NWL news

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THIS MONTH

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FELINE BLOOD TYPING

"Unlike the canine DEA system, an A-B system is used in cats."

Blood types are determined by inherited antigens present on the red blood cells' surface membrane. Unlike the canine DEA system, an A-B system is used in cats. AB blood groups are inherited in a simple dominant form. Group A is dominant over B (in most cases), hence type A cats may be homozygous AA or heterozygous AB. Type B cats must be homozygous BB. The exception to the rule is the AB blood group which is very rare, but in which A & B appear to express co-dominance.

The frequency of feline blood groups is subject to geographic variation, which may become more relevant as greater cross-border movement of cats occurs under the Pet Travel Scheme.

In the UK more than 90% of domestic short hairs are Type A; amongst the pedigree breeds there is considerable difference: most Siamese, Burmese and Oriental short hairs are blood type A. However, in breeds such as the British short hair, Rex and Birman up to 50% of cats may be Type B. This is significant when considering blood transfusions and neonatal isoerythrolysis, as discussed later.

Again, in contrast to the situation in dogs, in the cat alloantibodies are common. Alloantibodies are naturally occurring antibodies directed against foreign feline blood group antigens. Alloantibody titers vary between and within blood types and this has significant implications when considering blood transfusions and the possibility of incompatibility reactions.

Approximately 65% of Type A cats have low titers of agglutinating anti-B alloantibodies and no detectable anti-A alloantibodies.

Type B cats all have agglutinating anti-A alloantibodies, with greater than 90% having high or medium titers. In addition, small numbers of Type B cats have very low titers of anti B alloantibodies.

Type AB cats may have very low anti B alloantibody titers but no detectable anti-A alloantibodies. The frequency of cats with anti-B titers is difficult to establish as the blood type itself is so rare, estimated at less than 1% in the UK.

The main aim of blood transfusion is to increase the PCV of a severely anaemic cat, allowing the cat to survive whilst erythropoiesis hopefully, proceeds to restore red cell numbers and resolve the anaemia.

The life expectancy of red cells in cats given type matched transfusions is around 35 days. Even mild or subclinical incompatibility reactions will result in destruction of donated red cells, usually within seven days.

The most serious blood transfusion reactions occur following transfusion of Type B cats with Type A blood. Medium to high levels of anti-A alloantibodies results in the rapid destruction of transfused red cells, sometimes within hours, and a significant possibility of anaphylaxis. Although such reactions are unlikely to occur in the general domestic short hair population they are potentially much more likely in the breeds where type B blood groups are encountered.

If a Type A cat receives Type B blood, an immediate transfusion reaction is unlikely to occur, however, the existence of low titers of type B alloantibodies, along with antibody induction to foreign antigens, will result in a significant reduction in the red cell lifespan

(*Remember, it is the presence of alloantibodies in the recipient cat, not the donor cat, which will cause the major problems as regards incompatibility*.)

As Type AB cats are rare, they are not a major consideration in feline transfusion medicine. Ideally, they should receive blood from a Type A donor, as the potential presence of type B alloantibodies may result in premature red cell destruction.

The prospect of major, even life-threatening, transfusion reactions and to desire to maximise the life-expectancy of transfused red cells, are very genuine reasons for blood typing cats and performing type matched transfusions wherever possible.

A rapid card agglutination test has recently become available and allows quick and easy `in house' blood typing of cats. If the blood type of a donor and recipient is unknown the minimum requirement pre-transfusion is a compatible blood cross-match, and a retrovirus / FIA negative donor.

Any cat requiring further transfusions would need to be cross-matched with any subsequent donor, even one of the same blood type, as the first transfusion may result in antibody production against erythrocyte antigens other than those of the Type A-B system.

Neonatal isoerythrolysis is a rare condition except in breeding colonies where a high percentage of Type B cats may be encountered (Rex, Birman and British short hair breeds). It occurs following the mating of a type B queen with a type A tom. The resulting kittens will all be Type A (A is dominant) or rarely type AB.

Antibodies present in the queen's colostrum and milk are absorbed from the gastrointestinal tract during the first 24 hours of the kitten's life. Depending on the levels of type-A alloantibodies haemolytic anaemia and death of kittens may result. This situation can only be avoided by removing `at risk' kittens from the queen at

birth and hand rearing them milk for the first 3 days of life.

To summarise: in an ideal situation both donor and recipient cats should be Blood Typed prior to a first transfusion and rapid in-house kits are now available for this.

If Blood Types are not known, cross-matching should be performed, in addition the retrovirus and FIA status of the donor cat should be established.

For each and every subsequent transfusion, cross-matching is essential irrespective of the Blood Type.

Susan F Beck BVMS MRCVS

Test Name: Feline Blood Typing
Test Code: FBT
Sample : EDTA
Price : £28.00
Turnaround : same day

Leucocytes in urine - Why do they matter?

"Leucocytes in urine matter in two ways, they matter when they are present and they matter when they are not present"

When the urine sediment from a dog with or without urinary tract signs is examined and found to contain leucocytes in excess of 5-10 per field they indicate significant inflammation. If bacteria are also present then a bacterial infection is likely. Up to eighty percent of dogs and an indeterminate number of cats with UTI are apparently asymptomatic. (Ling, "Textbook of Veterinary Internal Medicine" Ettinger and Feldman 2000).

Leucocytes in urine are significant with or without dysuria.

Underlying conditions can predispose to urinary tract infections including anything that interferes with the normal physical emptying of the bladder. I shall never forget the article, which listed a broken leg as being a common cause of cystitis and pyelonephritis in sows, not in this country I hasten to add, but it emphasises that:

The normal posturing and complete emptying of the bladder is fundamental to defence against bladder infection.

It is when the bladder is completely collapsed that the leucocytes in the bladder lining can mop up any bacteria which, like salmon in the Tay, have managed to ascend.

In young cats, inflammation of the bladder is frequently sterile and may be associated with a deficiency of GAG proteins in the bladder lining. In these cases, a leucouria and possible haematuria are found with evidence of dysuria but no bacteria are recovered even when there has been no prior treatment with antibacterials.

Sometimes urine is received from a dysuric patient with significant pain and stranguria but no leucocytes are found in the urine sample. This may be a significant indication of chronic change in the bladder wall, whereby the leucocytes remain caught up in the thickened lining of the bladder and are not shed in the urine.

Dysuria and stranguria without leucouria may indicate chronic and significant inflammation.

The discharge from the lining of the bladder in some of these patients resembles chocolate sauce or worse. When the bladder wall is thickened in this way the bladder cannot completely empty because of the swelling, residual organisms cannot be mopped up and infection can become established, whatever the original cause of the swelling may have been. Therefore, pain and dysuria, which do not produce a leucouria, are always significant and should be investigated further. Treatment should be aimed at reducing the inflammation and eliminating or preventing infection in the tract.

NB *Leucocytes in cat and dog urine cannot be detected by means of dipsticks.* These are intended for human urine use and false positives are very common. There is no substitute for microscopy. No need to centrifuge, direct microscopy without stain is quick, easy and very helpful.

SAMPLING HINTS Try to obtain a sample before starting antibacterial therapy. It really is worth the wait and anti-inflammatories can be given in the meantime.

- Cystocentesis provides the ideal sample for microbiology but if you mark the method of collection on the sample allowances can be made in interpretation. Even a free flow sample is better than none. A possible exception here is rabbit urine or indeed any sample scraped from the floor.
- Any clean dry container is ideal for collection of urine specimens although it should be sterile if cultures are required. A recent sample demonstrated the delicious aroma of the Seville Orange Marmalade which had been the previous occupant of the jar.
- If you wish to check post therapy, wait 10-14 days before obtaining a follow up sample.

Dr Geraldine Hale BVM&S PhD Cert PM MRCVS

See Section 24 of the Price List for all Urine test options.

NEW TEST URINARY CALCULUS ANALYSIS

In the UK the standard approach to the analysis of urinary calculi has been a semi-quantitative wet chemistry analysis. This is at best only a rough guide to the make up of a urolith and at worst may be misleading.

After an exhaustive search we have located a referral laboratory that can provide a Gold Standard analysis using a combination of analytical methods. These include
X-ray Diffraction, Infrared Spectrometry and a range of other analytical processes as required. This integrated approach to analysis should result in a significant improvement in identification of the often complex constituents of calculi and subsequent treatment.

Test Name: Urinary Calculus Analysis
Test Code: UCA
Sample : Dry Calculus
Price : £25.00
Turnaround : up to 10 days

CLIN PATH CLUB

Next Meeting

Thursday 12th September 2002
Sponsors
Arnolds Veterinary Products Ltd

The Clin Path Club is free and open to all vets and vet nurses

Venue

Swallow Hotel, Salmesbury, Preston. Directions: Junction 31 M6, follow A59 Blackburn, 1 mile.

Speaker

Dr Ian Ramsey BVSc PhD Dip ECVIM MRCVS: *Recent advances in the diagnosis and treatment of Canine hyperadrenocorticism*

Tea & coffee available, refreshments will be served after the meeting

To book your place, request further information or a location map call Joanne Kenyon on 01253 899215 or visit the web site.

Diary Dates:-

Thurs 14th November 2002 Dr A Coughlan BVSc Cert VA DSAS (Orth) PhD FRCVS *Working up the lame dog "Tricks and Traps"*

NEW COURIER ROUND STARTS

If you are located in the Merseyside area you could benefit from the extension of our Sameday Courier Service from 1st September.
No more unreliable post.
Samples collected AM, reported PM, (where request permits).
The service now covers most of the North West.
Contact Joanne Kenyon, Client Services Coordinator for details, 01253 899215

Tail End

"Passive smoking can kill your cat"

IF YOU won't give up smoking for the sake of the family, then at least give it up for the cat.
A report in the *American Journal of Epidemiology*, says that living in a household of smokers considerably increases a cat's risk of acquiring feline lymphoma, which kills three quarters of its victims within a year.
They found that, adjusting for age and other factors, cats exposed to second-hand smoke had more than double the risk of acquiring the disease. In households where they were exposed to smoke for five years or more, cats tripled their risk.

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