Babesia gibsoni

Information for veterinarians

The exotic red blood cell parasite *Babesia gibsoni*, which is an unwanted and notifiable organism in New Zealand, has recently been detected in a dog in the Canterbury region. This information sheet provides vets with important information about *B. gibsoni*, although we encourage you to undertake appropriate professional development in this area to obtain a fuller understanding of this disease.

What is *Babesia gibsoni*?

Babesia gibsoni is a protozoal parasite that causes the rupture of red blood cells in dogs. *B. gibsoni* is widespread around the rest of the world, including Australia. While most infections with *B. gibsoni* are mild or subclinical, some can be severe.

How is it spread?

Babesia gibsoni is a tick-borne parasite, and the endemic New Zealand cattle tick (*Haemophysalis longicornis*) is capable of transmitting it between dogs. *Babesia gibsoni* exists in areas where ticks are very rare, suggesting dog bites are a significant transmission pathway. Spread between dogs during normal dog play has been recorded. Blood transfusions, iatrogenic spread and transplacental infection are also important risks for transmission.

What disease does *B. gibsoni* cause?

Many dogs remain subclinically infected and do not develop disease. However, when disease does occur due to *B. gibsoni*, it is referred to as Babesiosis. Babesiosis in dogs may also be caused by other *Babesia spp.*, such as *B. canis*, *B. vogeli*, and *B. rossi*, all of which are exotic to New Zealand. *Babesia gibsoni* is considered less pathogenic than *B. canis*, and disease is often chronic and mild, but can be acute and severe in some cases. Chronic Babesiosis often presents as intermittent fever, lethargy and weight loss. Acute Babesiosis is characterised by fever, lethargy, haemolytic anaemia and marked thrombocytopaenia. Clinical signs and some laboratory tests may help to identify possible cases of Babesiosis and are covered in more detail below.

Subclinical and recovered dogs often reach a balance where their immune system suppresses the parasite, preventing disease, but does not eliminate it. This means they may still spread the parasite, and may develop disease in times of immune suppression, such as concurrent disease or stress.

How did *B. gibsoni* get into New Zealand and is it widespread?

Biosecurity New Zealand has robust measures in place to prevent *B. gibsoni* coming into New Zealand. All imported dogs must comply with import health standards (IHS) requirements, including veterinary inspections and treatments for external parasites, and serological or molecular testing for *Babesia spp.* parasites. In the Canterbury case, the infected dog has not been imported and there is no clear link to overseas. However, it did have close contact with other dogs in the Canterbury region, as well as being exercised in areas where ticks are known to occur. We do not currently know how this dog became infected or how widespread *B. gibsoni* is in the dog population, and we are working rapidly to try to establish this.

To help our investigation we are asking vets to consider *B. gibsoni* as a possible cause in cases of anaemia and thrombocytopenia in your canine patients, particularly in the Canterbury area, and notify us of any suspected case via the exotic pest and disease hotline, **0800 80 99 66**.

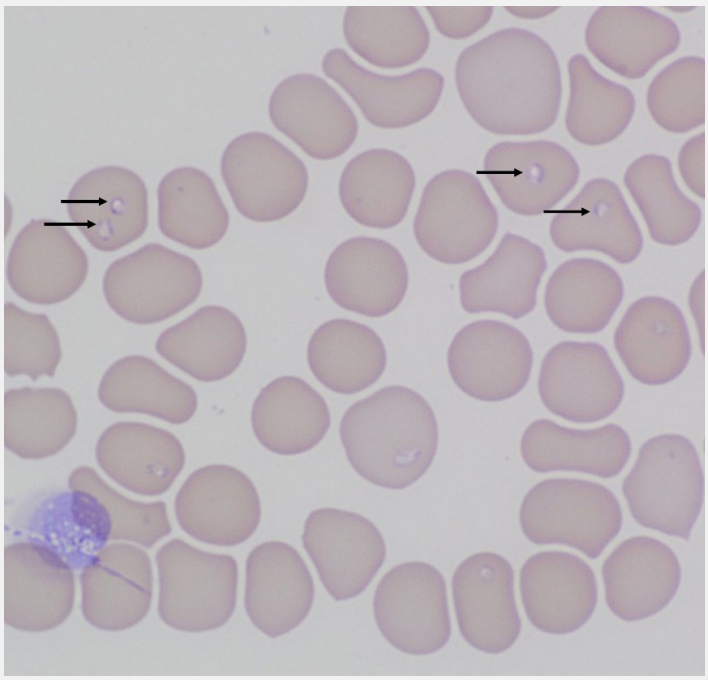

Figure 1: *Babesia gibsoni* organisms (arrows) forming teardrop-shaped clearings within erythrocytes (red blood cells) in the blood smear from the infected dog. Anisocytosis and polychromasia are also present, indicating a regenerative anaemia. Courtesy of Karen Bailey, Awanui Laboratories.

What clinical signs are seen with Babesiosis?

When present, a wide range of clinical signs can occur with Babesiosis depending on the level of the parasitaemia and the dog's immune response.

The most severe disease is generally seen in young (<2y/o) dogs and immunocompromised dogs. Clinical signs can range from mild to severe and may include fever, anorexia, depression, pale mucous membranes, lethargy, tachycardia, tachypnoea, vomiting, enlarged lymph nodes and splenomegaly. Organ failure and death may occur in severe cases.

Some endemic disease may present similarly to Babesiosis, such as primary IMHA, and/or ITP (Evans disease), haemangiosarcoma, oxidative toxicities, bacterial endocarditis, and rat bait toxicity.

How are *B. gibsoni* infections diagnosed?

Although there are many endemic causes, anaemia and thrombocytopenia may be suggestive of Babesiosis. The parasite may also be seen on a blood smear, although this has a low sensitivity, particularly in subclinical or recovered dogs. Specific testing for Babesia infection can currently only be done by submitting blood samples to Biosecurity New Zealand's exotic disease lab, the Animal Health Laboratory. This can only be done in consultation with an incursion investigator – if you suspect Babesia infection please phone the exotic pest and disease hotline on 0800 80 99 66 to discuss the case.

What species are affected by *B. gibsoni*?

Dogs are by far the most affected species, with Pit Bull Terriers, Staffordshire Bull Terriers and Greyhounds the most commonly affected breeds. Only dogs are considered important in the epidemiology and spread of *B. gibsoni*.

How is it treated?

There are several approaches to treatment, however all treatments only reduce the parasitaemia and limit the severity of the clinical signs, and do not completely eliminate the parasite. This means dogs may remain carriers once infected.

There are different therapeutic options reported in the literature. Common drugs used for treatment overseas include Diminazene Aceturate, Atovaquone, though clinical success rate can be variable using these and they are not readily available in New Zealand. Combination therapy using antibiotics such as doxycycline, clindamycin and enrofloxacin, or doxycycline, clindamycin, and metronidazole, have been reported to have clinical success rates up to 87% in clinical cases of babesiosis. Doxycycline, metronidazole, clindamycin, and enrofloxacin are all available as registered veterinary medicines in New Zealand. Supportive care based on the clinical picture is vital and may include fluid therapy or a blood transfusion.

Prevention of transmission is based around good tick control and avoiding situations where dogs may exchange blood, such as fighting.

What is Biosecurity New Zealand doing about this?

Our investigation is focused on how the dog in Canterbury became infected and understanding if there are any other cases in the country.

We are working with the owners of the affected dog and of other dogs it has been in contact with, to identify possible pathways.

We are asking vets to help our investigation by contacting us if you have any suspected cases of *Babesia gibsoni* via the exotic pest and disease hotline on **0800 80 99 66** to speak with an incursion investigator.