Virginia Cooperative Extension Service

VIRGINIA VETERINARY NOTES

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE

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WHAT'S INSIDE!

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FALSE POSITIVE REACTIONS WITH FELINE LEUKEMIA ELISA TESTS

A recent research report stated that .35% (.14 to .57%) of cats tested for Feline Leukemia Virus (FeLV) antigen by ELISA gave false positive results due to antimouse antibodies in cat sera.

Although the reason for anti-mouse antibodies in cat sera is currently not fully understood, these researchers stated that exposure to certain vaccines can cause false-positive reactions to FeLV ELISA tests. Bio-Rab®, a mouse brain origin rabies vaccine, caused false positive FeLV ELISA results in sera from domestic cats, snow leopards, bobcats and a panther. ImRab®, which is a hamster origin rabies vaccine, caused a false positive FeLV ELISA result in one domestic cat. In all cases of these false positive tests, pretreatment of test sera with mouse serum eliminated these false positive results.

These researchers noted that the sub-unit FeLV vaccine Leukocell® does not, by itself, cause false-positive FeLV ELISA results. Other FeLV vaccines have not been tested by these researchers.

It was also emphasized that some manufacturers of FeLV ELISA kits have recently made changes that reduce the number of false positive results due to mouse antibodies (see the second article referenced below for more information on these kits). They also noted that the greatest cause of FeLV ELISA false-positive results, technician error, would not be eliminated by lessening test kit reactivity to mouse antibodies.

Since the life of a cat may well depend on the results of one or more FeLV tests, consideration of all possible sources for test result error is important. **--N.A. Lopez, DVM, MS and R.H. Johnson, PhD, JAVMA, Vol. 195, No. 6, September 15, 1989.**

OVULATION PREDICTION IN FERTILE AND SUB-FERTILE MARES

A quantitative enzyme-linked immunoassay (ELISA) for progesterone was evaluated for determining the day of ovulation during 143 estrous cycles of 81 fertile (107 cycles) and 11 sub-fertile (36 cycles) 10 year old (4 to 22 years) Quarter Horse mares. Estrous cycles were determined by regular testing and the days of ovulation were determined by rectal palpation and ultrasonography. Plasma samples taken daily from beginning of estrus through 48 hours following ovulation were assayed with rapid progesterone assay (Ovucheck, Cambridge Life Sciences, Cambridge, England) to determine if the kits could be used to accurately indicate the time of ovulation. By 24 hours following ovulation, 55% of the sub-fertile mares' progesterone levels had increased by at least .5 ng/ml over initial values. By 48 hours following ovulation, 89% of the fertile mares' and 50% of the sub-fertile cares' progesterone levels had increased by at least .5 ng/ml over initial levels. Rapid progesterone assays can be used to document that ovulation has occurred in mares. **--Abstract of presentation at 69th Ann. Mtg. of CRWAD, November, 1988 as reported in Veterinary News, April, 1989, Penn State University.**

THOUGHT FOR THE MONTH

A goal is an aim or purpose. It is a plan - something you expect to do. Without long range goals, you are likely to be overcome by short range frustrations.

-John Seales

ETIOLOGY OF FELINE CHRONIC STOMATITIS

Chronic stomatitis is a relatively common, but often intractable clinical problems in cats. It is generally manifest by ulcerative or proliferative lesions in the gingiva, the fauces, and sometimes the buccal mucosa and tongue. The condition is more severe and extensive than that typically seen with inflammatory gingival disease in other species. The etiology of the condition is unknown. Suggested infections include bacterial and viral etiologies. Feline calicivirus (FCV), which is known to cause both respiratory and oral lesions, has also been implicated. The recently discovered feline immunodeficiency virus (FIV) may also be involved in some cases; in a series of 10 FIV seropositive cats in California, three had signs of chronic stomatitis. FIV has also been isolated from one cat in Britain with a wide range of clinical signs, including mild gingivitis. Another retrovirus of cats, feline leukemia virus (FeLV), has also been associated with some cases of chronic stomatitis.

The prevalence of feline calicivirus (FCV), feline leukemia virus (FeLV) and feline immunodeficiency virus (FIV) antibodies were assessed in 78 British and 18 North American household cats with chronic stomatitis and in appropriate controls. In British cats, FCV was significantly ($P<0.005$) more prevalent in both hospital (92 percent) and general practice (79 percent) cases compared to their controls (19 percent in both cases). A similar difference in prevalence of FCV was noted in North American cats where 50 percent of cases were positive compared to 0 percent of controls (P, 0.01). FeLV prevalence was low in all chronic stomatitis populations. A significantly higher prevalence of FIV antibody was found in British hospital cases (81 percent) compared with time-matched controls (16 percent) ($P<0.001$): a similar rate was found in the general practice cases (75 percent) for which no controls were available. In the North American sample, FIV antibody status was similar in cases (54 percent positive) and their age, sex and breed matched controls (50 percent).

It seems that FCV and FIV have possible roles in chronic feline stomatitis. No viral etiology or associated agent has been found or suggested as having a direct effect on gingivitis-stomatitis in other species. However, the periodontal lesions associated with feline gingivitis-stomatitis have usual features when compared to those observed in most other species. Thus, although the bacterial flora in the mouths of affected cats is very similar to that associated with gingivitis-stomatitis in other species, other periodontal disease factors rather than the generally accepted bacterial plaque etiology of periodontal disease may be at work. The FCV and FIV prevalence reported here suggests an alternative, additional or cofactor effect in the feline disease. Chronic stomatitis, however, does not seem to occur following experimental infection with FCV isolates from cats with acute or chronic disease. It may be possible that other virus or host factors contribute to a pathogenic lesion. One possible cofactor suggested by this study is that of agents or factors may also play a role. **--Abstracted from Knowles, J.D., et al, Veterinary Record 124, 1989, p. 336-338 as reported in Veterinary Medical Extension, Iowa State University Newsletter #349-V696, July, 1989.**

PENNIES TOXIC

Pennies minted after 1982 have a high zinc content and can be fatal to dogs which swallow the coins. The pennies are about 97 percent zinc with a copper plating. Stomach acid dissolves the pennies rapidly, sending the zinc into the dog's system.

ETHOXYQUIN IN PET FOODS

There has been a recent sharp increase in the number of inquiries from pet owners and veterinarians concerning preservatives, particularly ethoxyquin, in pet foods. Most inquiries have been prompted by the editorials of one particular dog breeder and her unfortunate losses (German Shepherd Quarterly, 1988). Veterinarians should be prepared to answer client questions concerning preservatives and/or anti-oxidants in pet foods.

Pet foods contain fat, essential fatty acids (linoleic, arachidonic) and fat-soluble vitamins (A, D, E and K) which oxidize when exposed to oxygen (air). Essential fatty acids and fat-soluble vitamins are destroyed when oxidized. The oxidation of fat produces toxic compounds called peroxides which decrease cell membrane integrity and may be related to cancer. The food becomes rancid and takes on off-flavors and is then unpalatable.

Antioxidants have been used in pet foods for 20 to 30 years and are defined by the FDA as substances used to preserve food by retarding deterioration, rancidity and discoloration due to oxidation. There are two types of antioxidants; natural and synthetic. Natural antioxidants are vitamins E (tocopherols) and C; whereas, synthetic antioxidants are butylated hydoxytoluene (BHT), butylated hydroxyanisole (BHA) and ethoxyquin. The best antioxidant forms of vitamin E (gamma and delta) are not the best biological form (alpha). Alpha-tocopherol used in pet foods is an encapsulated form and may not be capable of protecting the fat. Vitamin C is effective when combined with other antioxidants such as vitamin E or BHT. Natural antioxidants must be added after the product has been processed because they cannot withstand the high temperature and pressure of processing.

Synthetic antioxidants BHT and BHA have been used in human foods since 1954 and are most effective when combined. They have a maximum allowable concentration of 0.02% or 200 parts per million (ppm). Ethoxyquin has been approved in animal feeds and pet foods by the FDA for more than 30 years. The maxim allowable concentration is 0.015% or 150 ppm. Ethoxyquin is a very effective antioxidant and can withstand the heat, pressure and moisture of food processing better than BHT and BHA. Ethoxyquin has not been shown to have permanent detrimental effects when consumed at very high levels over a long period of time. To date, ethoxyquin is the preservative of choice because of it's stability in processing and efficacy.

Dry forms of pet foods, exposed to air all the time, require antioxidants to protect the fat. Canned foods do not require antioxidants because they are held under vacuum which excludes air until the can is opened. However, some dry food manufacturers are selling "all natural" products which the public interprets as free of "additives" such as preservatives, antioxidants, colors and flavors. This is a game of semantics because five of five "natural" products analyzed by Monsanto in March of 1988 were positive for ethoxyquin. The ethoxyquin antioxidant was legally omitted from the ingredient list because the manufacturer did not "add" it to the product. The preservative was added by the fat ingredient processor and not the pet food manufacturer. When dry foods contain animal fat, poultry by-products or a meat meal, the antioxidant was added by the processor before they were purchased by the pet food manufacturer. Likewise, canned foods may not need a fat preservative but if the antioxidant was added to the fat source by the ingredient processor, it will be in the product but not on the label.

Monsanto has conducted studies using poultry, rats, rabbits and dogs to demonstrate the safety of ethoxyquin. The data are the result of proprietary research and have not been released to the general public. The data were reviewed by the FDA which subsequently approved the use ethoxyquin. Monsanto literature indicates ethoxyquin underwent long-term (5 year) studies in the dog using levels 5 to 10 times the recommended levels; however, there was no mention of studies with cats. A crude version of ethoxyquin is used as a rubber stabilizer but it has never been sold by Monsanto as an insecticide or herbicide. Ethoxyquin is used in some human foods such as apples, pears, paprika and chili powder.

There are some 50 million dogs and slightly more cats in the U.S. with a majority being fed dry pet foods. These preservatives have been fed for some 30 years and the average lifespan of pet dogs and cats has increased. There have been no indications that antioxidants are harmful to the health of these pets. These factors are quite convincing and even more so than the one or two individual dog breeder testimonials now appearing in the popular trade magazines or even the five year studies conducted by Monsanto. The disease consequences of feeding unprotected pet foods should be of greater concern. Homemade diets which are prepared frequently and refrigerated between feedings may be free of preservatives, depending upon the ingredient sources. Many homemade diets are not balanced for the canine or feline nutrient requirements but that is another very different problem.

With increasing evidence of food allergies in pets, it is quite possible to have an individual patient responsive to an additive or ingredient in some pet foods. It would be prudent for the veterinarian to investigate these cases of possible food reactions in a logical, scientific manner. An appropriate protocol would be to positively eliminate the suspect agent from the food for a substantial period of time (weeks). As noted, ingredient labels may not provide that assurance. If the clinical signs have resolved with the suspect agent removed from the food, a rechallenge is required with the reappearance of the clinical signs to confirm suspicions. This protocol provides a sound scientific approach upon which to incriminate a food component in a disease. Suggested reference: Canadian Veterinary Journal, August 1989, Vol. 30:682-684. **--Rebecca L. Remillard PhD, DVM, Clinical Nutritionist, Virginia Maryland Regional College of Veterinary Medicine, Blacksburg, Va, 24061.**

VVMA FOOD ANIMAL PROGRAM

An excellent continuing education program for food animal practitioners has been planned as part of the Virginia Veterinary Medical Association annual winter meeting to be held February 15-18, 1990 in Williamsburg, Va. The emphasis of the program will be on practical, up-to-date knowledge and techniques that can be put into application in your practice.

Features of the program include:

- Several hours of instruction from Dr. Andy Johnson, herd-health practitioner from Wisconsin who was the 1989 AABP Dairy Practitioner of the Year and who has been featured on many national programs.
- Ultrasound techniques by Dr. Donna Mathews and Dr. David Sprecher.
- Parasitology Update from Dr. Gil Meyer of American Hoeschst.
- Practice tips from Virginia's best practitioners.

Make plans now to attend this outstanding program!

RECOGNIZING SIGNS OF ILLNESS IN PET BIRDS

Survival of birds in the wild depends upon their ability to conceal their illness. This instinct often makes it difficult to detect early signs of disease in our pet birds. It is important for the practitioner and the bird owner to become familiar with the following signs of illness which a bird may exhibit.

A. CHANGES IN CHARACTER OF THE DROPPINGS - To evaluate changes, one must be aware of the appearance of normal bird droppings which consist of three parts.

1. FECES-may vary somewhat in color and consistency depending upon the diet, but is usually green, black or brown in color and well formed.
2. URINE-the liquid portion, is normally clear. This may increase in volume on a diet high in fruit and vegetable matter.
3. URATES-a creamy, white paste.

Some of the changes that may occur in the character of the droppings are:

-Decrease in the total number or volume of the droppings
-Change in color of any portion of the droppings
-Increase in water content of the feces (diarrhea)
-Decrease in feces volume with an increase in urates
-Increase in urine portion (polyuria)

B. DECREASE OR EXCESSIVE FOOD OR WATER CONSUMPTION
C. CHANGE IN ATTITUDE, PERSONALITY OR BEHAVIOR
D. CHANGE IN APPEARANCE OR POSTURE. This may include ruffled feathers, drooping wings, sitting on a low perch or on the bottom of the cage.
E. CHANGE IN CHARACTER OF RESPIRATION, such as any noticeable noise or excessive body movement corresponding to breathing.
F. CHANGE IN WEIGHT OF GENERAL BODY CONDITION. Feeling a prominent breast bone indicates severe loss of muscle mass.
G. ENLARGEMENT OR SWELLING OF THE BODY.
H. INJURY OR BLEEDING.
I. VOMITING OR REGURGITATION
J. DISCHARGE FROM THE NOSTRILS, EYES OR MOUTH.

Any of these changes may indicate the presence of a serious illness.

The metabolism of birds is quite high. Therefore, it is imperative to make food available to sick birds. Dishes filled with the bird's favorite food should be placed in the area of the cage that the bird is favoring. Feed by hand or tube if necessary. A bird that doesn't take in the required nutrition and energy level will soon die.

In addition, an environmental temperature of 85-90^{o}F should be maintained. Increasing the ambient temperature reduces the metabolic energy requirement. A temporary incubator can be made by placing a heating pad along the side or floor of the cage and draping the entire cage with plastic wrap or a blanket. A 100 watt light can be used as an alternate heat source. Watch for signs of overheating which may be exhibited as rapid breathing or holding the wings away from the body.

Remember, by the time a bird is showing outward signs of illness, it has probably been sick for some time. Do not wait to see how it will do tomorrow. At the very least, supportive nursing care is called for. **--Jean Sander, DVM, MS, Veterinary Newsletter, University of Georgia, November, 1989, no. 254.**

CONTINUING EDUCATION OPPORTUNITIES
VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE
SPRING 1990 PROGRAMS

Date	Program	Location	Contact Hours
*March 9-10	Critical Care Nutrition	Blacksburg	10
*March 16-17	Plastic and Reconstructive Eyelid Surgery	Blacksburg	10
March 24-25	Llama Conference	Blacksburg	
March 29	Small Animal Medicine Update	Charlottesville	4
*March 30-31	Equine Respiratory Disease	Blacksburg	10
April 8	Small Animal Medicine Update	Charleston, WV	4
*April 20-21	Gastrointestinal Endoscopy	Blacksburg	8
April 22	Pet Bird Medicine	Midlothian	6
May 12	Food Animal Practitioners	Waynesboro	6

*Limited enrollment course

Note: Program brochures are mailed approximately six-eight weeks prior to the course date. For course information or assistance, please contact:

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VIRGINIA STATE MEETING IN WILLIAMSBURG

Virginia Veterinary Medical Association Annual Meeting
Kingsmill, February 15-18, 1990
For information, contact Jack Lewis, VVMA Office, Richmond, VA (804) 270-9013

Note: VMRCVM senior students will be available for employment interviews on Friday afternoon and Saturday morning during the VVMA meeting at Kingsmill.

PATIENT CARE

A short course on Critical Care Nutrition for small animal patients is scheduled for March 9-10, 1990 in Blacksburg. Course instruction outlines practical ways for practitioners to provide life saving parenteral and enteral nutrition of critical patients. These techniques are illustrated, discussed and then practiced in a hands-on laboratory. For more information, please contact Kent Roberts, DVM, VA-MD Regional College of Veterinary Medicine.

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