Molecular identification of *Babesia* spp isolated from Polish cattle with asymptomatic protozoa infections

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Abstract

The aim of the paper was to study the epizootic situation of babesiosis in the cattle population in eastern Poland and possibly to determine what species of protozoa infects Polish cattle. Blood samples for molecular analysis (real time PCR) were collected from 192 dairy cows from various farms located in eastern Poland. The infection was detected in 10.4% of the samples. All animals were infected with *Babesia occultans* which sequence of the 18S RNA gene fragment showed a 93.1% homology with the sequence of *B. occultans* EU 376017. This is the first report about the detection of *B. occultans* DNA in asymptomatic cattle in eastern Poland.

Key words: babesiosis, cattle, sequencing

Introduction

Bovine babesiosis is a tick-borne disease. Its etiologic agents are intraerythrocytary protozoa belonging to the genus *Babesia*, family *Babesidae*, order *Piroplasmida*, phylum *Apicomplexa* (Vial and Gorenflo 2006). In the body of the animals, the protozoa proliferate in the host’s red blood cells, causing their destruction. If untreated, the disease often leads to death of the infected animal. Two groups of *Babesia* parasites capable of infecting cattle can be distinguished: large *Babesia* (*B. bigemina, B. major, B. occultans, B. ovata, B. jakimovi*), whose merozoites are longer than cattle erythrocyte radius, and small *Babesia* (*B. bovis, B. divergens*), with merozoites are smaller than the erythrocyte radius (Chauvin et al. 2009, Cao et al. 2012). The greatest pathogenicity in cattle is observed for three species: *B. bovis*, *B. bigemina* and *B. divergens*. Their range depends on the presence of their vector – ticks belonging to the *Ixodidae* family (Gohil et al. 2013). The protozoan species with lesser pathogenicity include e.g. *B. major* and *B. occultans* (Decaro et al. 2013).

Cattle babesiosis occurs mainly in areas with a tropical or subtropical climate, there are relatively few reports of cases of this disease in Europe (Hornok et al. 2006, Cassini et al. 2012, Ionita et al. 2013). Until now, no cases of babesiosis in this animal species have been reported in Poland. There are also no reports about the presence of the etiologic agent in ticks collected on the territory of Poland.

The study was aimed at evaluating the epizootic situation of babesiosis in the selected bovine herds in eastern Poland and possibly determining what species of protozoa infects Polish cattle.