

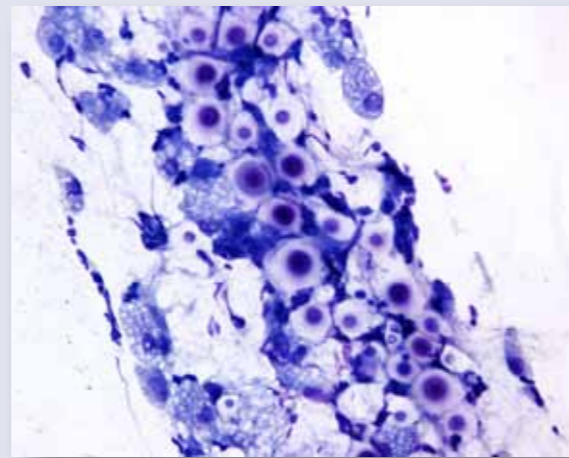
WHAT'S YOUR DIAGNOSIS?

ANSWER - CHRONIC-ACTIVE INFLAMMATION AND YEAST INFECTION (consistent with *Cryptococcus*)

The clinical presentation of the lesion in this case, of a swelling at the bridge of the nose, is a typical one for feline *Cryptococcus*. Infection is usually established primarily in the nasal cavity following inhalation of the infective organisms, with direct extension to the skin of the muzzle – although disseminated cutaneous lesions can also develop, likely via haematogenous spread. In our experience, there is wide variation in the size and morphology of the yeast seen in cytological preparations, particularly the thickness of the polysaccharide capsule. The organisms in this case were smaller and relatively poorly encapsulated, as opposed to the more classical “soap bubble” appearance of *Cryptococcus*, created by very thick clear capsules (Photo #2, from a cutaneous lesion on the head of a different 11 year old cat). The amount of inflammation invoked by the organisms is also variable, as a general rule more intensely pyogranulomatous when the organisms have less capsule, and minimal in association with the thickly encapsulated agents.

Adrienne French

Many thanks to Dr Robert Bird at WellPet Paraparaumu for submission of the case cytology, and to Dr Brian Bishop from Terrace End Veterinary Clinic for submission of the second cytology sample illustrated.



TIMING OF BLOOD SAMPLES

For some tests it is important to sample at the correct time, whereas for other and this includes most of the routine biochemistry and haematology tests, sampling time is not vital except that it is preferable to avoid lipaemia.

Bile Acids

Ideally ensure a 12 hour fast before assessing pre-prandial bile acids. When assessing post-prandial bile acids the aim is to give enough food to produce gall bladder contraction without inducing lipaemia. Lipaemia, in itself is not too big an issue but it produces haemolysis and the resultant pink/red discolouration of the serum produces artificially high bile acid concentrations. The general recommendation is to feed about 2 teaspoons of food to animals under 5 kg and at about 2 table-spoons to larger animals. Regular tinned food is fine but it is recommended to avoid low fat and low protein food. When taking the blood sample a large gauge needle and careful sampling are suggested to avoid haemolysis. Sometimes, a pre-prandial bile acid concentration may be higher than the post-prandial level which can be related to spontaneous gall bladder contraction, delayed gastric emptying or altered transit time.

Cyclosporine

For therapeutic monitoring you want to get a trough sample (just before medication). You can check the first blood level 48-72 hours after starting therapy.

Digoxin

For those rare cases in which this drug is still used! For therapeutic monitoring the serum sample is taken 6 to 8 hours after the last dose.

Neomercazole

For therapeutic monitoring you can check serum T4 concentration anytime during the day.

Phenobarbitone

For therapeutic monitoring try to get a trough sample as published target concentrations are based on these. In 90% of dogs there isn't much difference between trough and peak samples so any time would be fine. However, 10% of dogs have >30% variability in serum phenobarbitone throughout the day and we don't know which particular dogs might fall into this group. So try for a trough sample but if you can't get one it is likely that you are dealing with a dog with constant levels and it won't be a issue.

If you are checking for possible toxicity, check a peak level at about four hours after medication.

Potassium Bromide

For therapeutic you can check serum levels anytime during the day if the drug has been given for more than four months as a steady state has been reached and the results should be the same throughout a 24 hour period.

Sandra Forsyth

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CARDIOPET™proBNP

A New Way to Assist in the Diagnosis and Assessment of Cardiac Disease in Dogs and Cats

What is it?

Cardiopet™proBNP measures circulating levels of NTproBNP.

BNP is released by the myocardium in response to increased stretch and/or dilation. The role of this hormone is to counter the mechanisms that contribute to congestive heart failure by promoting natriuresis, renal perfusion, vasodilation and diastolic function. Released as a prohormone BNP is cleaved to form the active component BNP and the inactive form NTproBNP in equimolar quantities.

NTproBNP has a longer half-life and is more stable than BNP.

For these reasons Cardiopet™proBNP assesses the concentration of circulating NTproBNP providing a valuable evaluation tool for cardiac disease.

How can Cardiopet™proBNP be used in clinical practice?

- To assist in the diagnosis of cardiac disease in both dogs and cats.
- To assist in differentiating cardiac disease from primary pulmonary disease in both dogs and cats presenting with respiratory signs.
- To identify occult cardiomyopathy in asymptomatic cats
- To assist in the staging of cardiac disease and the monitoring of disease progression.
- To assist in assessing response to therapy

Practical considerations.

Procedure:

Blood is collected by syringe and transferred into an EDTA (lavender top) tube.

This tube is then spun, in the clinic, by centrifuge to obtain plasma.

A minimum of 0.3ml plasma is then transferred to a pink-top tube available from NZVP.

The pink-top tube must be inverted gently several times.

Submission of the pink-top tube to NZVP is as for any other sample.



Cost:

Pink-top tubes are available exclusively from NZVP at █ plus GST

Cardiopet™proBNP is █ plus GST per sample reducing to █ plus GST in association with any panel e.g. sick animal, diabetic, geriatric, pre-anaesthetic etc.

Factors that may influence results.

Azotaemic and/or hypertensive dogs and cats may have increased Cardiopet™proBNP levels in the absence of cardiac disease.

Normal Greyhounds appear to have a higher reference range for Cardiopet™proBNP than other breeds with the top end being 1200 pmol/l.

Note: articles about this test are available from the lab or visit: <http://www.idexx.com>

Angus Black

CARDIAC TESTS PROVIDE MAJOR STEP FORWARD

The new canine and feline tests covered in this newsletter represent the latest example where the NZVP – IDEXX Laboratories relationship is bringing tangible benefits to the New Zealand veterinary profession. The difficulty in establishing an early diagnosis of cardiac conditions is a repeated theme I have encountered in my reading and discussions with clients. I have been heartened by the response from veterinarians to the prospect of having this new test available.

I am sure just as we saw with the Specific Pancreatic Lipase tests people will gradually see how these tests can fit into their diagnostic processes. We are also actively planning a series of presentations to groups of veterinarians to help with the understanding and uptake of the tests. We have presented to regional branch meetings at Auckland and Northland.

The latest in our ongoing series of seminars that we stage at Massey University in collaboration with IVABS was with world renowned cardiologist Mike Martin. This was a fantastic event and Rebecca Allan concluded the evening by detailing the new tests. We will continue to seek opportunities to get the word out and welcome any enquiries at all.

Naturally there is a commercial benefit to both NZVP and IDEXX in making the cardiac and pancreatic tests available. In addition to that I take personal satisfaction from delivering on our strategic value of having the interests of the New Zealand veterinary profession at

heart.

Our isolation and small market do mean we are regularly behind the rest of the world in gaining access to resources vets elsewhere take for granted. Jenni Donald has just returned from Ireland where she attended the European Clinical Pathology Conference. One of her leading observations was that New Zealand has some catching up to do in comparison to the technologies your peers in other countries have access to.

Our recent addition of the D-dimers test for dogs is a very good example of our approach to this issue. This test which helps diagnose Disseminated Intravascular Coagulation in dogs will not provide a return on the set up costs that a purely commercially motivated operation would entertain. We receive sporadic enquiries from clients operating at the hospital and specialists level and do not anticipate a wide uptake of the test. However there are times when it will be very useful and we are determined to see such tests available in this country.

One more practical consideration is the route you choose for tests such as CARDIOPET, Spec pl and D-dimers that are run exclusively at NZVP. Our policy has always been and remains that we do not add a margin to tests we refer to outside laboratories. The logic is simple to us and I don't see why you would want to pay any more than you can source the test for directly. However when you are now being charged 50% more for a Spec pl test to come to us via another laboratory, why wouldn't you send it to us yourself?

Richard Campbell

BOVINE NEONATAL PANCYTOPENIA (BNP)

For the first time in New Zealand, a haemorrhagic diathesis consistent with Bovine Neonatal Pancytopenia (BNP) has been identified in this season's calves.

Since 2008 in Europe, BNP has been identified in calves less than 4 weeks old that had been fed colostrum from cows previously vaccinated with PregSure BVD[®]. Only a small number of cases have been confirmed in New Zealand so far, but as a result, the manufacturer (Pfizer) has voluntarily withdrawn and recalled this vaccine which has been available since 2008.

Cause

Based on research in Europe, BNP has been associated with ingestion of colostrum in which there are antibodies that target a cell membrane receptor found on the calf's leucocytes and other haematopoietic precursors in the bone marrow. Cows produce these antibodies following vaccination with the PregSure BVD[®] and low numbers of calves are affected.

Clinical signs

Affected calves are < 4 wks old (usually ~2 weeks) and present depressed or collapsed with petechial haemorrhages on mucous membranes, pinnae, GIT haemorrhage/melena, epistaxis or prolonged bleeding from ear tag or injection sites. Approximately 30-40% are clinically anaemic and 50% are pyrexia.

Antemortem diagnosis

Submission of EDTA blood with fresh blood smears is required. Haematology reveals a severe thrombocytopenia (<50 x 10⁹/L) and neutropenia (<3.0 x 10⁹/L). A concurrent lymphopenia is often present. Anaemia, if present, is initially due to thrombocytopenia-induced haemorrhage but is non-regenerative.

Post mortem diagnosis

In Europe, over 90% of cases were fatal and on post mortem ecchymotic haemorrhages and GIT haemorrhage are most commonly observed. Post mortem diagnosis requires bone marrow (sternum or proximal femur) which reveals severe or total depletion of all three cell lines (aplasia) +/- lymphoid depletion. Differential diagnoses are few given the haematological and bone marrow changes. Overseas BVD type II can cause a similar syndrome but this has never been identified in New Zealand. Diagnosis of BVD type II would be by PCR for viral RNA on fresh spleen.

Prevention

It is not yet known whether the withdrawal of the vaccine in NZ will significantly reduce the chance that cows with BNP calves will have BNP calves in the next season, but it seems likely. However, only a small proportion of vaccinated cows will have BNP calves. In Europe, only 4000 cases were reported despite over 13 million doses of the vaccine sold since 2008.

Geoff Orbell

OVINE ABORTION ROUND - UP

With lambing underway or just around the corner in many parts of the country, it is worth looking back at ovine abortion submissions. NZVP has seen an increase in submissions this past season, possibly because of increasing lamb values. Thirty-two submissions were received, mainly of lamb carcasses. Generally, testing for toxoplasma and campylobacter is carried out in the first instance, with further testing (often histology and/or further microbiology) available at the submitter's discretion.

Campylobacter and toxoplasma diagnoses combined account for approximately 50% of diagnoses. It is worth remembering that these are really flock level diagnoses. Campylobacter is quite a fastidious bacteria so sometimes more than one foetus needs to be examined to arrive at a diagnosis.

On a couple of occasions this year toxoplasmosis was diagnosed in flocks that had a history of being vaccinated. The toxoplasma vaccine, while very effective, has a short shelf life and is quite labile. Careful transport, storage, and administration of the vaccine should help to reduce apparent failures.

Total submissions:	32
Toxoplasma:	11
Campylobacter:	5
Inflammation (not otherwise specified):	2
No Diagnosis:	14

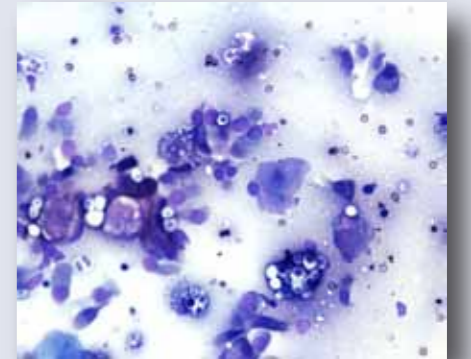
Isobel Gibson

WHAT'S YOUR DIAGNOSIS?

The smear contained epithelial cells, including both mature squamous cells and columnar respiratory epithelial cells, and mixed inflammatory cells that were predominantly neutrophils and large macrophages. Present within macrophage cytoplasm and sometimes free within the background were a population of round yeast organisms, ~5-10µm in diameter, with a relatively thin clear capsule and central basophilic body.

See back page for diagnosis...

Photo: Fine needle aspiration from a swelling on the bridge of the nose of an 11 year old domestic shorthair cat.



MICROSILICA CRYSTALS

The plastic red-top serum tubes that have replaced glass tubes have micro silica (ground glass) added to enhance blood clotting. These tiny crystals are incorporated into the clot and cause no issue when testing serum but frequently cause problems when examining urine and cytological preparations. The micro silica obscures crystals and bacteria during microscopic examination of urinary sediment and can create similar and additional artefacts in cytological preparations. Cells suspended in fluid come into contact with the sharp crystals causing membrane damage and additionally, histiocytic cells (those that ingest foreign material) take up the crystals and may lyse as a consequence.

Overall the quality of cytological preparations can be markedly compromised by collection of fluid samples into these tubes. The tubes are identified by noting CAT (Clot Activating Tube) written along the top of the label.

Alternative tubes to consider are Becton Dickinson 3 ml, clear top, no additive plastic tubes (BD 362725) which cost about \$60.00 + GST for 100. These are available from NZVP.

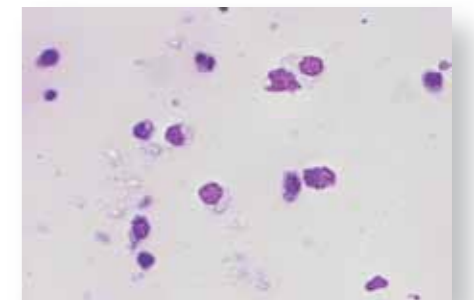


Fig 1. Silica crystals ingested by macrophages

Sandra Forsyth