

THE TWO METHODS OF TAKING FINE NEEDLE ASPIRATES

One of the first things I was taught when starting out doing cytology is that we only look at intact cells – ie they must still have the cytoplasm around the nucleus. When the cells lyse we only have the bare nucleus and cells can be lysed during the collection process or when the smears are made.

There are two methods for taking fine needle aspirates and which one you use does depend on the tissue involved and how fragile the cells might be. You can use the suction technique where the syringe is attached to the needle and suction is applied or the non-suction technique where only the needle is used and the syringe is attached to gently dispel the sample from the needle on to the slide. The suction technique is good for firm masses where we need the suction to get the cells out. The non-suction technique is much gentler on the cells and is good for lymph nodes. This is especially true when lymphoma is suspected as neoplastic lymphocytes are more fragile than “normal” cells.

The two photos show the state of the cells from the same lymph node when samples were taken by the non-suction (Figure 1) and the suction (Figure 2) aspiration methods.

Thanks to Dr Lynda Evans for providing the samples for this exercise.

Jenni Donald

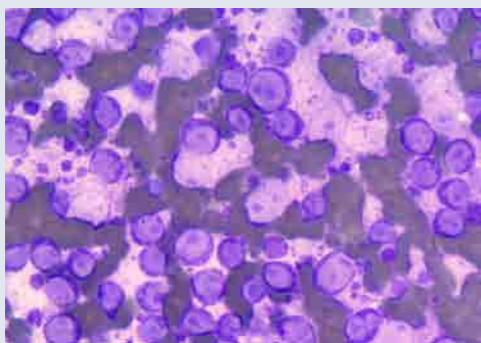


Figure 1 – Well preserved neoplastic lymphoblasts with intact cytoplasm obtained when the non-suction method was used.

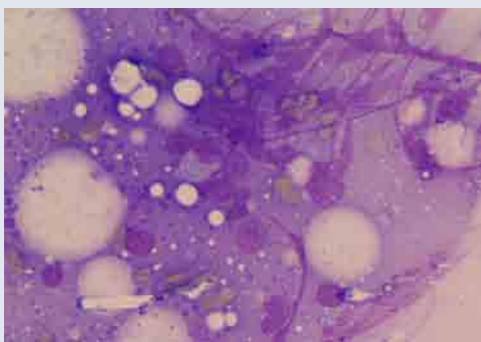


Figure 2 – Smeared nuclear material and bare nuclei when the suction method was used.

FELINE INFECTIOUS PERITONITIS AGAIN!

FIP raises its head again. We have recently changed the serology comment to better reflect what it is that is being tested when we are asked to do serology for FIP. It is not possible to provide a specific FIP-antibody titre because the virus is antigenically identical to enteric coronavirus. While a high titre is consistent with FIP, it is certainly not diagnostic for the disease as many cats exposed to the enteric form of the virus can have moderate to high titres also.

A negative titre (ie no antigen detected) will typically rule FIP out as a diagnosis except in cats that are in very late stages of the disease.

Histology of appropriate lesions currently remains the most sensitive technique available in New Zealand for FIP diagnosis. This can be enhanced with immunohistochemistry available as an international referral test.

So, aside from biopsies what else points to FIP?

Abdominal Fluid

If there is abdominal or thoracic fluid present, take a sample and send it in! FIP fluid often has a characteristic light to dark yellow colour and has a sticky, viscous consistency. Fluid protein is usually high (50-120 g/L) and cytology is usually bland.

1. An A: G ratio (abdominal fluid) < 0.80 is highly predictive of FIP.
2. An albumin concentration (abdominal effusion) > 48% of the TP or a globulin < 32% of TP are very good predictors that the effusion is not due to FIP.
3. An effusion in which the globulin fraction > 32% of TP (in the fluid) is highly predictive of FIP.

Serum

About 75% of cats with the non-effusive form of FIP have a TP > 78 g/l often with low albumin and high globulin fraction.

PCR

It has been found that m-RNA (messenger RNA) of coronavirus replicating inside macrophages can be detected by PCR. This is exciting news because cats with both enteric coronavirus and FIP can have viraemia but ONLY cats with FIP show virus replicating within cells other than enterocytes. Currently this test is only available overseas at a cost of about \$100 and can be carried out on cells from body cavity fluids, tissue biopsies or aspirates and EDTA blood samples.

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SYNAPSE



AUGUST 2011

.....making connections

ISSUE 46



BOVINE ABORTION ROUND UP

With calving season underway it is worth looking back at the previous gestation period to identify what the major causes of abortion may have been. The graph below summarizes what causes of abortion were identified during each month from March to June.

In the early months, March and April (most cows at about 150 days gestation), Neospora is the most commonly identified cause of abortion. This is due to several factors, including ease of diagnosis (histology is definitive and only the foetal tissues are required) and the fact that Neospora tend to affect foetuses in mid gestation. All foetuses submitted have histology performed.

Later on, the proportion of cases that have Neospora identified reduces, and cases with “other” diagnoses increases. Animals in the “other” category typically have placental or other lesions suggestive of an infectious cause of abortion (i.e. fungal or bacterial placentitis), but a definitive agent is not identified. Low numbers of animals with confirmed fungal induced abortion (i.e. fungal hyphae were visualized on histologic examined) are also present in the months of May and June.

In May and June the number of cases for which a definitive diagnosis was not achieved increased, and in June many cases were nondiagnostic. In the laboratory, we were frustrated at the number of nondiagnostic late term abortions submitted, and thought at the time that many of them could be ascribed to nitrate toxicity. The 2011 season was atypical in that warm weather persisted in to late May and early June in much of the country, allowing pasture and crops to be fed. Unfortunately though much of the pasture and forage did have quite high nitrate levels and there were a number of deaths due to nitrate toxicity. It would not be unreasonable to believe that nitrate toxicity may also have contributed to the number of undiagnosed abortion.

Comparison with 2010 data shows that this may not be the case, as there were just as many undiagnosed late term abortions in that year as well. There were slightly more abortions attributable to fungal disease, and while this may reflect the fact that more stored feed was fed in 2010, it may also just be due to chance.

The large number of undiagnosed late term abortions may be just simply because many do not progress testing to the level of fungal and bacterial culture to establish an etiology. While some foetuses aborted due to fungal or bacterial placentitis have lesions (these are in the ‘other’ category), many do not, and if the placenta is not submitted for histologic examination there may be ‘no diagnosis’ rendered. Since most fungal and bacterial causes of abortion tend to be sporadic in a herd there may not be a huge benefit in establishing a precise etiology, which is why some veterinarians do not progress testing further.

Many of you will also be wondering about the potential effects of BVD on abortions. Currently, the most commonly performed BVD test on aborted foetuses is a BVD antigen test on ear notch. This determines whether the foetus was (or would have been) a PI animal. In 2011, 17 BVD antigen tests were performed on ear notches, and of these, two were positive. BVD may not just cause abortion of PI foetuses though, and there may be foetal losses occurring during acute infection which would not be picked up using this test. Even so, depending on the BVD status of the herd, this test could be well worth performing.

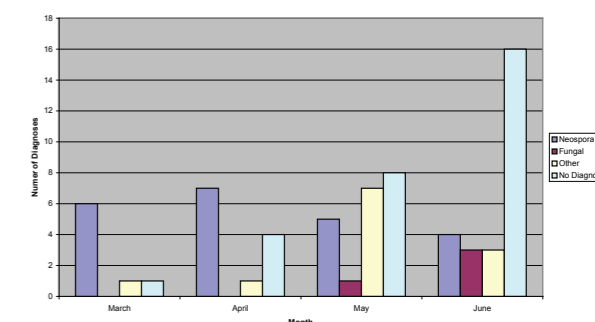
A test that is not currently frequently performed is BVD antibody testing on foetal heart blood. This can be performed on heart blood taken from an immunocompetent foetus (greater than 150 days gestation) This would give an idea of whether foetal exposure to virus had occurred but unfortunately may not necessarily indicate that BVD was the cause of the abortion.

The take home message from all of this is:

- 1) Your chances of getting a diagnosis from an abortion case is greater earlier in gestation, when it is more likely to be Neospora that is the problem.
- 2) Late gestation abortions are probably more likely to be due to bacterial or fungal causes. If there are no lesions present histologically, it may still be worth considering fungal and bacterial culture if you desire a precise etiologic diagnosis.
- 3) BVD is rarely identified as a cause of abortion, but relatively few animals are tested. Depending on the individual property's BVD status, BVD testing may be worthwhile.

Isobel Gibson

Causes of Abortion in the 2011 Season



GEOFF ORBELL NAMED AS NUMBER 8



The latest move associated with the growth we are experiencing sees us add Geoff Orbell as our eighth pathologist. He will be located at our Palmerston North laboratory. While we still await the details of his relocation from Melbourne we expect him to be with us before the end of August.

Geoff rounds out the Massey University based pathology team extremely well with his production animal experience both as a practitioner and pathologist.

Apart from those who were at Massey with him many of our clients will already know Geoff from his time in production animal practice in Feilding. This was followed by the obligatory OE where he spent two years in mixed animal practices in England and Scotland. He returned to Massey to complete his MVS and take up a residency in anatomic pathology. A teaching stint at Washington State University was his final preparation for his American Board qualification which he gained in 2008.

He has spent the last 2 years working in Melbourne. His time as a pathologist has seen him add companion animal interests and strengths to his repertoire. He is now well regarded in the two key areas of dermatopathology and oncology that dominate companion animal submissions.

The time is now right for him, his wife Helen, who will also be known to many, and their family to return home. We count ourselves as very fortunate that this timing coincides with our need and ability to take another pathologist on.

My comment about rounding out our Massey team is a very important issue to us. Pathology is not suited to being done in isolation and we now have two people working principally in

both anatomic and clinical pathology at each site. This gives everyone someone at hand for that invaluable second look. My office sits amongst our Hamilton pathologists and I am aware of this process which also occurs between the two disciplines as well as within them on a daily basis. In Adrienne French we have New Zealand's only practicing member of a very select group worldwide that is boarded in both.

Then we are so fortunate to have our master card of the relationship with Massey. Our pathologists do not hesitate to avail themselves of the expertise at hand from Keith Thompson, his fellow pathologists and the entire range of expertise within IVABS. We even picked Bob Jolly's brain on a recent case.

The recently renewed emphasis on Continuing Professional Development that you, our clients, are facing is also something we take very seriously. Our pathologists have as part of their contracts a commitment from NZVP to fund attendance at an overseas conference every two years. In addition to this there are courses in New Zealand each year we have people attend. Recruiting Geoff provides extra depth to maintain the required level of service when there is a pathologist away.

The importance of Geoff's arrival extends beyond the daily work. At this year's strategic planning meeting we committed to a strategy of getting our pathologists and other technical personnel out of the lab. We aim to develop relationships with our clients that go far beyond the transfer of samples, reports and invoices. In the last 3 months alone every one of our pathologists has been involved in activities ranging from conference presentations, contributing to farmer seminars run by clients and a large number of clinic visits. It is the concentration of pathologists at each site that enables us to get them out into the field. These activities are of real value to us as well as enabling us to make another contribution to the profession as a whole. We heartily welcome any enquiries about how we can assist.

Richard Campbell

USING SLINK LAMB LIVERS AS A PREDICTION OF WEANED LAMB COPPER STATUS

The following extract is taken directly from:

Grace N, Knowles S and Sykes A. Managing Mineral Deficiencies in Grazing Livestock. Occasional Publication No. 15 – New Zealand Society of Animal Production 2010

Copper

"Valuable information about the Cu status of flocks can be obtained by collecting livers from 8-10 newborn dead lambs (slink lambs) at the time of necropsy. The liver Cu concentration of lambs changes little from birth to weaning."

Reference: Grace ND et al. Copper oxide needles administered during early pregnancy improve the copper status of ewes and their lambs. *New Zealand Veterinary Journal* 52(4), 189-192, 2004

NZVP Recommendation

On the basis that liver copper concentrations in lambs tend to remain unchanged from birth to weaning slink lamb livers can be an alternative, convenient means of predicting weaned lamb liver copper status.

Procedure:

1. Request your farmer clients gather livers from ten slink lambs.
2. Livers can be refrigerated or frozen until a batch have been collected.
3. Have the farmers bring the livers to your Veterinary Clinic.
4. Submit the livers to NZVP marked as "Slink Lamb Livers"



Angus Black

FELINE FORENSICS - A CASE REPORT

A much loved two-year-old domestic cat was last seen alive at 1.30 pm. The owner went out for two hours and returned home at 3.30 pm to find their cat dead on the lawn. The submitting vet reported that the limbs were already a bit stiff a short time later, and they were particularly interested if there was any evidence of thromboembolism.

At postmortem examination the body was found to be in fat condition (body condition score 5 / 5). The cat was anaemic with white oral mucous membranes. In the subcutis of the right chest wall there was an area of haemorrhage 15 mm diameter surrounding a 3 mm projectile track. The projectile track passed through the dorsal part of the right sixth rib and the rib bone was fractured. The projectile track continued through the pleura into the thoracic cavity, through the caudal part of the right cranial lung lobe, through the vena cava, through the overlapping cranial part of the left diaphragmatic lung lobe and the junction of the left cranial and middle lung lobes, through the pleura caudal to the dorsal part of the sixth rib and into the subcutis where extensive haemorrhage separated the muscle layers. The right and left sides of the thoracic cavity were full of blood. Despite an extensive search in the subcutis caudal to the left scapula a projectile was not immediately found. A radiograph demonstrated a slug gun pellet in the soft tissue immediately beneath the skin on the left side of the thorax. The slug gun pellet was recovered from the subcutis caudal to the left shoulder. The path of the slug gun pellet through the lungs and vena cava would have caused immediate collapse of the lungs and very rapid exsanguination into the thoracic cavity.

In general it appears that a projectile needs quite a lot of energy to penetrate the fibro-elastic tissue of the skin. When there is no exit wound the projectile often ends up lodged just beneath the skin. It can be difficult to find the projectile because it can veer off bone in any direction and fragment into pieces. Because the path of the projectile is disrupted in the body any idea of using



the path of the projectile to deduce the angle of the shot and position of the shooter is generally in the realm of fiction. Radiography is sometimes the only way to definitively identify the projectile and also make a permanent evidentiary record of it in the body.

The use of high power slug guns has been in the media lately, but this is the first case of death of an animal caused by a slug gun pellet to be submitted for post-mortem examination by NZVP. The cat had lived in a built up area, so this finding also raised further issues around the use of the slug gun.

NZVP would like to thank Warrick Bruce for kindly radiographing the body of the cat for us.

Sandy McLachlan