



## Major Symptoms and Treatment of Babesiosis

Elie Charabaty\*

Department of Medicine, University of Staten Island, New York, USA

### DESCRIPTION

Babesiosis is a tick-borne zoonotic disease caused by hematopoietic parasites of the genus *Babesia*. The *Babesia* protozoa are among the most ubiquitous and widespread blood parasites in the world, after *Trypanosoma*, and are therefore of global importance. It has economic, medical and veterinary implications. The parasite resides in red blood cells and is commonly called *Piroplasma* because of the pear-shaped appearance found in infected red blood cells. *Piroplasma* is transmitted by ticks and can infect a variety of vertebrate hosts capable of maintaining cycles of transmission. Studies using non-human animal hosts have greatly contributed to our understanding of disease processes, including parasites and possible pathogenic mechanisms of host immune responses. To date, there are several *Babesia* species that can infect humans, but *Babesia microti* is the most common. Infection by *Babesia* species generally follows a regional distribution. US cases are mainly caused by *Babesia microti*, whereas European cases are usually caused by *Babesia branches*. Disease manifestations range from asymptomatic infection to fulminant malaria-like illness, leading to severe haemolysis and sometimes death. Recent advances have led to the development of several diagnostic tests with increased detection sensitivity. This facilitates diagnosis, facilitates appropriate patient management, and provides more accurate epidemiological characterization.

Babesiosis is a tick-borne malaria-like disease caused by species of the intraerythrocytic protozoan *Babesia*. Humans become accidental hosts for *Babesia* when they are bitten by *Babesia* larvae or adults. *Babesia* infections are most common in the Midwest and Northeast United States. It is also found in certain parts of Europe, Asia, Africa and South America.

Babesiosis is a zoonotic disease in which ticks transmit *Babesia* from a vertebrate host to humans. Humans tend to be dead end hosts. In the United States, most infections are caused by *Babesia microti*, a common species in mice.

Canine babesiosis is a cyclical disease with variable and unpredictable periods of apparent well-being and recovery from

initial infection. Clinical manifestations vary depending on the stage of the disease, age and immune status of the dog. Young animals are more affected than older animals. A tick must remain attached to a susceptible host for 2-3 days before the *Babesia* fungus can be transmitted to the host. There are three stages of canine babesiosis: acute, asymptomatic, and chronic. The acute phase is the initial infection and usually lasts only a short time. It is characterized by haemolytic anemia, enlarged lymph nodes, enlarged spleen, vomiting, lethargy, and fever. Most dogs recover after treatment.

Half of *Babesia*-infected children and a quarter of previously healthy adults are asymptomatic. When people develop symptoms, the most common are fever and haemolytic anemia, which mimic the symptoms of malaria. A symptomatic person is usually 1 to 4 weeks after being bitten or infected. She develops symptoms 1 to 9 weeks after transfusion of blood products. Infection with babesiosis causes gradual malaise and fever. Hemolytic anemia also develops, in which red blood cells are destroyed and removed from the blood. Chills, sweating, and thrombocytopenia are also common symptoms. Symptoms may last from days to months.

Less common symptoms and physical exam findings of mild-to-moderate babesiosis:

- Headache
- Muscle pain
- Anorexia
- Nonproductive cough (mucus is not coughed up)
- Arthralgias (noninflammatory joint pain, unlike arthritis, which is inflammatory)
- Nausea
- Vomiting
- Sore throat
- Abdominal pain
- Pink eye/Conjunctivitis
- Photophobia (abnormal intolerance to visual perception of light)
- Weight loss
- Emotional lability

**Correspondence to:** Elie Charabaty, Department of Medicine, University of Staten Island, New York, USA, E-mail: charabatyh@elie.edu

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- Depression
- Hyperesthesia (more sensitive to stimuli)
- Enlarged spleen
- Pharyngeal erythema
- Enlarged liver
- Jaundice (yellowing of the skin and of the sclera)
- Retinopathy with splinter hemorrhages
- Retinal infarcts
- Neutropenia

In more severe cases, malaria-like symptoms include fever up to 40.5°C (105°F), chills, and severe anemia (haemolytic anemia). Organ failure, including adult respiratory distress syndrome, may persist. Sepsis in individuals undergoing splenectomy can progress rapidly and is consistent with overwhelming post-splenectomy infections. Severe cases are also more likely in the very young, the very old, and immunocompromised people, such as those with HIV/AIDS.