

BRONCHOALVEOLAR LAVAGE AND TRACHEAL WASHES IN HORSES

Respiratory disease is a major cause of disrupted training in performance horses and for the veterinarian, analysis of airway fluid is a common component in the examination of these patients. There are various reported techniques for carrying out tracheal washes (TW) and bronchoalveolar lavage (BAL) but standardised techniques are necessary if objective reproducible results are to be obtained. This is because the volume of fluid infused affects cell differentials with low volumes increasing neutrophil and decreasing mast cell percentages. The International Workshop on Equine Chronic Airway disease recommends using 250-500 ml of fluid for BAL whereas the guidelines for TW are less precise, although 10-30 mls appears to be commonly used.



Ideally samples are analysed as soon as possible after collection because cell deterioration occurs quickly and changes in differential cell counts may be seen after about 8 hours. Although samples can be processed in practice, cell numbers are low because of the diluting effect of the fluid and so concentrating the sample using a cytocentrifuge is commonly carried out in commercial laboratories. Samples are often stained using Leishman's or May-Grunewald-Giemsa because Diff-Quik does not adequately stain mast cells in respiratory fluids. Because of low cellularity and clustering of cells, high numbers (at least 500) are counted to ensure an accurate differential count.

Total cell counts are generally not helpful because they are affected by so many outside influences such as amount of fluid infused, amount collected, and possibly contact time between fluid infusion and collection. However, cell differential counts can be useful provided that there is consistency in how they are done. For example most papers recommend that epithelial cells are excluded, however, they are incorporated in the differential count in some studies. BAL fluid from healthy horses typically contains about 60% macrophages, 35% lymphocytes, <5% neutrophils, <2% mast cells, <0.1% eosinophils and rare if any epithelial cells. Similar work has not been carried out for TWs but it is generally considered that epithelial cell numbers are larger and that the number of neutrophils that may be found in healthy horses may be up to 20% (possibly higher). There is no published reference interval for the number of RBCs that may be found in either BALs or TWs. The effect of exercise on BALs is variable with little change immediately afterwards but a non-significant increase in neutrophils may be seen by 24 hours, especially in cold weather. Not surprisingly, an increase in RBCs is noted after exercise. Little appears to be known about the effect of exercise on TWs.

Inflammatory airway disease (IAD) is described as airway inflammation that is not due to an infectious cause and can affect horses of any age. It is diagnosed by BAL cytology with increases noted in neutrophils, lymphocytes, eosinophils and/or mast cell percentages.

Currently, there is no standard, reproducible means for detecting exercise induced pulmonary haemorrhage (EIPH) although an increase in the number of macrophages containing haemosiderin is considered suspicious.

Bacteria cultured from the lower airway collected by TW may represent infection, transient colonisation or contamination even when the sample is collected aseptically using a sterile guarded catheter or via transendoscopic collection.

So the bottom line is, it is possible to diagnose respiratory disorders in horses via cytology but sample collection needs to be standardised and laboratory findings need to be interpreted in conjunction with clinical findings to provide useful information.

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NZVP CAN CUSTOMIZE HOW YOU RECEIVE YOUR RESULTS

In an effort to make their clients' day more efficient, the team at NZVP is able to offer its submitting vets a range of options as to how they receive their lab results. Currently the results can go directly to the clients' history within your practice software via the submission number on the form. This is great in the clinic, but for a busy rural vet on the road often the last job of the day is to phone the results that have come through via the fax machine.

One option that has helped many rural vets is sending the traditional copy scanned as an easy to read pdf attachment to the vets' email. If you can get coverage with an air-card/Blackberry in your working area, the field options become quite helpful. You can open the result and phone the client whilst driving to your next call without spilling coffee over it! Likewise it can be instantly forwarded to a farmer's email, or printed at the clinic if you have linked your Outlook to the clinic printer from the field. The counter staff can put it in an envelope - job completed. This ticks it off your "to do list" before you meet the usual barrage of other issues when you return to the clinic.

Setting up a "Lab Results" folder in the Public Folders in Outlook has been very useful for a lot of rural practices. Public folders are easily setup and are accessible by anyone with an Outlook account on your network. NZVP can send your results to your email address as well as the public folder. The benefits of this are that any of the other vets can look up a

result in the clinic if you are away rather than rummaging through your in-tray or having to request the result be re-faxed. Likewise the format looks more professional should you need to print or email a copy, compared to the way it looks in the client history on the software you run in house. There is even the option to have the price removed from the pdf which is a tremendous advantage if you do want to share the results with your client.

NZVP are asking vets to give feedback on how best to customize your results and are open to any further suggestions.

Karl Weaver
VetPlus Reporoa/Rotorua



TURNIP TOXICOSIS UPDATE.

This year there have been a number of cases of hepatogenous photosensitization in cows grazing turnips. Most cases have occurred in the lower North Island. In some herds up to 30 cows have been affected and a few have died. Typically affected cows have elevated serum GGT, GLDH and in some cases bilirubin is also elevated.

We have been lucky enough to receive liver specimens from affected cows and can report that the histologic lesions are subtle and very different from sporidesmin toxicosis. The biliary epithelium is not damaged.

The toxic agent is hypothesized to be glucosinolate compounds that increase in concentration in drought stressed plants. Mark Collett at Massey has a team working to identify the toxic principle and determine the pathogenesis of the liver changes.

Sandy McLachlan

THE BOSS'S BLOG

I find a March 31 end of financial year a very interesting concept. Just when I have got through the torment of letting another batch of personal New Year resolutions slide I have to go through the whole exercise again from a business perspective. Sadly the desk isn't any tidier, I haven't lost any weight and I haven't read any books. So why do I feel so much more confident that the goals that have come out of our annual strategic planning exercise will not also be consigned to history with a shrug of the shoulders in three months time?

Accountability is the primary reason. As the board was involved in developing and signing off our goals there is a mechanism through our regular meetings to monitor progress. Then we ensure a wider accountability exists by clearly laying out these goals to all who work at NZVP. Now we have added another 42 critical minds to the group who can at any time rightly ask how we are tracking.

Shared responsibilities are another reason we will meet our goals. Achieving them requires the input of everyone here. Yes, some will be more heavily involved than others in putting initiatives in place. However we all understand we have the potential to undo any progress with actions that are in conflict with what we are trying to achieve. Taking time to help everyone understand the benefits to our clients and our business that our goals will bring is fundamental to ensuring we are all working in harmony with them.

Momentum is a great thing and is something we have on our side at NZVP. I am sure if I lost those first 3 kilos that would boost me to aim for the other 2. We have finished the 2010/11 year strongly and success breeds success. Providing everyone with regular updates on how we have

GIARDIA SP. Testing – SNAP™ & Float

There has been a lot of discussion about Giardia testing in recent months. Despite the introduction of new technologies in recent years, it will continue to be difficult to pick up 100% of the cases 100% of the time. We, at NZVP are trying to get as close to this point as possible for our clients.

NZVP will continue to offer the Giardia Antigen (SNAP™) test and the Giardia Centrifugation flotation test with same day turnaround, as normal.

However, from 1 April 2011 NZVP's clients will be able to request one of our Giardia tests at the standard price (██████████), then if needed they can request the other test for a minimal fee of ██████████.

If a Gastro-Intestinal Panel (GIP1, GIP2 or GIP3) is requested and you would like both Giardia tests performed let us know. The ██████████ fee will be added on top of the GIP cost.

So, if you request a Giardia Centrifugation flotation test and it is negative, then you can phone in an extra request for Giardia Antigen testing and vice versa. Alternatively, you can request that both tests are run at the same time.

Please be aware that the Giardia Centrifugation flotation requires a minimum of 2g of faeces. So, if you think you will want both, please be sure to send in sufficient sample.

Here is the science...

Mekaru et al. (2007) report the sensitivity of the SNAP™ Giardia is 85.3 % and the specificity is 100 % (no false positive results). These

performed against the targets for that year has lifted everyone's sights to aim for still more progress this year.

Naturally there are several goals I would be silly to put out into the public domain too far in advance of implementation. I can say there will be a steady stream of significant developments that you will see coming to fruition over the next 12 months. Here are some of the more imminent ones we are prepared to add to our accountability by letting you know:

1. We will release New Zealand's first biochemical tests for feline and canine cardiac health
2. We will launch a range of feline and canine respiratory and faecal PCR panels that include a broader range of pathogens than that currently available
3. We will make urinary cortisol a daily test as opposed to the once weekly current service

These are clearly a batch of soon to be achieved steps in companion animal diagnostics. We also have key projects underway in production animal tests that will follow.

All of us at NZVP sincerely thank our clients for the growth in our business you have provided. It is your support that allows us to actively engage in test development and validation projects that will return the compliment and grow your businesses. We also benefit from the tremendous personal satisfaction gained from each successful development.

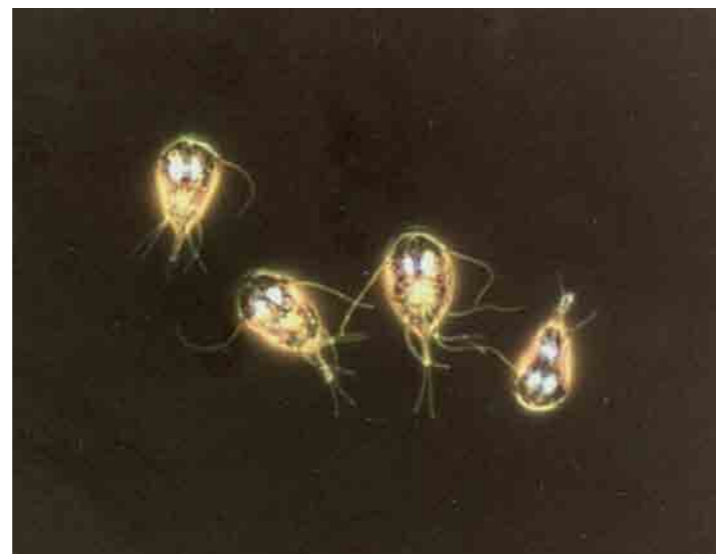
Richard Campbell

are very good statistics in themselves, but when the SNAP™ Giardia and faecal flotation are performed in parallel a sensitivity of 97.8 % can be achieved.

We believe the SNAP™ Giardia in parallel with faecal flotation is the easiest and quickest option for detection of Giardia in most situations.

Mekaru et al. (2007). J Vet Intern Med; 21:959-965.

**Yvette Macpherson
Sandy McLachlan**

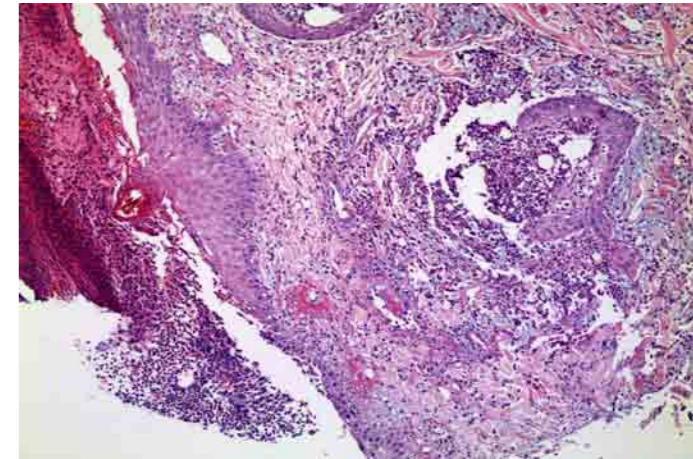


EOSINOPHILIC FURUNCULOSIS OF THE FACE

A 10 year old black Labrador retriever presented with acute, severe swelling and ulceration of the muzzle. The dog was intensely painful and pruritic. (See Figure 1).

Biopsies were examined of the lesions and showed a marked ulcerative and eosinophilic inflammation causing destruction of hair follicles. (See Figure 2).

A syndrome known as eosinophilic furunculosis of the face was diagnosed. This is a syndrome seen relatively uncommonly in New Zealand which causes marked swelling of the face, with pustules, nodules, and plaques over the dorsal and lateral muzzle, as well as around the eyes. Eosinophilic furunculosis of the face is typically seen in association with insect bites or stings, with insects assumedly targeting the less haired skin of the muzzle and face. On enquiry, this patient had recent exposure to biting insects. The dog was treated with anti-inflammatories and antibiotics as a concurrent bacterial infection could not be ruled out. The lesions and pruritis slowly resolved.



While NZVP's pathologists enjoying seeing such distinctive dermatologic syndromes histologically, the fulminant and rapid onset, severity, and distribution of lesions in this disease is quite clinically distinctive. Histopathology may not be required if the clinical appearance and history are consistent. It most frequently occurs in younger larger breed dogs. It has not been observed in toy breeds. Clinical differential diagnoses include bacterial folliculitis and furunculosis, tick bite hypersensitivity, and severe dermatophytosis. None of these other syndromes generally have the very acute (overnight) onset seen with eosinophilic furunculosis of the face.

Many thanks to Victoria D'Este-Hoare, VetEnt, for submission of this case and the clinical photos.

Ref: Gross, T.L. et al. Skin disease of the dog and cat. 2nd Edition. Blackwell Science Ltd, Ames. Pages 452-453, 2005.

Isobel Gibson

ADRENAL TESTING SNIPPETS

Effect of exogenous glucocorticoids on the ACTH stimulation test

1. Prednisolone administered to a suspect Addison's patient prior to testing can falsely elevate cortisol concentrations due to cross-reactivity and ideally, testing is carried out at least 12 hours after the last dose. However, a flat line response would be expected at whichever time point the ACTH stimulation test is done. Dexamethasone and Florinef do not cross react with cortisol.
2. Chronic steroid administration can blunt the result of an ACTH stimulation test due to negative feedback on endogenous ACTH secretion and subsequent adrenal atrophy. The duration of effect of a particular drug at a particular dose in a particular animal is quite variable. If ACTH stimulation is done too soon after withdrawing steroids, there may be a flat line response and an animal incorrectly diagnosed with hypoadrenocorticism. Six weeks without steroids is considered a safe margin, although some dogs will be OK sooner than this.

Effect of Lipaemia on Cortisol

1. Lipaemia has no effect on the cortisol assay (unless extreme) so fasting is not necessary.
2. No special management is needed regarding insulin or feeding in a diabetic patient that is being tested/monitored for hyperadrenocorticism.

Monitoring a dog with Hypoadrenocorticism

1. The aim is to adjust the Florinef dose to get [Na] and [K] into the middle of the reference interval. However, a percentage of dogs (maybe up to 25%) never

show normal electrolyte concentrations despite ever increasing doses of Florinef.

2. A dog with hypoadrenocorticism will never regain adrenal function so repeat testing by assessing the response to ACTH stimulation is not warranted.
3. There is no laboratory test to assess requirements for prednisolone therapy. Medication is adjusted to find the lowest dose that prevents clinical signs of glucocorticoid insufficiency such as lethargy, anorexia, vomiting and/or diarrhoea. About half of dogs receiving Florinef do not require prednisolone because the glucocorticoid effect of fludrocortisone is sufficient.
4. Consider culturing the urine of dogs with hypoadrenocorticism from time to time, even if the sediment is quiet.

Monitoring a dog with Hyperadrenocorticism

1. Monitoring of treatment (Lysodren or Trilostane) is carried out using the ACTH stimulation test, even in dogs that have a normal ACTH prior to starting therapy. The aim is to reduce the post-Synacthen cortisol to low levels ie 140 nmol/l in dogs on Lysodren and 50-200 nmol/l in dogs on Trilostane.
2. An ACTH stimulation test is carried out about 2 weeks after starting Trilostane therapy, 4-6 hours after the morning pill. Ideally electrolytes, particularly potassium should be checked at this time also.

Sandra Forsyth