by *B. bacilliformis*
- cat scratch disease caused by *B. henselae*;
- trench fever caused by *B. Quintana*



THE TRANSMISSION OF BARTONELLA BACTERIA CAUSES

Bartonella bacteria invade erythrocytes and the lining of the blood vessels (endothelial cells), where the organism proliferates. Inside the erythrocytes, it is protected from the host's primary and secondary immune response, thus explaining bacterial persistence that can occur in some

cases.

Cat scratch disease (CSD), *Bartonella henselae*

- it occurs frequently in children under 15
- spreads from the scratches of domestic or feral cats, particularly kittens
- Cats can harbor infected fleas that carry *Bartonella* bacteria. These bacteria can be transmitted from a cat to a person during a scratch.
- Stray cats may be more likely than pets to carry *Bartonella*.
- Cat scratch disease caused by *B. henselae* infection occurs in approximately 1 per 10,000 persons.
- occur more frequently in males than females with a ratio of 3:2

SIGNS AND SYPTOMS

- Fever
- Enlarged, tender lymph nodes that develop 1–3 weeks after exposure
- A papule or pustule at the inoculation site
- Rarely, unusual manifestations such as eye infections, severe muscle pain, or encephalitis may occur.

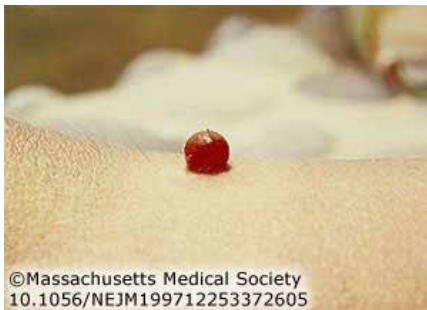


Other symptoms of cat-scratch disease may include achiness and overall discomfort (malaise), fatigue, headache, and in some patients, fever. Less common symptoms in-

clude loss of appetite, sore throat, and weight loss. In some cases chills, backache, abdominal pain, and/or convulsions have been reported. Other atypical manifestations of CSD include pericarditis (inflammation of the two layers of the thin, sac-like membrane that surrounds the heart) and pleural effusion (water on the lungs). Increasingly these atypical manifestations have been reported in patients without the typical symptoms of CSD. Children in particular appear to develop inflammation in the liver (granulomatous hepatitis) or spleen (splenitis) and bone (osteolytic) lesions. A more severe, systemic form of cat scratch disease has been reported. Major symptoms may include prolonged fever, joint pain (arthralgia), rash, weight loss, and/or enlargement of the spleen (splenomegaly).

Carrión's disease, *Bartonella bacilliformis*

Carrión's disease, formerly known as bartonellosis, is transmitted by bites from sand flies (genus *Lutzomyia*) that are infected with the organism. Carrión's disease has limited geographic distribution; transmission occurs in the Andes Mountains at 3,000 to 10,000 ft in elevation in western South America, including Peru, Colombia, and Ecuador. Most cases are reported in Peru.



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SIGNS AND SYMPTOMS

This disease has 2 distinct phases:

- Oroya fever: During this phase, patients may present with fever, headache, muscle aches, abdominal pain, and severe anemia.
- Verruga peruana: During this later phase, lesions appear under the skin as nodular growths, then emerge from the skin as red-to-purple vascular lesions that are prone to ulceration and bleeding.

Trench fever, *Bartonella quintana*

Trench fever is transmitted by the human body louse. Because of its association with body louse infestations, trench fever is most commonly associated with

- Homeless populations or
- areas of high population density and
- poor sanitation.
- Trench fever received its name during World War I, when many soldiers fighting in the European trenches harbored infected body lice and became infected with the disease.

Trench fever has a worldwide distribution; cases have been reported from Europe, North America, Africa, and China.

SIGNS AND SYMPTOMS

- Fever (may present as a single bout of fever or bouts of recurrent fever)
- Headache
- Rash

- Bone pain, mainly in the shins, neck, and back

Trench fever, caused by *Bartonella quintana* (*B. quintana*), shows symptoms within a few days or up to five weeks following exposure to the bacterium. Affected individuals may develop sudden fever, chills, weakness, headache, dizziness, leg and back pain, and/or other abnormalities. Initial fever may last about four to five days and may recur one or several times, with each episode lasting about five days. Additional findings may include a temporary skin rash consisting of flat (macular) or raised (papular) lesions, splenomegaly, and/or enlargement of the liver (hepatomegaly). Trench fever is usually a self-limiting disease, although relapses and chronic bacteremic states are well known.

DIAGNOSIS

- CSD may be diagnosed presumptively in patients with typical signs and symptoms and a compatible exposure history. Serology can confirm the diagnosis, although cross-reactivity may limit interpretation in some circumstances. In general, lymph node aspiration is not recommended except to relieve severe pain and swelling or in cases where the diagnosis is unclear.
 - *B. henselae* DNA may be detected by PCR or culture of lymph node aspirates or blood, though sensitivity of these methods is not optimal for blood samples.
 - Since *B. henselae* is a fastidious, slow-growing bacterium, cultures should be held for a minimum of 21 days.
- Trench fever can be diagnosed by isolation of *B. quintana* from blood cultured on blood or chocolate agar under 5% CO₂. Microcolonies can be seen after 21 days of incubation at 37°C.
 - Trench fever can also be diagnosed by serology.
 - Carrión's disease is typically diagnosed via blood culture or direct observation of the bacilli in peripheral blood smears during the acute phase of infection (Oroya fever).
 - Endocarditis due to *Bartonella* species can be diagnosed by serology and by PCR or culture of excised heart valve tissue.

TREATMENT:

The use of antibiotics to shorten the course of disease is debated. Most cases of cat scratch disease (CSD) resolve without treatment, although some patients may develop complications from disseminated disease. Azithromycin has been shown to decrease lymph node volume more rapidly compared to no treatment. The recommended dose of azithromycin for CSD is:

- For adults and children > 45.5 kg: 500 mg on day 1, followed by 250 mg for 4 days
- For children ≤ 45.5 kg: 10 mg/kg on day 1, followed by 5 mg/kg for 4 days

A number of other antibiotics are effective against *Bartonella* infections, including penicillins, tetracyclines, cephalosporins, and aminoglycosides. Since aminoglycosides are bactericidal, they are typically used as first-line treatment for *Bartonella* infections other than CSD. Often, with serious infections, more than one antibiotic is used.

Trench fever, Carrión's disease, and endocarditis due to *Bartonella* spp. are serious infections that require antibiotic treatment. Health care providers should consult with an expert in infectious diseases regarding treatment options.

PREVENTION**CAT SCRATCH DISEASE (CSD), *BARTONELLA HENSELAE***

- Avoid rough play with cats, particularly strays and kittens, to prevent scratches. This is especially important for immunocompromised individuals. Wash hands promptly after handling cats.
- Treat cats for fleas using fipronil and other spot-on treatments. Check with your veterinarian. Permethrin should not be used on cats.
- Use a flea collar or similar topical preventive on dogs (fipronil, methoprene, imidocloprid, or permethrin), especially if you have both cats and dogs in your household.
- Keep cats indoors and away from stray cats.
- Immunocompromised individuals should avoid owning cats less than one year of age.

TRENCH FEVER, *BARTONELLA QUINTANA*

- Avoid exposure to human body lice. Body lice are typically associated with conditions of crowding and limited access to proper personal hygiene.

CARRIÓN'S DISEASE, *BARTONELLA BACILLIFORMIS*

- Use [repellents](#) and protective clothing to avoid sand fly bites in areas where Carrion's disease is common (South America). If possible, limit outdoor activities at dawn and dusk, when sand flies are most active.

Other complications

- Bacillary angiomatosis (caused by *B. henselae* or *B. quintana*) and bacillary peliosis (caused by *B. henselae*) occur primarily in immunocompromised people, such as those with advanced HIV infection.
- Bacillary angiomatosis may present as lesions in the skin, subcutaneous tissue, bone, or other organs.
- Bacillary peliosis causes vascular lesions in the liver and spleen.



SUBACUTE ENDOCARDITIS Many *Bartonella* species can cause subacute endocarditis (infection of the heart valves), which is often culture negative.

RELATED DISORDERS

Certain features of the following disorders may be similar to those of bartonellosis:

Adenitis (Bacterial, Fungal, Pyogenic, and Tuberculous) is an inflammatory disease characterized by lymphadenopathy. Differential diagnosis may be accomplished through skin testing and/or microscopic examination of the involved lymph nodes.

Atypical mycobacterial infections are caused by nontuberculous mycobacteria, but can be very difficult to distinguish from tuberculosis. Lymphadenopathy is caused by nontuberculous mycobacteria, surgical removal and examination (biopsy) of involved tissue may be necessary for diagnosis.

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