

Fatal babesiosis in a dog imported into Canada

Andrew R. Vince

The body of a 10-week-old mixed-breed puppy was received at the Animal Health Laboratory for postmortem examination after dying unexpectedly during importation to Canada from the Dominican Republic. Grossly, there was mild generalized icterus of mucous membranes and soft tissues. The spleen was enlarged and fleshy (rather than congested) on cut section. The liver was generally pale, both renal cortices were dark red-grey, and the urinary bladder contained moderate quantities of red-tinged urine. A tentative gross diagnosis of hemolytic anemia was made. Histologically, there was diffuse interstitial pneumonia with capillary thrombi, and most intravascular erythrocytes contained small (1-2 μm) round-to-pyriiform, faintly-basophilic Giemsa-positive, PAS-negative organisms suspicious for *Babesia* spp. (Fig. 1). There were lesions of acute hypoxic injury in the liver and kidney, and some renal tubular epithelium contained hemoglobin-like pigment globules. Fresh-frozen lung was submitted to the Vector-Borne Disease Lab at North Carolina State University for PCR panel assessment for *Babesia*, *Anaplasma*, *Bartonella*, *Ehrlichia*, *Rickettsia*, and hemotropic *Mycoplasma* spp. **DNA consistent with *Babesia canis vogeli* was identified within lung, and a final diagnosis of acute *Babesia*-associated hemolysis was made.**

Babesia spp. are hemoprotozoan parasites transmitted by ticks within the US and South America, particularly the tick *Ixodes scapularis*. Internationally, these are of great economic concern, particularly their impact on animal health and productivity. Dogs have been reportedly infected with *B. vogeli*, *B. conradae*, *B. gibsoni*, *B. vitali*, *B. rossi*, *B. canis*, and an unspciated *Babesia* species. In dogs, clinical babesiosis varies from mild to severe forms, manifesting as hemolysis and secondary systemic hypoxic and inflammatory organ injury, organ dysfunction, shock, and death. The prognosis of clinically ill dogs infected with *Babesia canis* may be negatively predicted by hyperlactatemia, leukopenia, hyperphosphatemia, hypertriglyceridemia, and hypoproteinemia, hypoglycemia, increased serum cortisol, and clinically com-

promised circulation/consumptive coagulopathy.

Trends indicate that importation of domestic dogs to Canada from overseas is becoming more common, although this is not well-tracked and reliable statistics are not available. This pattern of importation provides a greater risk of infectious diseases being imported along with them, and because many of these pathogens depend on environments or vectors not seen in Canada, recognition is often delayed. **Moreover, because of the presence of competent tick vectors in Ontario, the importation of dogs with babesiosis provides a risk to other dogs, further to the risk of borreliosis.** Hemotropic parasites such as *Babesia*, *Anaplasma*, *Mycoplasma*, *Bartonella*, *Ehrlichia*, and *Rickettsia* spp. should be considered as differential diagnoses in imported dogs, and blood testing (including review of blood smears) prior to importation of dogs from endemic areas is recommended to avoid undue loss of life and to reduce the risk of establishing infection within Canadian tick populations. AHL

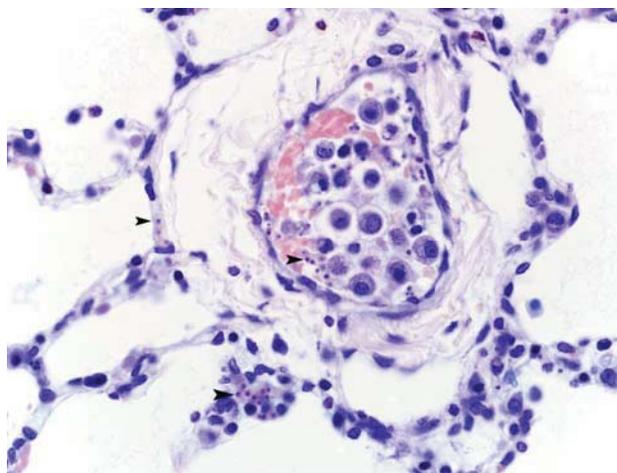


Figure 1. Lung, 600x magnification, Giemsa stain. Hypochromatic erythrocytes in blood vessels contain Giemsa-positive, roughly round, 1-2 μm diameter *Babesia* organisms, often in pairs (arrowheads).

An update on PCR testing for dogs

Davor Ojkic

The AHL has been increasing the number of real-time PCR tests designed for detection of viruses affecting dogs. In addition to single-target tests for detection of *Canine parvovirus 2* and *Canine distemper virus*, we have developed and validated a **triplex real-time PCR test for detection of *Canid herpesvirus 1*, *Canine adenovirus 2*, and *Canine parainfluenza virus*.**

Although influenza A viruses have not been detected in dogs in Canada, the risk of influenza cannot be underestimated – for rapid detection of influenza A viruses we also offer an **influenza A virus PCR**. All tests are run daily and typical turnaround time is the next business day. AHL