

Human babesiosis: an emerging tick-borne disease

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Human babesiosis is a worldwide tick-borne zoonosis caused by hemoparasites of the protozoan genus *Babesia* (phylum Apicomplexa, order Piroplasmorida) that are transmitted via the bite of an infected ticks of the *Ixodes ricinus-persulcatus* 'complex', or less commonly through blood transfusion or transplacentally. Of the more than 110 number of *Babesia* species that infect wild and domestic animals, only a few are known to cause disease in humans, including *B. microti*, *B. microti*-like organisms, *B. duncani* (WA1), *B. duncani*-type organisms, *B. divergens*, *B. divergens*-like organisms, *B. venatorum* (formerly called *Babesia* EU1) and *B. crassa*-like. Emerging infections are defined as those which incidence has increased within the past two decades or threatens to increase in the near future, and the majority (about 60%) of emerging infections in humans are zoonosis. Human cases of infection with *Babesia* spp. are increasing in both incidence and geographic range. In North America, most cases of human babesiosis are caused by *Babesia microti* in the Northeast and the upper Midwest. A small number of cases caused by *B. duncani* and *B. duncani*-type organisms have been reported along the Pacific Coast. Sporadic cases of human infection with *B. divergens*-like organisms have been documented in Kentucky, Missouri and Washington State. In Europe, however, the majority of described cases have been due to *B. divergens* and only few have been caused by *B. venatorum*. However, more recently *B. microti* has been recognized as an increasingly important cause of human babesiosis in Belgium, Germany, Poland, Spain, Sweden and Switzerland. Human infections with *Babesia* have been reported from Asia, Africa, Australia and South America. In some endemic regions of the northern hemisphere, the incidence of human infections with *Babesia* parasites has increased dramatically in the last decade, from 4–20-fold and poses a serious health threat in highly endemic areas. The disease may be severe or fatal, particularly in neonates and patients who are otherwise healthy but older than 50 years of age, and in patients who are immunocompromised regardless of age, especially among patients who have undergone splenectomy.

The aim of this review is to summarize the current knowledge on human babesiosis, with a special focus on the situation in Poland, as well as to describe its ecology, epidemiology and potential impact on public health, especially in relation to blood transfusion safety.