Awanui Veterinary

Pathology in focus

May 2024

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Exotic visitors

Sunao Fujita

Clinical history

An 18-month-old, spayed, American Staffordshire Terrier recently presented at the veterinarian for lethargy and inappetence. Pale mucous membranes and pyrexia (39.9°C) were observed on physical examination. In-house CBC and chemistry revealed marked anaemia and mild hyperbilirubinemia, respectively. An EDTA sample was sent to Awanui Veterinary for a full CBC including blood film examination.

Laboratory findings:

Moderately severe anaemia (HCT 22%, reference 37-55%) with mild regenerative response (reticulocytes 103 x 10^9/L) and mild neutrophilia (13.1 x 10^9/L, reference 3.6-11.5 x 10^9/L) were confirmed. Coombs test was negative with no agglutination on the blood films, suggesting IMHA was unlikely. Platelet counts appeared adequate on the blood films. Moderate numbers of small (1-3 µm) ring-like structures with a thin blue cell membrane, pale cytoplasm and eccentric dot like nucleus were seen in the RBC's, resembling *Babesia* piroplasm (small form) (Figure 1).

This case was reported to MPI since *Babesia* species are exotic and notifiable blood parasites in New Zealand. The EDTA sample was sent to Animal Health Laboratory, Wallaceville and *Babesia gibsoni* was identified on the molecular testing.

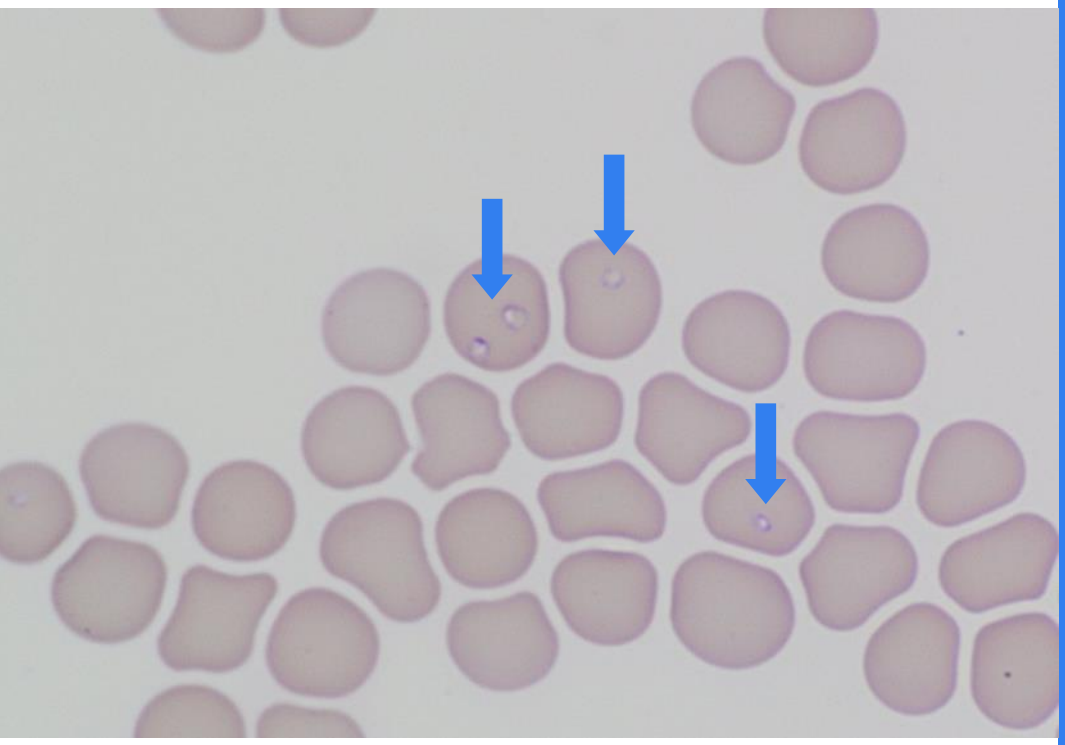

Figure 1: Babesia gibsoni piroplasms within RBCs from the dog (arrow). B. gibsoni piroplasm is a small form Babesia (1-3 µm) with a thin blue cell membrane, pale cytoplasm, and eccentric dot like nucleus.

Discussion

This Babesiosis case was recently diagnosed in Canterbury. *Babesia gibsoni* is a haemotropic protozoa that can cause RBC rupture in dogs. *B. gibsoni* is one of the small forms of *Babesia* spp. and is widespread around the rest of the world, including Australia[1]. Babesiosis in dogs can be caused by other *Babesia* spp., including large form Babesia – *B. canis, B. vogeli* and *B. rossi*, and small form *Babesia* – *B. conradae* and *B. vulpes*, all of which are exotic protozoal to New Zealand[2].

B. gibsoni can be transmitted to dogs via ticks that carry infectious sporozoites in saliva. *Haemophysalis longicornis* (New Zealand cattle tick) is an endemic tick in New Zealand and is a known tick vector of *B. gibsoni* in Australia[1]. *Rhipicephalus sanguineus* (brown dog tick) is also a vector of *Babesia* spp. and is widespread around the world, including Australia but is not established in New Zealand[3]. Direct transmission is possible through *B. gibsoni* infected blood, such as blood transfusion, contaminated surgical instruments, and repeated use of the same needle. Direct transmission can also occur from bite wounds. Transplacental transmission has also been reported[1].

Babesiosis caused by *B. gibsoni* is often mild and mostly subclinical, which makes detection of potential carriers difficult. Clinical signs vary depending on the immune response of the infected dogs. The most severe clinical outcomes (multiorgan failure and death) are typically seen in puppies and young dogs (<2 years of age)[1]. Chronic Babesiosis is manifested by intermittent fever, lethargy, and weight loss, and parasitaemia can persist for years. Acute Babesiosis can present with fever, lethargy, haemolytic anaemia, and marked thrombocytopaenia.

Regenerative haemolytic anaemia and thrombocytopaenia are the most common abnormalities seen on routine blood tests.

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The anaemia is caused by mechanical damage to RBCs due to piroplasm migration out of the RBCs, intravascular haemolysis, and immune- or non-immune mediated destruction of RBCs. The mechanism of thrombocytopaenia has not been fully elucidated[1].

In clinical veterinary practice, the most commonly used diagnostic method is microscopic detection of *Babesia* piroplasm on blood films. The blood film examination is easy to perform, faster than other laboratory tests (e.g. molecular and serology tests), and is economical. For detection of *B. gibsoni* piroplasms, a blood film made from a fresh blood sample is preferred, since degeneration of piroplasms can occur in stored blood. Therefore, submission of an EDTA sample with a fresh blood film (made in-clinic) is recommended when requesting haematologic examination at reference laboratories.

Unfortunately, automated haematology analysers are not helpful for detection of blood parasites, including *Babesia* spp. Thus, routine blood film examination is essential, particularly in cases where haematologic abnormalities are detected by automated haematology analysers.

No treatment providing complete elimination of *B. gibsoni* piroplasm has been reported, however the currently available treatment options may be helpful for improvement of clinical signs. Infected dogs frequently have disease recurrences even though they appear clinically normal and parasitaemia is no longer confirmed after treatment[1]. Thus, dogs recovering from an acute phase can become potential carriers of *B. gibsoni.*

For successful transmission of *B. gibsoni* to dogs, the ticks must suck into the skin for at least 48-72 hours[1]. Therefore, the use of repellent drugs for ticks is important for prevention of Babesiosis. Once attached ticks are found, the ticks should be removed as soon as possible. Also, situations in which dog bites/fights could occur should be avoided.

References

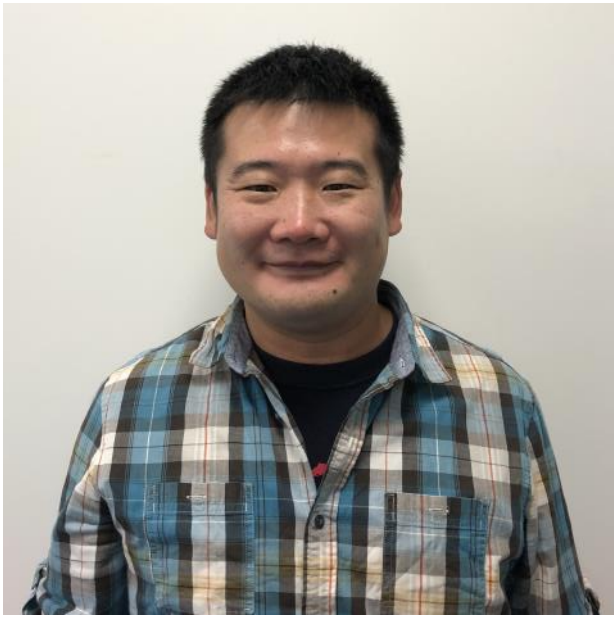
1. Karasova M, et. al. The Etiology, Incidence, Pathogenesis, Diagnostics, and Treatment of Canine Babesiosis Caused by *Babesia gibsoni* infection. *Animals* 12(6):739, 2022.
2. Biosecurity New Zealand Ministry for Primary Industries. "*Babesia gibsoni* Information for veterinarians" April 2024.
3. Biosecurity New Zealand Ministry for Primary Industries. "Brown Dog Tick Information for Veterinarians" September 2023.

If you have any suspected cases of *B. gibsoni* (or other exotic diseases), please call the Biosecurity NZ Exotic Pest and Disease hotline on 0800 80 99 66.

Pathologist spotlight

Since we started the ball rolling with two newcomers last month, we will continue to highlight at least one of our fabulous pathologists each month to enable to you to meet the team.

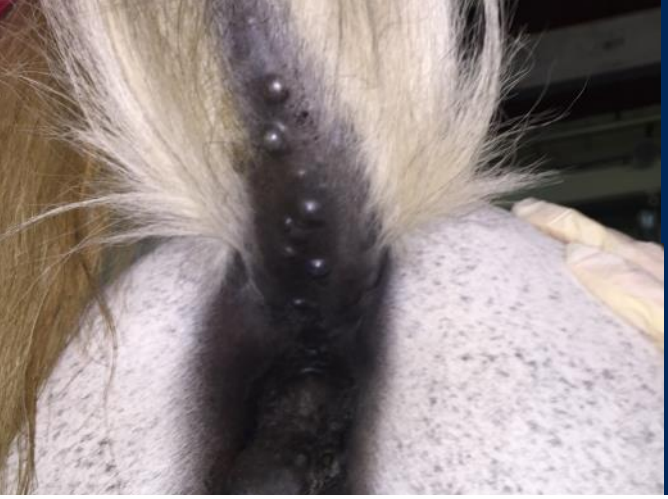
Sunao Fujita graduated from Azabu University in Japan in 2004 with a Bachelor of Veterinary Medicine and spent the next nine years in small and exotic animal practice. Sunao then moved to the USA to complete his residency at Oklahoma State University. During his residency, Sunao engaged in diagnostic services and teaching, as well as an internship at Antech Diagnostics in California.



After passing his ACVP board exams, Sunao returned to Japan and worked as a clinical pathologist at the Fujifilm Vet Systems Co Ltd, providing diagnostic services (cytology, haematology, bone marrow exam and urinalysis), quality control and consultation with practitioners. He has also been involved in educational seminars and as a speaker at conferences during this time.

Sunao is interested in all aspects of clinical pathology, particularly cytology and haematology, focusing on infectious diseases.

He moved to New Zealand in 2020 with his wife and two children and his personal interests include cooking, watching sports, and outdoor activities.



What's your diagnosis?

A monthly spot quiz

Test your skills with this gross photo: Black nodules seen on the tail of a lethargic and anaemic, grey, warm-blood horse.

What's your diagnosis? *(Answer can be found on last page).*

Sheep poo required

Facial Eczema (FE) costs the New Zealand economy a staggering $332 million dollars a year and is a challenge farmers are facing across the country.

B+LNZ, along with our partners, are working to produce new solutions to tackle this devastating disease, but we need your help. It is easy to get involved and play a part. Are you able to commit to collecting 10 poo samples from the ground from one mob of sheep every 2 weeks from October – May? We would love to have you join our collectors around the country to help provide valuable information and samples from your farm to understand this disease.

How do I find out more?

Find out more by going to www.beeflambnz.com/FEstudy and registering your interest by following the link.

Will this cost me anything?

There is no cost to you. B+LNZ funds the testing, provides all the testing kits, sampling protocols and return pre-paid courier bags to get the samples back to the lab. The sample collection will take approximately 30 -45 minutes per fortnight of your time.

What do I get out of it?

- Regular fungal spore counts from your sheep's faeces to help understand your FE risk.
- Access to a map showing areas where fungal spores have been detected around NZ.
- Networking opportunities with other farmers in the study through:
  - > WhatsApp group
  - > Webinars such as 'ask an expert' and the annual results of the study.

What if I miss a sampling week?

Don't worry, just let us know and then sample the following week.

What age sheep do I need to sample from?

We would prefer young animals that will be staying on the farm from October – May (e.g. hoggets or 2-tooths). If you do not have this age group, the next best would be mixed aged ewes.

Do I have to be in an area that is known to have FE?

No! We need to sample from farms both with and without known cases of FE. This will help us define where it is and is not occurring as well as investigating what makes these areas different. We aim to use this information to help provide better solutions to manage this disease.

If FE is detected on my farm, will identifiable information be kept confidential?

Yes, we take privacy seriously. Your personal information will be kept confidential by B+LNZ. Any results published will be presented in a way that individual farms or farmers results are unable to be identified.

Download a flyer for your clients and find more information on the B+LNZ website.

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Awanui Veterinary

Bring science into mastitis management

- bulk sample prices now available until 15 June 2024.

StaphGOLD™ *Staphylococcus aureus* antibody ELISA testing

- Available on individual cow (composite quarter) milk samples
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- Ideal as a screening test for cows with elevated SCC before dry-off
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- $11.30 per sample for 45+ samples.

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- Don't rely on subjective visual analysis of culture when dealing with *S. aureus*
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- *MALDI-TOF used when required for identification of pathogens.*
- *Bulk sample discount only applies when samples are received at Awanui in one submission, for a single farm.*
- *Pricing excludes GST and is available for samples received into the laboratory on or before 15 June 2024.*
- *Turn-around time 3-4 working days from receipt.*

Image by Freddy from Pixabay

When is a swab more than a swab?

Geoff Orbell

Sometimes knowing which gel swab to use for a given sample type or pathogen can be confusing. ESwab® are quickly becoming popular in veterinary medicine as they are extremely versatile and can be used for a variety of cultures including:

- Aerobic and anaerobic culture
- Fastidious bacteria e.g. *Nocardia* sp., rapidly growing *Mycobacteria* and Chlamydiaceae
- Gram stains
- Fungal culture, including dermatophytes
- Virology
- Molecular testing
- Joint fluid culture
- Fresh tissue cultures

What are they and how do I use them?

Rather than a gel media, ESwab® come with a liquid Amies culture media, which maintains pathogen viability for culture for up to 48 hours at room or refrigerator temperature. Samples for molecular testing remain viable for up to five days.

The swab itself is flocked (nylon fibre brush) and when placed into the liquid medium, over 90% of the patient specimen elutes into the liquid.*

After the swab has been used for sampling, the swab is immersed in the liquid media and the handle broken at the level of the cap, which is then screwed on to secure the sample.

Since ESwab® provides a homogenous liquid sample (after elution), multiple tests can be run off the one sample.

Fresh tissue skin biopsies

Where ESwab® really come into their own are with fresh tissue biopsies, as it is very difficult to extract solid tissue from the gel in gel swabs for culture at the laboratory. Previously, fresh tissue biopsies for culture were transported in a sterile container wrapped in a sterile saline-soaked surgical swab but they could still dry out during transport.

Fresh tissue skin biopsies require special treatment as they are prone to contamination by commensals. Unlike skin biopsies for histology, biopsy sites for fresh tissue culture should be clipped and surgically scrubbed. This may mean that biopsies for histology are taken first.

Any ulcerated areas or fistulae should be avoided, and the biopsies taken adjacent to these areas and as deep as possible using a 6 or 8mm biopsy punch, or incisional biopsy if the lesion is subcutaneous.

Using a sterile needle or instrument, the biopsy should be elevated, removed and placed onto a sterile surface. The epidermis still needs to be removed to minimise contaminants. This is most easily performed by placing the biopsy on its side on the sterile surface and using a new scalpel blade to cut the epidermis from the rest of the biopsy.

The remaining fresh tissue can then be placed into the liquid media of the ESwab® with the swab itself removed.

Where can I get ESwab® from?

ESwab® are available via the online shop on our website.

Although ESwab® are more expensive than standard gel swabs, they have a similar shelf-life and can still be stored at room temperature, but their versatility and ease of use makes them easily justified for almost all applications.

* https://www.copanusa.com/faqs/eswab/

Image thanks to Copanusa.com

Sample packaging tips

After receiving some very wet and almost destroyed submission forms recently, we thought it was a good time to provide some tips for sample packaging. Full instructions can be found on our website here.

- When packaging up samples, please ensure the submission form is placed in the pocket on the **outside** of the sample bag. This helps it stay warm and dry (and legible) when your submission is received in the laboratory.
- Ensure the sample bags are sealed shut to avoid any potential spillage leaking out, and to prevent moisture from getting in and affecting the samples.
- If you're using water based ice packs, please ensure they are placed in a zip-lock bag and sealed shut to keep any leakage contained.
- And yes, including some absorbent material in your package is a brilliant idea just to soak up anything that sneaks out!

In brief

- The facial eczema season is winding down for the year. The Lab-Portal will however remain operational so please continue to submit counts if you are doing them. Thank you for all your support this season.
- Submitters of cases that are culture positive for *Salmonella* Agona and Livingstone will be sent a brief questionnaire to help MPI understand what risk factors may be involved in disease.
- ACTH testing vouchers from Boehringer Ingelheim entitle you to one free test on a horse not previously diagnosed with PPID and are valid until 31 July 2024.

From page 3: What's your diagnosis? *Melanocytes were observed in the peripheral blood of this horse. These nodules are typical of melanoma which are usually firm and nodular, may be solitary or multiple, and may be hairless and ulcerated. They are usually black. Melanoma can be suspected based on clinical signs and visual inspection, and confirmed via either FNA cytology or biopsy histopathology. Equine melanoma can be benign or malignant. The skin is the most common site for the tumour in horses, with the typical locations being the ventral tail, perineal region, prepuce and commissure of the lips. It is most prevalent in grey horses and it's estimated that up to 80% of grey horses more than 15 years old have melanomas.*

Contact us

- contacting Awanui Veterinary couldn't be easier.

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