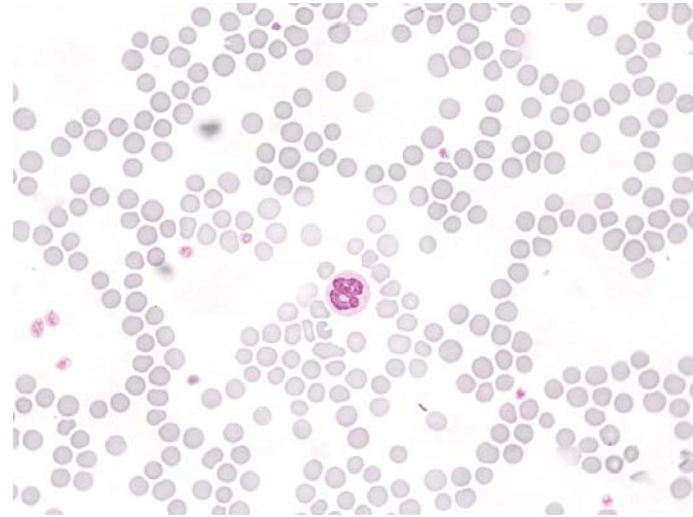


BLOOD SMEARS

Consider making a blood smear every time you collect blood to send to the laboratory for a complete blood count. This is because EDTA doesn't provide pH stability or a cellular energy source and so erythrocytes and leukocytes begin to degenerate within hours of collection and the subsequent changes in morphology can mimic disease states such as toxic changes in neutrophils, neoplasia in lymphocytes and acantholysis or fragmentation of red cell membranes. See pictures (1) and (2). A well made blood smear is great because it allows us to see many cells that are well prepared and preserved but even if your skills are mediocre, send a smear as we are often able to make out the morphology of enough cells to determine if there is a pathological process present or not.

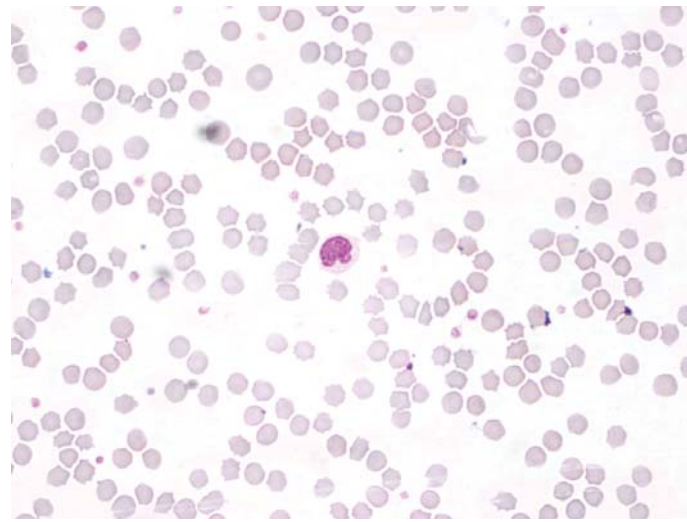
Sandra Forsyth



(1) A blood smear made at the time of collection. Note the distinct nucleus of the neutrophil and the regular shape of the RBCs

URINE SEDIMENT – ANSWERS

- Rod shaped bacteria – if there are doubts about the presence of bacteria the sediment can be air dried and then stained with the Dif-Quik stain. Cocci can be more difficult as they can be confused with particles.
- White cells – these are larger and have more complex internal structures than red cells. If in doubt the sediment can be stained.
- Aggregate of crystalline material from the coating of a serum activator tube. This is an artefact formed when urine is collected into red top tubes which have the clot activator. These tubes are labelled SAT. This crystalline material will also be present in any fluid collected into these tubes and should be ignored and not interpreted as a pathological finding.
- Ammonium biurate crystals – these crystals are golden brown and spherical with protrusions giving them the "thorn apple" appearance. These crystals can be seen with liver dysfunction especially congenital or acquired portosystemic shunts. They can be seen in urine of normal Dalmatians. Dalmatians and Bulldogs are predisposed to urate urolithiasis.
- Struvite crystals – most of the crystals have the typical coffin lid appearance. They can be a normal finding in both dogs and cats and there presence needs to be interpreted with the clinical picture.



(2) A smear made at the lab several hours after blood collection. Note the indistinct nucleus of the neutrophil and the unusual shapes that the RBCs have developed.

SPECIAL OFFER FEES

We take great pleasure in providing several offers that provide points of difference for NZVP. More importantly they are tangible demonstrations of our core value of having the interests of New Zealand's veterinary profession at heart.

- No Minimum Case Fee
- No In Clinic Analyser Interpretation Fee
- Reduced Repeat Cytology Fee
 - [redacted] for a repeat aspirate compared to [redacted] and [redacted] and initial charge for fluids and FNA smears respectively
- Reduced Cytology/Histology package of [redacted]
 - this compares to the combined individual charges of [redacted] and [redacted] for fluids and FNA smears respectively.
 - this offer is available to be taken up once the initial cytology results are reported and is not restricted to the time of initial submission.

- Veterinarians Own Pets Fees Discounted
- Veterinary Clinic Staff Pet Fees Discounted
 - the reduced pet fees do not apply to production animals and commercial horses.
 - if you have a pet pig, horse or elephant just let us know.
- Reduced Fees To Support Trials and Studies
 - Price on Application

All prices are GST exclusive.

NZVP

HAMILTON

PO Box 944, Cnr Anglesea & Thackeray Sts
Fax 07 839 1471

PALMERSTON NORTH

PO Box 325, Tennent Drive
Fax 06 353 3986

FREE PHONE 0800 838 522



SYNAPSE



FEBRUARY 2010

.....making connections

ISSUE 38

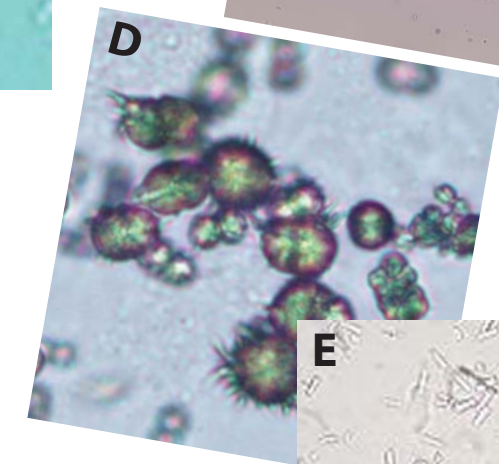
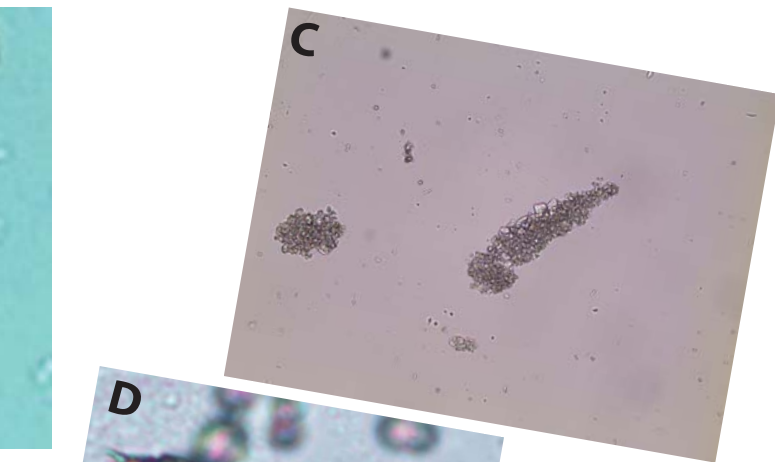
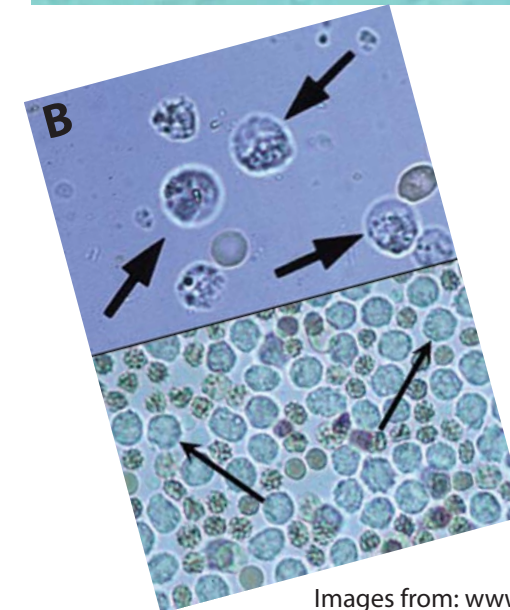
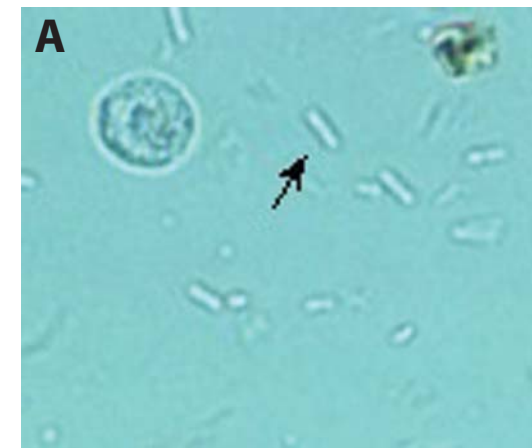


URINE SEDIMENT

Instead of a "Whats your diagnosis" cytology this month, the following are structures which can be seen in urine sediments. We are often asked for help with in-clinic assessment of urine and given that it is best to examine a urine sample within 30 minutes of taking it more of you

are doing this. These pictures may help build up a library of images for your clinic. The websites they came from are very useful. Identify the following structures/crystals.

Answers on the back page.



Images from: www.diaglab.vet.cornell.edu
& www.wpcontent.answers.com

PIGS ARE NOT A CAUSE FOR PANIC!

New Zealand is not a major worldwide pork producer, and with pig practice mainly confined to a few specialists, the average New Zealand veterinarian might only rarely see a problematic porcine. Many pig clients are those that might keep a few baconers in the garden to help with food waste management, and a few keep relatively small scale piggeries.

It is easy to feel like a fish out of water when dealing with a species that you only see infrequently. However, New Zealand Veterinary Pathology is here to help you with diagnostics and advice!

Listed below are a few differential diagnoses you might consider in various ages of pigs, plus some ideas on diagnostics. Please note that this list is NOT EXHAUSTIVE. It merely lists a few of the more common things to consider. Feel free to contact Sandy or Isobel if you have questions.



Please note: Several pig diseases that are highly prevalent in many overseas markets that are important pig producers are NOT PRESENT in New Zealand. If you suspect any of these diseases on clinical grounds, MAF should be informed via 0800 80 99 66.

Pig diseases not present in New Zealand include:

- Porcine reproductive and respiratory syndrome (PRRS)
- Hog cholera (Classical Swine Fever)
- African Swine Fever
- Pseudorabies (Aujeszky's Disease)
- Transmissible Gastroenteritis virus (TGV – Porcine coronavirus)
- Vesicular diseases
 - Foot and Mouth Disease
 - Vesicular Stomatitis
 - Swine Vesicular Disease
 - Vesicular Exanthema of swine
- Atrophic Rhinitis
- Porcine Brucellosis
- Nipah virus
- Enterovirus encephalomyelitis virus
- Trichinellosis
- Porcine cysticercosis (cysticercus cellulosae)
- Salmonella choleraesuis

Isobel Gibson

WAITANGI DAY

Both Hamilton & Palmerston North Laboratories will be closed on Waitangi Day Saturday 6th February 2010

THROMBOCYTOPENIA IN AN ADULT COW

In a typical presentation an adult cow developed sudden onset bilateral blindness. Clinical examination revealed a complete lack of vision and menace response in both eyes but with innervation retained. Haemorrhage into the anterior chambers of both eyes was suspected. There were no other clinical findings of significance other than ketotic breath.

Subsequent biochemistry was unrewarding but there was a severe thrombocytopenia evident on haematology with platelet numbers $<10 \times 10^9/L$ (reference range 220-640 $\times 10^9/L$). The thrombocytopenia was presumed to be of immune-mediated origin although this cow had been in a mob with access to some recently cleared areas of land containing bracken fern (*Pteridium aquilinum*). Bracken fern toxicity was considered much less likely as there was no

concurrent neutropenia, anaemia, pyrexia or melena, and only one cow was affected.

New Zealand Veterinary Pathology deals with rare cases of presumed immune-mediated thrombocytopenia in cattle, most commonly involving individual adults, as in this case. The clinical presentation is invariably blindness with evidence of retinal and, in many cases, generalised intra-ocular haemorrhage. Rapid resolution of the thrombocytopenia is often seen in response to steroid therapy further strengthening the likelihood of an immune-mediated aetiology.

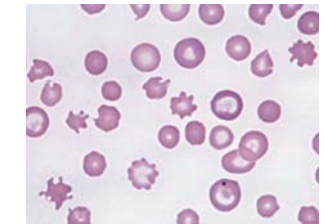
With many thanks to: Dr Holly Walton, Southern Veterinary Centre, Invercargill.

Angus Black

ACANTHOCYTES & CANINE J/D DIET

At the recent Clinical Pathology conference in California there was a poster presentation describing increased numbers of acanthocytes in the blood of dogs on J/D diet. This was a follow up to anecdotal observations of this finding. Four dogs on long term J/D were found to have significantly greater numbers of acanthocytes than four dogs on maintenance diet. Acanthocytosis is found in humans taking fish and flax seed oil supplements and is thought to be due to changes in the lipid content of the red cell membrane. This was investigated in this study but no differences in the lipid content of the red cell membranes was found between the dogs on J/D diet and those on the maintenance diet. Further investigations to find the mechanism are being undertaken.

Typically we see acanthocytes with microangiopathies such as haemangiosarcoma (splenic or cardiac), cardiac disease and occasionally with vasculitis. The fact that this change can occur in normal dogs on J/D diet means that it should not be over interpreted in these animals.



Acanthocytes in dog blood. From www.diaglab.vet.cornell.edu

Jenni Donald

BILE ACID LEVELS IN CATS

Measuring bile acid levels in serum allows assessment of two processes involved in the recycling of bile acids and therefore assesses both liver function and portal blood flow to the liver. Bile acid levels will be increased on a fasted sample when there is:

- Decreased bile acid clearance from portal blood
 - o Decreased functional hepatic mass
 - o Decreased portal blood flow to the liver as with acquire or congenital shunts
- Decreased excretion of bile acids into bile
 - o Obstructive cholestasis – can be hepatic or post hepatic
 - o "Functional" cholestasis - ie sepsis associated cholestasis

In healthy animals the bile acid level is expected to be low ($<15 \mu\text{mol/l}$ on a fasted sample & $<25 \mu\text{mol/l}$ on the 2 hour post-prandial). The more diagnostically sensitive assay is the post-prandial assay as we are actually challenging the liver's ability to remove the bile acids from circulation within a certain time period. The difference in the sensitivity of the assay is particularly noticeable in cats. The sensitivity for the presence of hepatobiliary disease is only 49% on a fasted

sample using a cut off of $>20 \mu\text{mol/l}$ ie 51% of cats with hepatobiliary disease do not have increased bile acids on a fasted sample. The sensitivity increases to 81% if we assess a post-prandial sample. The specificity is nearly 100% when values $>20 \mu\text{mol/l}$ were considered as increased for fasting or post prandial samples.

Other factors which can affect the test

- Haemolysis & lipaemia of the sample cause marked interference with the assay we use.
- Spontaneous contraction of the gall bladder can increase the fasted level unexpectedly.
- Intestinal disease can affect absorption and lower the bile acid levels. Abnormalities in gastric emptying, intestinal transit time etc will also affect the post prandial result.
- Small intestinal bacterial overgrowth can increase the bile acid level.
- Some drugs eg rifamycins, fusidic acid, cyclosporine, bumetanide can inhibit hepatocyte uptake and cause increased bile acid levels.

Jenni Donald