

BOVINE ABORTIONS

There has been a steady stream of Neospora abortions at the lab since January. Typically diagnosis is made on the basis of a combination of characteristic histologic lesions and the dam having a high Neospora antibody titre (>1/600 within three weeks of abortion). Less commonly we diagnose bacterial placentitis often combined with fetal pneumonia, fungal infection, BVD and Leptospirosis.

We undertake abortion investigations in a stepwise manner to maximize the chance of getting a diagnosis for the least cost. Fetal histopathology is done first, and if a diagnosis can be made we stop there. If not, the histopathology findings and history guide our choice of further tests. The key is having the necessary samples available.

Bovine Abortion Sampling Guide.

From the Fetus

Fixed tissues.

- Heart, lung, liver, kidney, spleen, brain and placenta.

Unfixed.

- Stomach contents collected aseptically into a red top vacutainer, lung and placenta.
- Heart blood or blood from the vena cava into a red top vacutainer (if there is no blood, thoracic fluid is OK).
- Ear notch - approximately size of 10 cent coin.

From the Dam

Serum (red top vacutainer).

Please note:

We can no longer use fresh spleen for BVD antigen; heart blood or ear notch is the required specimen.

It is worth pouring liquid calf brain into a separate pottle of formalin. Fixation hardens it nicely.

Include an estimated gestational age or crown rump length on the submission form as the fetus must be immunocompetent for serologic tests to be worthwhile.

Sandy McLachlan

CYTOLOGY & HISTOLOGY PRICES

However, there is some flexibility in how this is applied. For example, if the masses are the same, 2 lipomas, 2 mast cell tumours, then only one report is written and the fee will be a single fee. Also for lymph node aspirates, it is always best to look at more than one node, so again these will only have a single fee, even if 2-3 nodes are examined.

Less flexibility is possible in charging of multiple histology submissions, as the cost for processing multiple tissues must be taken into account.

Base prices are:

- Single tissue or single skin biopsy
- Multiple tissues or multiple skin biopsies

Apart from skin, multiple biopsies from a single lesion or organ - e.g. punch biopsies from a skin mass, or Tru Cut biopsies of liver - will be charged at single tissue price.

Reminder: *When sending necropsy specimens please send as many fixed tissues as you want to collect. Once two tissues are collected and processed, then the charge is for "multiple tissues" regardless of how many are sent. Sometimes a histological diagnosis can be lurking in that tissue that looks grossly unremarkable.*

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SYNAPSE

MAY 2009

.....making connections

ISSUE 34



THE BOSS'S BLOG.....

Six months into my time at NZVP and I must say thank you to all the renewed and fresh acquaintances I have made. I am really enjoying telling the NZVP story and the response we are seeing in increased business confirms there are some very important aspects to it that people outside of our business can see.

Firstly the New Zealand ownership is something to value. With Massey University and veterinarians as shareholders we have the wider interests of the veterinary profession and farming sectors of New Zealand at heart as well as our own commercial imperatives. This is exactly the position we cultivated during my time at AgVax and at NZVP we are now working with clients in areas such as staff training, project involvement and promotion of veterinary services such as trace element analysis.

I hold a view that with the crucial importance of biosecurity and disease surveillance to our economy a New Zealand owned veterinary diagnostic facility is more of a strategic asset, than the strip of asphalt on the edge of the Manakau Harbour, which Winston Peters used

to appeal to the wartime thinking of his elderly constituency.

Secondly and of very real importance to you is our absolute and non-negotiable vet only position. I have been confronted and even had opportunities presented which involve fertiliser companies, OTC distributors and an SOE being supplied with veterinary diagnostic results. These do not and will not come from NZVP.

All is not plain sailing though and I unreservedly apologise for any disruption caused by the false start of our new software. We remain committed to bringing you many enhanced reporting features such as online access to your results. We are working hard to bridge the gap between the current performance of this software and the faultless level we all require.

I hope to be able to update you soon.

I look forward to catching up with as many of you as I can in the near future and welcome any feedback and enquiries.

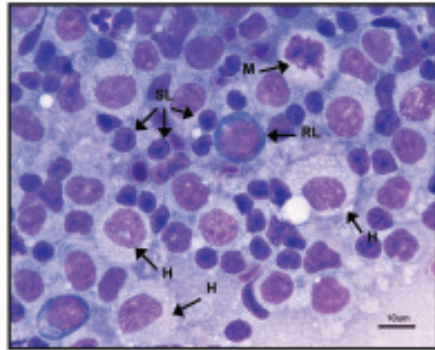
Richard

LYMPHADENOPATHY ASSOCIATED WITH BENIGN CUTANEOUS HISTIOCYTOMA

A six month old male West Highland White terrier puppy presented with a 2cm diameter, well-circumscribed, raised and ulcerated dermal mass on the back of the neck. It was also noted on examination that the left prescapular lymph node was palpably enlarged, around 5cm in diameter. The skin mass was surgically excised and fine needle aspirates of the enlarged node taken, and both samples were submitted to the lab. Histology of the skin mass was initially performed, and was typical for a canine cutaneous histiocytoma. Following this diagnosis, it was considered that the node may be reactive secondary to the superficial ulceration and local inflammation, and the aspirates were placed on hold. At a post-operative check up the following week, however, the lymph node was felt to have actually increased in size, and the cytology was actioned. The lymph node smears were highly cellular, and contained a mixed lymphoid population consistent with reactive lymphoid hyperplasia, admixed with moderate numbers of round cells with oval or indented nuclei, finely granular chromatin, inconspicuous nucleoli, and moderate amounts of light blue-grey cytoplasm – i.e. morphologically identical to cells that would be expected in aspiration of a primary cutaneous histiocytoma!

Canine cutaneous histiocytomas are focal dermal proliferations of Langerhans cells, which are the dendritic antigen presenting cells of the skin; as such, Langerhans cells may be expected to migrate to lymph nodes. Lymphadenopathy of the draining node, secondary to a focal cutaneous histiocytoma therefore most likely occurs, to some degree, probably more commonly than is clinically appreciated, and it is something we rarely get to see diagnostically here at the lab. Variable effacement of the lymph node by the histiocytoma cells may occur, and in this case led to significant lymph node enlargement.

The majority of cutaneous histiocytomas undergo spontaneous regression within weeks to months of development, and in cases with lymph node involvement the lymphadenopathy reportedly will regress simultaneously with the skin lesion. We were uncertain what to expect in this case, given that the primary tumour had been surgically excised: would the lymph node infiltrate regress sooner, follow the same course of regression as a cutaneous lesion, or persist? In fact, the node remained enlarged for some weeks, but had completely resolved at a check up 6 weeks post-operatively, presumably within a similar time frame as might have been expected for spontaneous regression of the skin tumour.



Cytology of the left preapical lymph node with the large histiocytic cells (H), including one in mitosis (M), amongst small lymphocytes (SL) and a few reactive lymphocytes (RL).

Reference: Skin Diseases of the Dog and Cat, 2nd ed. Gross et al.

Many thanks to Dr Megan Irvine at the Richmond Veterinary Clinic for submission of this interesting case and for providing the clinical follow-up, and to Dr Keith Thompson for the photograph.

Adrienne French

INSULINOMAS

Tumours of pancreatic beta cells produce large quantities of insulin and clinical signs are related to the resulting hypoglycaemia. Symptoms include bizarre behaviour, weakness, ataxia, seizures and coma that result from CNS hypoglycaemia. Tremors, restlessness and nervousness may also be seen and are due to the compensatory release of counter-regulatory hormones such as adrenaline. Most animals developing this tumour are middle aged or older and may have had symptoms for days to years, but typically present within several months of the onset of clinical signs. Insulinomas respond to increasing blood glucose concentrations [BG] by over producing insulin and hypoglycaemic symptoms may develop 2 to 6 hours after eating. Exercise, excitement and fasting can also induce clinical signs. Generally there are no abnormalities noted on physical examination or in the CBC, urinalysis and biochemistry, other than hypoglycaemia. Fasting [BG] is often about 2.0 mmol/l but can occasionally be within the reference range and it may be necessary to check it every hour or so until hypoglycaemia is noted.

In healthy fasted dogs blood glucose is about 3.9-5.5 mmol/l and insulin levels 36-144 pmol/l. Diagnosis of an insulinoma depends on finding an elevated insulin level in the face of hypoglycaemia. Consequently if glucose is ≤ 3.3 mmol/l, serum insulin is expected to be low. **An insulin level ≥ 72 pmol/l in a dog with a blood glucose concentration of ≤ 3.3 mmol/l is diagnostic for an insulinoma.** Insulin levels from 36 to 72 pmol/l in the presence of a low [BG] may be due to an insulinoma or to one of the other causes for hypoglycaemia. When [BG] is within the reference range it is not possible to interpret results from an insulin assay.

Insulinomas are generally small (less than the size of a pea) so are not seen on radiographs and are difficult to detect by ultrasonography. Consequently laboratory analysis remains the most useful method for diagnosing this disease. When submitting a red top tube for serum insulin levels, also provide a fluoxalate sample to confirm the presence of hypoglycaemia at the same time.

Sandra Forsyth

CALVES, COLOSTRAL TRANSFER & GAMMA-GLUTAMYL TRANSFERASE (GGT)

The need for colostrum.

The effects of inadequate colostrum transfer in calves are well documented. Deficient calves have a pre-weaning mortality >5.4 times that of calves having had sufficient colostrum. Similarly calves that have had sufficient colostrum are 9.5 times less likely to become diseased and/or die in comparison to colostrum deficient calves⁽¹⁾.

GGT as an indirect measure of colostrum transfer.

GGT is a membrane-associated protein involved in amino acid transport.

There is high GGT activity in the secretion of seminal fluid, bile and colostrum.

GGT is ingested concurrently with colostrum and subsequent enteric absorption and circulation allows for measurement within serum⁽²⁾.

GGT levels can therefore provide a quick, relatively cheap and practical means of assessing colostrum transfer.

Defining the relationship between GGT levels in serum and colostrum transfer.

Four studies utilising serum GGT levels in calves as an indirect measure of colostrum transfer are summarised.

The first⁽¹⁾ involving 48 calves established a serum GGT concentration of ≥ 200 IU/l as indicative of colostrum adequacy if measured within the first week of life. The sensitivity and specificity of a cut off value of 200 IU/l of GGT for diagnosing failure of passive transfer (<800 mg IgG/dl in this study) were 80 and 97% respectively.

The second⁽³⁾ involved 144 calves of up to one week of age. Chosen at random from over 15 different farms inadequate colostrum transfer was established in 33%. This was also based on a GGT concentration of <200 IU/l as indicative of colostrum inadequacy.

The third study⁽⁴⁾ involved 71 calves. Serum GGT was measured at one to three days of age and then at two, seven or fifteen days subsequently.

General conclusions, based on a desired passive transfer goal of 1000mg IgG/dl, are as follows:

One-day-old calves should have serum GGT activities >200 IU/l.

Four-day-old calves should have serum GGT activities >100 IU/l.

One week-old-calves should have serum GGT activities >75 IU/l.

Calves in the first two weeks of life with serum GGT activities <50 IU/l may be presumptively classified as having failure of passive transfer.

These recommendations are also cited in Veterinary Medicine: A Textbook of the Diseases of Cattle, Sheep, Pigs, Goats and Horses. Radostits O.M et al. 9th Ed, 2003.



The fourth study⁽⁵⁾ involved 74 one-day-calves. Inadequate colostrum transfer was established in approximately 45%. Again, a serum GGT concentration of <200 IU/l was regarded as indicative of passive transfer failure.

Recommendations.

Gamma-glutamyl transferase (GGT) activity as an indicator of colostrum intake in calves:

Age (days)	Inadequate	Marginal	Adequate
1-3	<50 IU/l	50-200 IU/l	>200 IU/l
4-10	<50 IU/l	50-100 IU/l	>100 IU/l
11-15	<30 IU/l	30-50 IU/l	>50 IU/l

The adequate levels are the minimum desired.

This is a screening test – GGT can only be regarded as an indirect measure of passive transfer.

Calves tested within the first few days of birth provide the greatest correlation between GGT concentration and IgG levels.

If a more accurate measure of colostrum transfer is required IgG concentrations in sera can be assessed.

References.

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