

# Human Babesiosis: An Emerging Human Zoonosis

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## Introduction

Babesiosis, caused by infection with intraerythrocytic parasites of the genus *Babesia*, is one of the most common infections of free-living animals worldwide, and it is gaining attention as an emerging human zoonosis. It is also a vector-borne disease with major public health implications. Three *Babesia* species, *B. divergens*, *B. microti*, and *B. venatorum*, are primarily responsible for zoonotic babesiosis in many parts of the world. *Babesia divergens* originated from bovines. Ticks of the genus *Ixodes* are the primary vectors of babesiosis, and their geographical distribution determines the prevalence of the pathogens involved. Worryingly, the geographical range of *Ixodes* ticks is expanding as a result of climate change. *Ixodes* ticks are also vector of *Borrelia burgdorferi*. the main vector species of *Ixodes* are *I. ricinus*, *I. scapularis*, and *I. persulcatus*. Babesiosis is transmitted to humans through infected tick bites, but it can also be transmitted through blood transfusion and transplacental transfer from mothers. Human babesiosis symptoms include headache, fatigue, loss of appetite, fever, chills, nausea, and shortness of breath, with the elderly at a higher risk of severe symptoms like hepatomegaly, kidney failure, hemolytic anaemia, splenomegaly, and splenic complications, which can lead to death. Blood smear examination is commonly practiced for diagnosis.

Asia as a region is currently undergoing extensive human modification of natural habitats, threatening its biodiversity. The destruction of Asia's habitats increases the risk of zoonotic disease spread, benefiting known reservoirs of zoonotic diseases, particularly rodents, which are more adaptable and resistant to habitat change. The impact of zoonotic transmission of babesiosis in Asia



is being worsened by a lack of molecular diagnostic techniques and clinical diagnostic expertise, insufficient medical awareness, and low capacity to detect the pathogens responsible. Human babesiosis is an underrepresented disease in Asia due to its low incidence, and its occurrence has not been thoroughly investigated in this region. Nonetheless, it is known that specific *Babesia* species are to blame for the spread of babesiosis throughout Asia. It has also been reported that in Asia, rodents and their associated ticks serve as major reservoirs of *Babesia* spp., including *B. microti*. *Babesia microti* was also reported in wild animal populations in Thailand and Japan, with evidence of human case reports also found in Singapore, Mongolia and India There is a lack of information on the current status of zoonotic babesiosis in Asia in terms of species distribution, reservoir diversity, intensity, and prevalence.

Human babesiosis has also been reported in India, though only in one case of a man in the Baroda (Gujarat) region, where the genus *Babesia* was identified through microscopy. A 51-year-old man presented to a private hospital with fever, loss of appetite, and vomiting, and *Babesia* was identified morphologically from smears taken after antibiotics failed to treat his symptoms. Plasmodia antigen testing was negative, indicating that the patient was not infected with malaria. Malaria is prevalent in many parts of India, and the intraerythrocytic parasites are commonly referred to as plasmodia. Only a careful examination of peripheral blood smears can distinguish *Babesia* from malarial parasites. To determine the true prevalence of human babesiosis in India, extensive peripheral smear examination and serological surveys may be required. People may get sick from the *Babesia* infection and may show flu-like symptoms, such as fever, chills, headache or body aches, a low red blood cell count (anaemia). Some people are more likely to develop severe illness, including: elderly people, people with other illnesses, individuals without a spleen

Preventive measures should be taken by the person who involve in animal rearing and taking animals to feed on dense pasture where ticks might be found. Preventive measures are especially important for people who are at high risk of developing severe babesiosis like, people who do not have a spleen. The best defense is to limit your exposure to tick habitats. Other things should be taken care for prevention from Babesiosis are like walk on cleared trails, avoid areas with overgrown grasses or brush. Wear long pants, long-sleeved shirts, and socks when outdoors. Tuck the pant legs into the socks. Apply tick repellents to skin and clothing etc.

