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HUMAN BABESIOSIS IN EUROPE

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Human babesiosis in Europe came to medical attention in 1957 and until now 19 cases have been reported, most of them due to Babesia divergens. *The onset of the disease is characterized by hemoglobinuria, high fever and renal failure ensue rapidly. The patients were generally asplenic and resident in a rural area. Intraerythrocytic pleomorphic parasites (1-3 µm) observed in stained thin blood smears are essential for Genus diagnosis. Parasitemia varyed from 5 to 80% of red blood cells. Massive blood exchange transfusion (2-3 blood volumes) followed by intravenous clindamycine (3-4 times daily) and oral quinine (600 mg base, 3 times daily) were successfully used in the treatment of three recent cases. Splenectomised individuals should be aware for prevention.*

Key word: human babesiosis – *Babesia divergens* – epidemiology – treatment

Babesiosis is a hemoprotozoan disease transmitted by tick bite to a wide variety of wild and domestic animals such as cattle, horses, dogs and rodents. The tick bite transmission from infected animals to humans has been clearly established and babesiosis should now be considered as a zoonosis. Three species of *Babesia* can infect human: *B. microti* which usually infects rodents, *B. divergens* and *B. bovis* which usually infect cattle.

Although babesiosis is frequent in animals, human cases are rarely reported. Nevertheless, more than 200 *B. microti* cases have been observed in USA and a total of 19 babesia infections have been observed in Europe. France and British Isles account for more than 50% of this total. This clustering may represent that of medical attention. These infections generally involved the common cattle pathogen *B. divergens* (14 of the 19 cases) transmitted by *Ixodes ricinus*. The risk appears to be greatest in bovine breeding areas, where cattle are numerous as in western part of France or Ireland. Human babesiosis has a seasonal distribution occurring from May to October corresponding to the period of the ticks activity. Residents of rural areas such as farmers or foresters and also campers or hikers are exposed to infection. No case associated with blood transfusion has, up to now, been reported in Europe, but it may be likely because parasite ability to survive in packed erythrocytes stored at 4°c for several weeks.

Splenectomized individuals are considered as the highest risk group for *B. divergens* infection. Thus, 16 of the 19 patients (84%) and all of thoses infected by *B. divergens* were splenectomized. Splenectomy had been performed since various time and for different reasons, such as traffic injuries, leukemia, hodgkin disease or immune thrombocytopenia. The risk is not rare, since more than 8000 individuals are splenectomized each year in France. *B. divergens* babesiosis has not yet been observed in AIDS patients.

The onset of the human *B. divergens* babesiosis appears suddenly following an incubation period estimated as 1-3 weeks. Clinical manifestations are characterized by an important intravascular hemolysis with hemoglobinuria, jaundice, a persistent non periodic fever (40-41°) with shaking chills, intense sweat, headaches, myalgia, lumbar and abdominal pain. In severe cases, patients rapidly developed a renal failure (16 of the 19 cases) frequently associated with a pulmonary oedema. Hemoglobin level generally falls to 80 or 70 g/l, sometimes less than 40 g/l, despite blood transfusions.

Diagnosis is based on the presence of intraerythrocytic 1-3 µm parasites in giemsa stained thin blood smears. In human erythrocytes, *B. divergens* is usually located in a central or subcentral position and appears as a ring

form, paired or tetrad forms. Parasitemia is variable (1 to 80%) and polyparasitism is frequent. In human erythrocytes, *B. divergens* does not appear in its typical peripheral position as in bovine erythrocytes and morphological identification of the species is difficult to establish. Thus, the species may be identified on epidemiological data, serological tests and inoculation in animals: gerbils (*Meriones unguiculatus*) or splenectomized calves.

Subclinical babesiosis has exclusively been observed in non splenectomized subjects and can be detected using serological tests. *B. divergens* infection may coexist with lyme disease as it was previously documented in USA with *B. microti*. In Germany, subclinical *B. microti* infections have been reported in two foresters (Krampitz et al., 1986) and one case of unidentified *Babesia* was observed in Spain (Woessner et al., 1984).

In Europe all cases of human babesiosis should be considered as medical emergencies. In addition to supportive treatment, patients should be promptly given a specific therapy to reduce parasitemia and to avoid the development of hemolysis and consequently a renal failure. The efficacy of chloroquine, quinine alone, pentamidine, pyrimethamine have not been previously demonstrated and 63% of patients treated for *B. divergens* babesiosis until 1987 died 4 to 7 days following the outcome of hemoglubinuria. In the other hand, the drugs successfully used to treat babesiosis in domestic animals, such as imidocarb, are not allowed for human therapy.

Gorenflot et al. (1987) described a therapeutic regimen consisting of a massive blood exchange transfusion (2-3 blood volumes) followed by intravenous clindamycin (600 mg, 3-4 times a day) and oral quinine (600 mg base, three times a day). This procedure was successfully used in 3 recent cases. In a recent french case (Gorenflot et al., 1990), exchange transfusion reduced parasitemia from 35 to 3% in few hours resulting in a dramatic improvement and clindamycin plus quinine reduced parasitemia to 0.1% in 2 days. Parasites were cleared from the blood in 11 days without any relapse. However exchange transfusion should be performed as soon as possible because of the rapid increase of parasitemia which correlate with intravascular hemolysis.

Splenectomized people should be aware of the risk of *B. divergens* infection. The inoculation of parasites occurs at least 48 hours after the infected tick was fixed on the skin. Thus, a rapid remove of the ticks is required to prevent the transmission of the disease. The survey of this zoonosis appears necessary for the future.

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