Paws claws and udder things

Gribbles VETERINARY

April 2023

A little bit blue

KAREN BAILEY

Clinical history:

An adult male kororā / little blue penguin (*Eudyptula minor*) was brought to a wildlife hospital. On examination it was severely underweight at 805g (should be 1 - 1.2 kg) and had white mucous membranes. The PCV was 6% (normal 38-52%). An image from a blood smear (100x objective, 1000x magnification) can be found in Figure 1.

Laboratory findings:

Very large numbers of round (signet ring) or teardrop shaped intracytoplasmic structures can be seen within the erythrocytes. These are consistent with *Plasmodium* species trophozoites, supporting a diagnosis of avian malaria.

Discussion:

Avian malaria is a mosquito borne protozoal disease which can affect many bird species, but is especially problematic in penguins, particularly in captive populations but also in the wild. In this case the bird died.

Cytological examination of a smear from the spleen showed 50 -75% of erythrocytes contained 1-8 haemoparasites most consistent with *Plasmodium* sp. (though gametocytes of *Haemoproteus* sp. or piroplasms from *Babesia* sp. could not be ruled out based on morphology alone). Histopathological examination showed haemosiderosis in the spleen, cholestasis in the liver and intratubular haemoglobin of the kidney, consistent with a haemolytic process and the most common reason for this in penguins is avian malaria.

Clinical signs in infected birds may range from nil to sudden death and include pallor, lethargy, dyspnoea, anorexia, vomiting and more rarely, neurological signs. Physiological and environmental factors such as moult, chick rearing, weather and in captive environments, husbandry, may be associated with severity of disease.

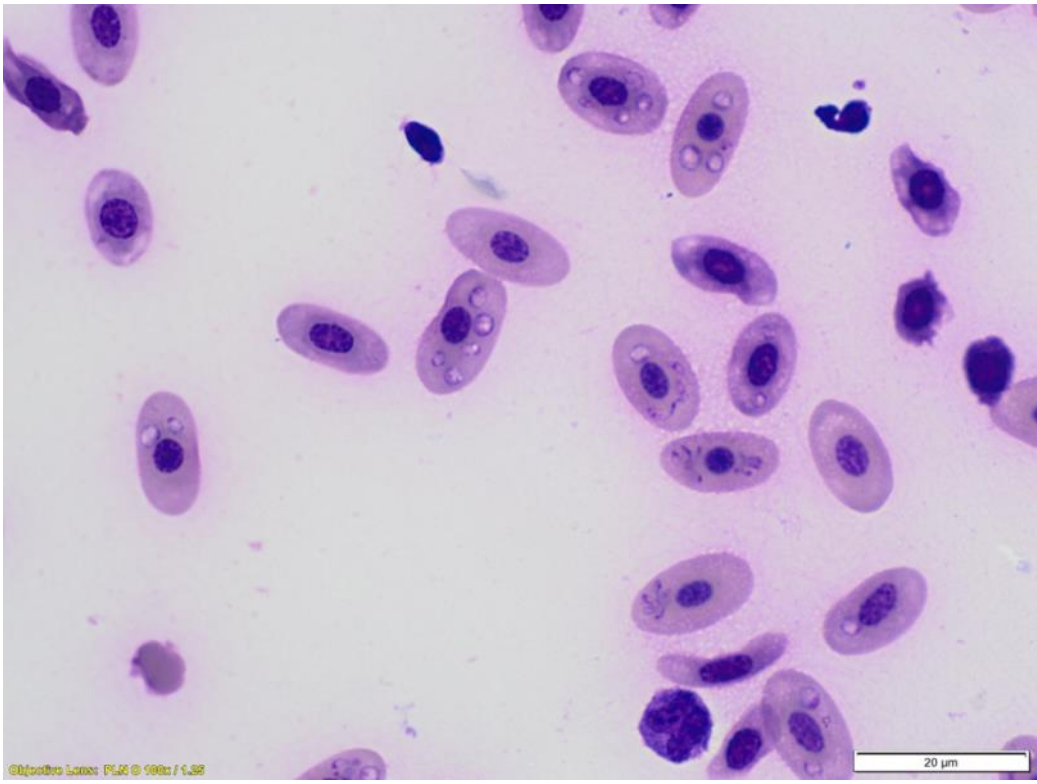

Figure 1. Blood smear (100x objective, 1000x magnification).

Thanks to Pauline Howard for this interesting case.

Handle with care!

SUNAO FUJITA

Ammonia (predominantly ammonium, $[NH_4]^+$) is largely produced in the gastrointestinal tract by gastrointestinal microflora that metabolize amino acids. The ammonia produced in the gastrointestinal tract is transported through the portal vein to the liver where the ammonia is converted to urea by the urea-cycle in the hepatocytes. Abnormal blood flow/ structure or significantly reduced numbers of functional hepatocytes can result in an elevated ammonia level in blood.

Blood ammonia levels can be used to evaluate liver function. Increased blood ammonia levels can be seen with portosystemic shunts (congenital or secondary to severe cirrhosis) or loss of >60% of the liver function[1]. Therefore, ammonia is fairly specific, but not very sensitive for detection of severe liver disease. Elevated ammonia concentrations can be considered evidence of hepatic encephalopathy, but this is not a consistent finding. Ammonia is not elevated by cholestasis, which is an advantage of measuring ammonia over bile acids[1].

"Ammonia has the potential to be a valuable analyte to evaluate liver function."

Ammonia levels will be increased with urea or ammonia toxicity in cattle[2]. Strenuous exercise could also increase ammonia levels in dogs and horses[2]. Intestinal disease in horses may be occasionally associated with increase in ammonia concentration[2]. Irish wolfhound puppies may show transient increases in blood ammonia concentrations, which resolve in adulthood (unknown pathogenesis); this breed also has a high incidence of congenital portosystemic shunts[2]. Rarely inherited or acquired urea cycle enzyme deficiency have been reported[2].

Ammonia has the potential to be a valuable analyte to evaluate liver function. However, this has not been widely utilized in veterinary medicine, because very strict sample handling is required for an accurate results. Ammonia measurement is problematic, as ammonia in blood is very unstable and volatile after collection. This has been a deterrent to routine measurement of this analyte. A general protocol for collection, storage and transport for an ammonia assay is as follows[3].

- Patients need to be fasted for at least 8 hours before sampling
- Collect sample into EDTA and keep on ice
- Centrifuge and separate plasma within 15 minutes of collection (leakage of ammonia from erythrocytes occurs within 30 minutes, resulting in falsely high values)
- Keep separated plasma on ice or refrigerated (4°C) and assay within 2-3 hours
- If longer delay until analysis is anticipated, freeze rapidly and store frozen until analysis
- Ship on dry ice. The sample MUST NOT thaw during transport
- All steps should be completed with minimal exposure to air, as any ammonia in the environment (air, water supply) can contribute to the ammonia in the patient sample
- Haemolysis, lipaemia, or icterus may cause false increases of ammonia.

No commercial veterinary laboratory in New Zealand has a validated veterinary ammonia assay. All Gribbles laboratories subcontract testing of frozen EDTA plasma to medical laboratories. We also do not have our own established reference interval for ammonia in any veterinary species. Thus, cautious interpretation is required for ammonia values. Falsely elevated ammonia results are common.

Ideally samples should be collected in the morning and sent to your local laboratory as soon as possible (following the sample handling recommendations above), and ammonia can be measured within a day at the medical laboratory. Storage of a sample overnight (or longer) and prolonged transport time will increase the risk of inaccurate results. Please phone your local laboratory prior to sampling to give advanced warning that a sample will be sent. For best results we recommend a detailed discussion of specific timing for sample collection and submission before submitting ammonia samples for testing.

Overall, ammonia measurement is not routinely recommended in New Zealand. Unfortunately, for many clinics the sample handling required to obtain an accurate ammonia result would be very challenging and in some cases impossible. Therefore, it should be first considered to use other analytes and diagnostic examinations for evaluation of liver function (e.g. bile acid, bilirubin, imaging, CT, etc.).

References:

1. Thrall, M.A., Weiser, G., Allison, R.W. et al. Laboratory Evaluation of the Liver. In: *Veterinary Haematology and Clinical Chemistry*, 2nd ed., pp. 401-424, Wiley-Blackwell, Ames, IA. 2012.

2. Stockham, S.L., Scott M.A. Enzymes. In: *Fundamentals of Veterinary Clinical Pathology,* 2nd ed., pp. 640-674, Blackwell, Ames, IA. 2008.

3. eClinPath, Ammonia, *Cornell University College of Veterinary Medicine* (March 19, 2023, https://eclinpath.com/chemistry/liver/liver-function-tests/ammonia/)

Our organisation's name is changing

The Asia Pacific Healthcare Group is proud to announce on 20 April 2023, our organisation will change its name to Awanui.

Awanui means big river, and represents the journey of bringing our network together to form a national organisation. Like our nation's rivers, our network of services, laboratories, collection centres and people, intersect and join.

When we join together, we are Awanui.

From June, this change will also begin to take place for the eight medical laboratory brands in our network across the motu (country), including brands Southern Community Laboratories (SCL), Medlab South, Canterbury SCL, Wellington SCL, Hawkes Bay SCL, Taranaki Pathology, Northland Pathology and Labtests.

In these regions where we provide pathology laboratory services, our communities will receive their health testing by the same great people and in the same place, but with a different name, Awanui Labs.

As part of the rebrand, Gribbles Veterinary, and our food and water testing business Gribbles Scientific, will also join the Awanui brand whānau later this year and become Awanui Veterinary and Awanui Science respectively (more updates to follow).

Alongside the 2,000+ strong team across our network who contributed to this mahi (work), we were privileged to have partnered with Te Reo Māori and Mātauranga Māori experts in health who offered their perspectives to guide and shape the final decision of our name and design.

Our rebranding and unifying of our identity is an integral part of our planning for the future, and it supports us in demonstrating our commitment to working in partnership with Māori and our commitment to the principles of Te Tiriti o Waitangi.

ACTH promo for PPID

With the Boehringer Ingelheim ACTH testing promotion starting in April, it's a good time to remind you of the sample handling requirements for these blood samples.

All samples for equine ACTH testing **must** still be cold when received in the laboratory. If they are ambient temperature on receipt, the samples are not suitable for testing.

We recommend:

> The sample must be chilled within 3 hours of collection, preferably immediately after collection.

> If possible separate the plasma from the red cell pack. This must be done by centrifugation.

> Freeze the separated plasma and send to the lab with gel ice packs.

> If separation is not possible, wrap the chilled EDTA sample lightly in cotton wool and send with gel ice packs (but do not allow to freeze).

Read more information about this test and sample requirements on our website here.

FECRT submission form

Faecal egg count reduction tests (FECRT) inform you about the drench resistance status of the parasite population on a specific property. This helps ensure the drenches in use are highly effective.

We have had an outstanding uptake of our FECRT testing but sometimes don't receive all the information we require to generate the report. To make sure we receive all the information required for this new report, there are new submission forms available to use for this testing - links below.

In order to compile this report, both larval cultures and FECs for all control, pre-drench and post-drench samples must be performed at one of our Gribbles Veterinary laboratories. This ensures we have all the data needed to calculate the susceptibility.

Download the ovine FECRT form here

Download the bovine FECRT form here

When size really does matter

We have recently received a few cytology cases submitted for immunocytochemistry (ICC) where the size of the slides used were too wide to fit in the slide holders for the testing.

We have attempted to physically file down the slides to try and make them fit, but the associated health and safety issues made it too dangerous. The size difference is only a matter of millimetres, but unfortunately it is enough to make staining impossible (see photo below).

Going forward, any slides that are too large for the special staining will be rejected as unsuitable for testing.

The slides we sell via our online shop are the perfect size for all laboratory testing, and we recommend you purchase these to use. They are suitable for all smear types. Find them here.

Photo below: When a couple of millimetres means testing is not possible!

In brief

> **We'll be closed on April 25 for ANZAC day**.

> **Is your clinic missing some Cytopoint?** Our Auckland laboratory received a box of 10mg Cytopoint on March 9, in a Provet bag with some ice packs. We think it was inadvertently taken out of the clinic fridge and put on the courier instead of samples. Despite posting on Facebook, we have not found its owner. Please contact our Auckland team if you think it is yours.

> **View the latest facial eczema trends** via our Lab-portal or submit data any time you do pasture spore counts. Login / register here to submit or view real-time facial eczema trends here (no user account required).

> **If you missed out on our new price book email**, download a copy here. The new prices are effective 1 May.

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Gribbles VETERINARY

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