

Occurrence of *Babesia* species in symptomatic dogs and co-infection with *Hepatozoon canis* in eastern Romania

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AIM. The study was aimed at investigating the occurrence of *Babesia* species and the co-infection with *Hepatozoon canis* in dogs suspected of babesiosis and in their ticks in Iasi, eastern Romania.

MATERIALS AND METHODS. Blood samples were collected from 90 owned dogs at the Clinics of the Faculty of Veterinary Medicine of Iasi (Romania), showing clinical signs specific for babesiosis (Fig.1). All the dogs tested positive for the babesial parasites using stained blood smears (Fig. 2). Species, stage, and sex of all the ticks (No. = 31) collected from the coat of the dogs (No. = 15) were determined under a stereomicroscope. Additionally, 69 ticks collected from the coat of other dogs previously diagnosed with babesiosis by stained blood smears, were included in the study. All the blood and tick samples were screened for identification of *Babesia* species and *H. canis* using a PCR protocol described by Bajer et al. (1) with some modifications.

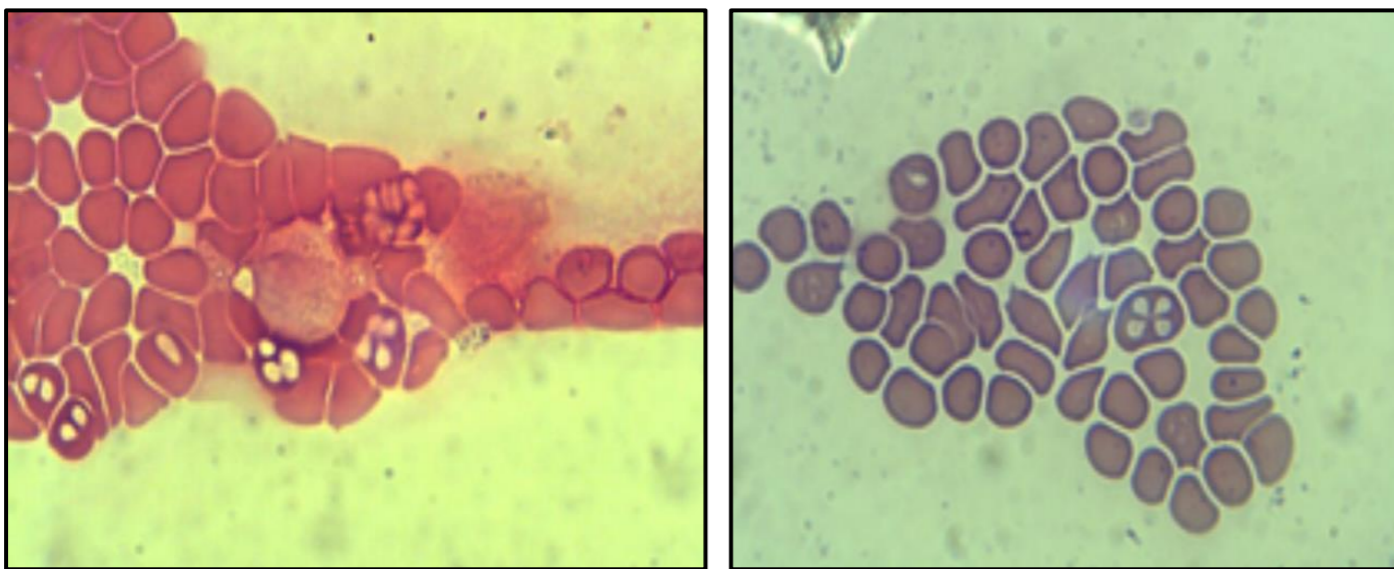


Figure 2. Giemsa- stained blood smears of infected dogs showing the pear-shaped large *Babesia canis* inside the erythrocytes.

RESULTS AND CONCLUSIONS. Prevalence values were higher in dogs between 1-3 years (27%; 95% confidence interval, CI= 18.1-37.2) and in males (63%; 95%CI= 52.5-73.1); the most frequently affected breeds were crossbreed (27%; 95%CI= 18.1-37.2), followed by Peking dogs (9.8%; 95%CI= 5-18.6) and German Sheperd (6.9%; 95%CI= 2.7-14.5). Three *Babesia* species were found in dogs: *B. canis* (94.4%; 95%CI= 86.9-97.9), *B. vogeli* (3.4%; 95%CI= 0.9-10.1) and *B. rossi* (2.2%; 95%CI= 0.4-8.6). All the dogs resulted negative for *H. canis*. The 100 ticks examined (32% males; 65% females; 97 adults, two nymphs and one larva) were identified as follow: *Ixodes ricinus* (64%; 95%CI= 53.7-73.2) (Fig. 3) *Dermacentor reticulatus* (33%; 95%CI= 24.1-43.2) (Fig. 4) and *Rhipicephalus sanguineus* group (3%; 95%CI= 0.8-9.1). *B. canis canis* (83.7%; 95%CI= 75.0-90.3), *Babesia canis vogeli* (13.5%; 95%CI= 7.4-21.6) and *B. microti* (2.7%; 95%CI= 0.8-9.1) were found in ticks. In addition, 15 ticks (i.e. nine *D. reticulatus* and six *I. ricinus*) were positive for *H. canis*, six were co-infected with *B. canis canis* and one with *B. microti*. The study provided the first identification of *B. rossi* in two symptomatic dogs from Romania. Therefore, the genetic characterization of *Babesia* species, could be helpful for practitioners to select appropriate testing, treatments and for understanding risks for infection.

References. 1. Bajer et al., 2019, Comparison of the detection efficiency of haemoparasite DNA in blood and faecal samples - the way to eco-epidemiological studies Ann Agric Environ Med. 26:538-543; 2. Estrada- Peña et al., 2004, Ticks of domestic animals in the Mediterranean region. Zaragoza: Universidad de Zaragoza.

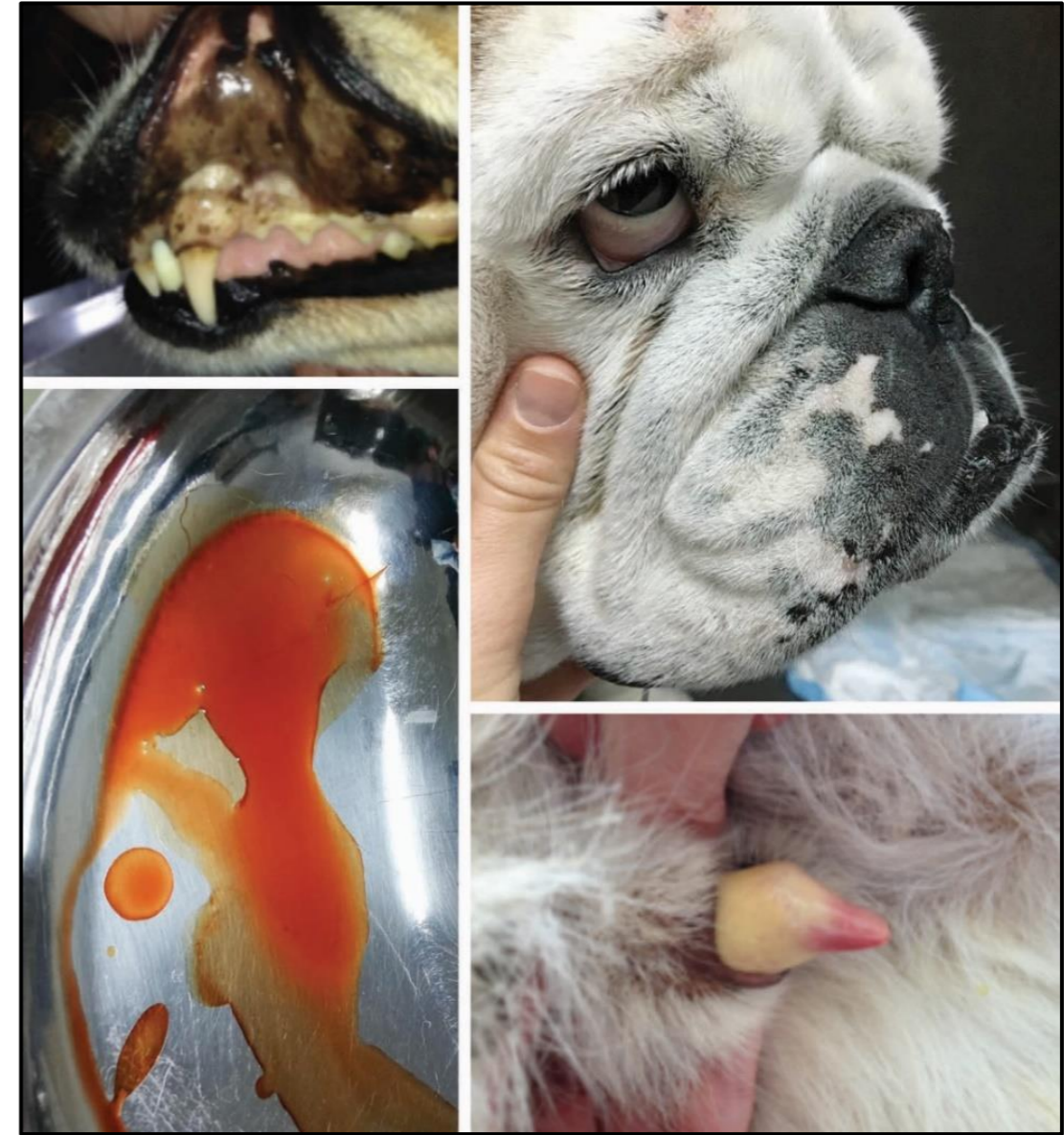


Figure 1. Dogs infected with *Babesia* spp. presenting, anorexia, severe anemia, icterus and haemoglobinuria.

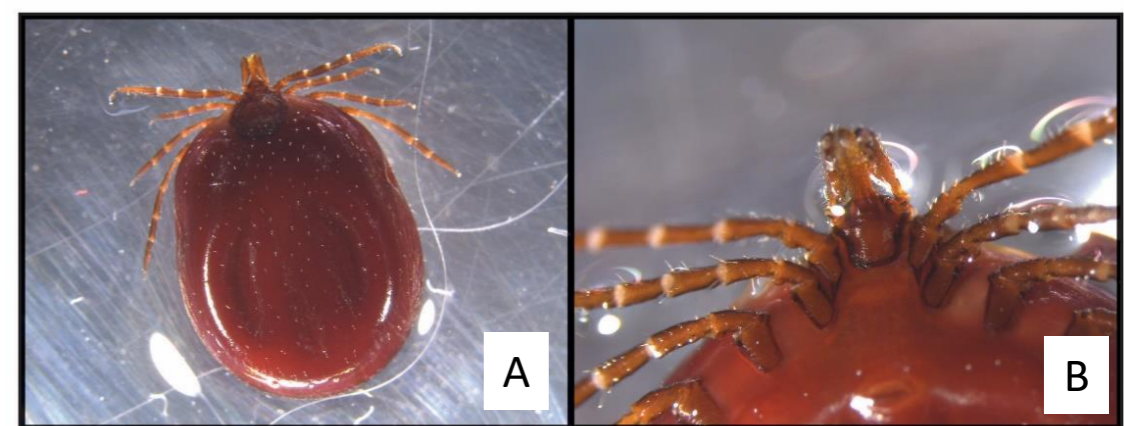


Figure 3. Semi-engorged female of *Ixodes ricinus*: A) dorsal view, note the palps and hypostome long (longer than width of basis); B) ventral view; note the internal spur longer than the external spur (2).

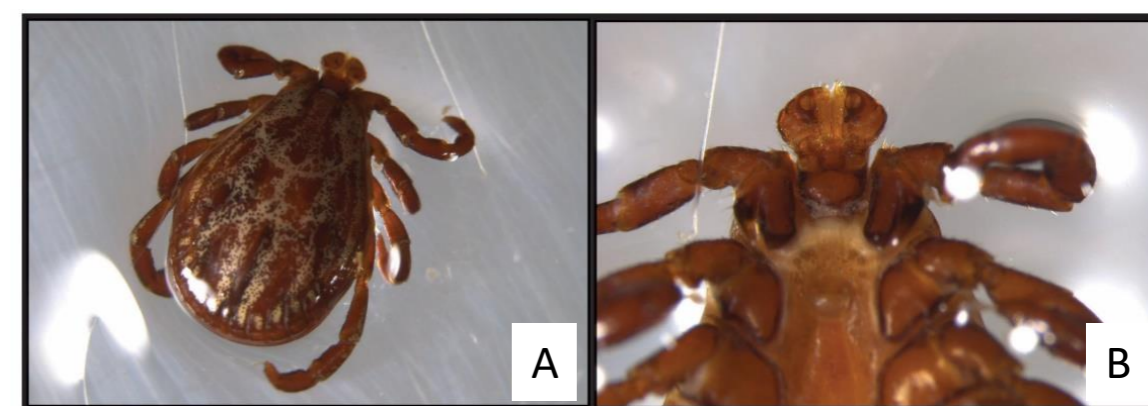


Figure 4. Male of *Dermacentor reticulatus*: A) dorsal view with white enamel ornamentation, note the presence of the posterior palpal spur of both palp articles; B) ventral view; note that coxae 1 gap between external and internal spurs is narrow (also the external spur is as long as the internal spur) (2).