Human babesiosis (Piroplasmosis)

Babesiosis occurs only **occasionally** in man (mainly cattle farmers) and the disease is often misdiagnosed as drug-resistant malaria since the drug response significantly differs from that of *Plasmodium*. Thus the incidence of Babesiosis in man is not well known. What however is known is that frequently anti-*babesia* antibodies are found in African people, indicating that they easily contract babesiosis without suffering from major symptoms of disease.

Humans become infected with *Babesia* when they **accidently intrude into a natural disease cycle**. In the eastern and mid-western U.S., the disease is known since 1966. Human cases often turn out to be caused by ***Babesia microti*** of rodents. Human infections tend to be mild and self-limiting, and most probably are never diagnosed.

Transfusion with blood or blood component from asymptomatic donors may result in human babesiosis. However, such a risk is minimal.

**Tick Vectors**  
**Transmission** of *Babesia microti* from one host to another generally takes place through **direct** **tick-host contact**

**Reservoir Hosts**  
*Plasmodium* (Malaria) and *Babesia* species are the most global intra-erythrocytic parasites that affect humans and animals. The infection occurs wherever certain hosts are parasitized by ticks. *Babesia microti*, in particular, has been recognized as the zoonotic agent infecting rodents in various regions of the world.

**Symptoms**

**Flu-like symptoms** start two to four weeks after a tick bite, and can include sweating, fever and chills, headache, fatigue, muscle pains and weight loss. They usually only become severe in persons with a **weakened immune system**, or whose spleen has been damaged or removed. The spleen is responsible for clearing out damaged blood cells, so when it is missing, these infections can progress out of control. In spleen-intact patients, **parasitaemias** may range from **1 to 20%,** however, a parasitaemic level of 85% in severe human babesiosis has been reported. [Haemolytic](http://www.icp.ucl.ac.be/~opperd/parasites/terms.htm#anchor1598015) [anaemia](http://www.icp.ucl.ac.be/~opperd/parasites/terms.htm#Anaemia) and [thrombocytopenia](http://www.icp.ucl.ac.be/~opperd/parasites/terms.htm#thrombocytopenia) have been frequently found, and **dark urine** also may be observed. Patient leukocyte counts are typically in the low to normal ranges.

**Diagnosis**

Diagnosis of human babesiosis relies upon the determination of the presence of the erythrocytic stage of the organism. Examination of Giemsa-stained thin blood smears is considered the most useful diagnostic procedure. The **tetrad forms** (Maltese-cross) of the parasite are believed to be the primary diagnostic character for the disease.

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| http://www.icp.ucl.ac.be/~opperd/parasites/images/bab_canis2.jpg | *Tetrad and binary forms of Babesia in erythrocytes* |

However, the predominant forms in most of the blood smears closely resemble rings of *Plasmodium* spp., with small to large cytoplasmic vacuoles. Therefore, it is difficult to differentiate *Babesia microti* from *Plasmodium* spp., especially *Plasmodium falciparum*. It is recommended that diagnosis of clinical case of human babesiosis be made by a combination of criteria including the presence of **intense parasitemias** (1-50%), erythrocytes infected by **multiple basket-shaped parasites**, and the presence of **extracellular merozoites**. In addition, *Babesia microti* infection in humans appears to trigger يثير humoral immune responses. An **indirect immunofluorescent antibody assay (IFA)** procedure has been widely used in the diagnosis of clinical cases and in prevalence determination of the infection in human populations.

**PCR** has proven to facilitate the diagnosis of zoonotic *babesia* infections. By using genus- and species-specific primers.

**Treatment**

Most patients infected with *Babesia microti* appear to experience only mild clinical manifestations; therefore, they normally require no specific treatment. If treatment is required, both **pentamidine and berenil therapies** can effectively control the parasitemia, but fail to eliminate the parasites completely. Currently, administration of **quinine combined with clindamycin** is the treatment of choice for human babesiosis. The parasitemia is consistently eradicated after the administration of the drugs and there is no recurrance of the *babesia* infection after the discontinuation of the treatment.

**Prevention**  
It is important to **control rodents** around human habitation and to use **tick repellents**. It is helpful to wear **light colored clothing** and to **tuck pants into socks** when walking through tick-infested areas.