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VETERINARY MEDICINE



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Kent C. Roberts, DVM
Extension Veterinarian

DIAGNOSIS OF GIARDIA INFECTION

The protozoan parasite Giardia is one of the most prevalent intestinal parasites of small animals and is a common cause of diarrhea. Unfortunately, the organisms are not always present in the feces and many practitioners feel uncertain of their expertise in identifying the cyst stage of the parasite. However, Giardia is not difficult to recognize when the appropriate techniques are used. Two forms of the parasite may be used in diagnosis. The motile trophozoite (9-21 μm in length) is normally found in the small intestine but is only occasionally present in diarrheic feces. Consequently, reliance on identifying the trophozoite in the feces will mean that many cases of giardiasis will be missed. The cyst (8-12 μm long) is the stage of the life cycle specialized for transmission, and is the form most often present in the feces of infected animals. Fecal examination of Giardia should always include a technique maximizing the possibility of finding the cysts. The following procedures are recommended when examining stool samples for Giardia:

1. If the feces are diarrheic, prepare a saline smear and examine it for trophozoites. It is important to use a fresh fecal sample. Trophozoites do not survive long outside the body and they are much easier to see if they are still moving. It is also important not to make the smear too thick--it should be thin enough to read newsprint through. The most distinctive characteristics of the trophozoite are its ventral concave shape and bi-nucleated "facial" appearance. Giardia may be confused with intestinal trichomonads which may also be found moving in fecal smears, but the trichomonads do not have the same morphologic appearance. Giardia cysts may also be present in smears, but are less readily seen amongst the debris because they do not move. It is very unusual to find trophozoites in feces of normal consistency.

2. If trophozoites are not present or if stool is not diarrheic, the best technique for concentration of cysts is the zinc sulfate (ZnSO_4) flotation. Other common flotation solutions distort Giardia cysts, making them virtually unrecognizable. A 33% ZnSO_4 solution (33g ZnSO_4 brought up to 100 ml with tap water) does not cause this distortion and will also effectively float other common eggs and oocysts found in small animal feces.

To use the ZnSO_4 flotation technique the following steps are performed:

- a. Mix about 1 tsp of feces with the flotation solution (about 15ml) and filter through a double layer of cheesecloth.
- b. Fill a 15 ml centrifuge tube with the mixture and place in the centrifuge. If the centrifuge carriers hang straight, fill the tube and place a cover slip on top so that the fluid is in contact with the cover slip.
- c. Spin for 2-3 minutes at 500-600g. For a bench top centrifuge with settings from 1 to 10, spin at about 8.
- d. Remove the cover slip from the top of the tube and place on a slide. The material on the surface of the fluid can also be collected by touching a wire loop or end of a glass rod (a 3ml Vacutainer tube also works well) to the surface and transferring the drop to a slide.
- e. Scan the slide at 10X and look for cysts under the high dry objective. A drop of dilute Lugol's Iodine may be added to the slide to make recognition of the internal structure of the cysts easier.

- f. If the sample contains a large amount of fat it is helpful to begin the procedure by first mixing and spinning the sample with tap water. The supernatant is then discarded and the ZnSO₄ solution added to the pellet and mixed well before completing the technique as described above.

Because Giardia cysts are present in feces only intermittently, it is recommended that at least 3 fecal samples be examined over the course of a week.

Recently, examination of duodenal aspirates has been shown to be a sensitive technique for identification of Giardia trophozoites. At this time, however, it has not been shown that a single duodenal aspirate is more effective in diagnosis than 3 fecal samples.--Anne M. Zajac, DVM, MS, PhD, Parasitologist, VA-MD Regional College of Veterinary Medicine, Blacksburg, VA.

FELINE ISCHEMIC ENCEPHALOPATHY (Cerebral infarct)

Feline ischemic encephalopathy is a poorly understood but intriguing disease complex that occurs in all ages and breeds, and both sexes of cats. It may occur more often in the late summer months and in cats that are one to three years old. About one-half of the reported cases have had upper respiratory signs preceding the neurological signs. The necropsies that have been done have most often shown ischemia to the portion of one cerebral hemisphere supplied by the middle cerebral artery. A common underlying cause of the ischemia has not been ascertained.

The onset of signs is acute and cats present with a variety of neurological signs, such as behavioral changes, aggression, motor deficits, seizures, visual deficits and ataxia. Neurological examination is important in localizing the lesion. Clinical signs of unilateral cerebral ischemia include circling toward the side of the lesion, focal seizures, behavioral changes, and contralateral limb weakness and proprioceptive deficits. Occasionally both cerebral hemispheres are damaged and the clinical signs are not as asymmetrical. If one side of the brainstem becomes ischemic, the cat may show unilateral and ipsilateral paresis or paralysis and cranial nerve deficits. If the optic chiasm is damaged, visual deficits and dilated pupils with poor to absent pupillary light reflexes will be found.

The hemogram, serum chemistries, urinalysis, feline leukemia virus test, etc. are not helpful in diagnosing cerebral ischemia, but they are important in helping to eliminate other diseases that could cause similar clinical signs. Cerebrospinal fluid analysis may show xanthochromia with an increased protein value. An electroencephalogram can be normal or abnormal depending on what part of the brain is involved.

Treatment frequently includes corticosteroids because of the edema associated with necrosis of brain tissue. Anticonvulsants should be administered if seizures occur. Supportive care is important if the cat isn't eating or drinking. The prognosis is fair to guarded, depending on location and extent of the ischemia. The clinical signs usually improve after days to weeks; however, residual behavioral changes and motor deficits may exist and epilepsy may develop. Aggressive behavior and poorly controlled epilepsy are the most common residual problems.--Linda Shell, DVM, Diplomate ACVIM (Neurology), Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA.

WHAT REALLY CONSTITUTES COSMETIC SURGERY?

Veterinarians are frequently faced with decisions regarding corrective surgery for eyelid problems in animals which have potential show or breeding use. The AVMA Judicial Council has provided clear guidelines to help the veterinarian in separating surgical procedures which are performed solely for the animal's well-being from those which are intended to mask the presence of a genetic defect or a conformational fault. Unfortunately, in some areas, notably ophthalmology, there may be considerable overlap between these categories and it becomes a matter of individual judgement to determine what constitutes the most ethical behavior.

It is the position of the Judicial Council that "surgery performed with the intent to deceive a third party is unethical". This is an intuitively obvious statement, yet its actual application may be difficult when one is faced with an animal which truly needs revision of deformed eyelids (for example, entropion which is compromising corneal integrity) but which the owners intends to use for breeding or show. Properly corrected, the defect may be undetectable to a prospective buyer, a show judge, or the owner of another animal who is considering breeding to the patient--in short, a "third party". The veterinarian is in a "Catch-22"...it is unethical and unacceptable to allow the eyelids to continue to cause damage to the cornea, yet once corrected, an unscrupulous owner may pass these now-perfect lids off as the animal's true conformation rather than the result of surgery. In the strict sense the operation was not "cosmetic" because its primary purpose was for treatment of a condition which was painful and potentially blinding to the animal. So although the veterinarian's motive in performing the procedure was ethical, the owner is free to use the result in an unethical manner and the veterinarian is an unwilling accessory. Since it is not the veterinarian but the owner who has "intent to deceive a third party", it is unlikely that the veterinarian would be considered responsible for the potentially negative results of the client's behavior. But the potential for guilt by association is obvious, and the question remains whether the veterinarian knew that the owner intended to deceive third parties before undertaking the operation, which might be interpreted as though the veterinarian himself had intended the deceit.

I handle this situation by making strong recommendations, verbally and in the medical record, that the animal be neutered when the corrective procedure is performed or as soon as is reasonable under the individual circumstances. However, if the client is unwilling to have the animal neutered, I feel I have no viable choice but to perform the surgery and again emphasize my position both in writing and directly to the client.--Kay Schwink, DVM, Ophthalmology, VA-MD Regional College of Veterinary Medicine, Blacksburg, VA.

SMUGGLED BIRDS: ANNUAL THREAT TO AMERICA'S CAGED BIRD AND POULTRY INDUSTRY

A January Alert

Smuggled birds enter the United States year round, but most of the 25,000 that enter illegally each year do so from the beginning of January through mid-May, the normal hatching season for wild birds. Most come across the Mexican border and originate in Mexico, Central America, South America, New Zealand, Australia and Africa.

Pet Bird Population Soars in the United States

The popularity of pet birds has increased in the United States. In fiscal year 1974, about 28,000 birds entered the country in legal commercial shipments; by fiscal year 1984 that number had risen to almost 742,000 and has averaged 800,000 each year since then. Experts believe that 15 percent of U.S. households now include pet birds. They are especially favored by apartment dwellers and elderly.

USDA Bird Import Rules

In 1979, APHIS adopted new strict regulations for importing personally owned pet birds because of increasing outbreaks of exotic Newcastle disease in the United States. Instead of the "gentlemen's agreement" by which owners agreed to isolate birds for a minimum of 30 days at home, travelers must now leave them for 30 days at a U.S. Department of Agriculture operated import facility at one of six ports of entry.

U.S. Outbreaks and the Smuggled Bird Connection

Outbreaks of exotic Newcastle disease have been averaging at one outbreak a year since the 1971-74 outbreak. Because of quick action by State and Federal eradication teams, poultry flocks were not affected. USDA epidemiologists studying the disease have traced these outbreaks directly to smuggled birds.

Punishment for Smugglers

Bird smugglers can now be sentenced up to five years in prison and fined up to \$20,000 per violation, if convicted under a law administered by the U.S. Fish and Wildlife Service.

How to Help

- *Deal only with reputable pet shops or wholesale dealers -- companies that have been recommended or that have been in business a number of years.
- *If you respond to a classified ad, make certain it is being offered by a bona fide dealer or breeder.
- *Be suspicious if the price of a bird is lower than normal and be wary of birds advertised at "rock bottom" prices. (See "hotline" note below.)
- *Check for the circular stainless-steel, USDA-approved leg band -- engraved with three letters and three numbers -- before buying an imported hookbilled bird. This band is your guarantee of a "legal" bird.
- *Isolate newly purchased birds for at least 30 days. If birds seem uncoordinated or have trouble breathing, contact a local veterinarian or animal health official immediately. If birds should die, place them in plastic bags and refrigerate them so they may be submitted to a diagnostic laboratory.
- *If you suspect illegal activity, call USDA's Smuggled Bird Hotline (301) 436-8073.
- *Maintain a good working relationship with a knowledgeable veterinarian.

*If you are a bird dealer, maintain communication with local government officials concerned about the safety, health and well-being of birds.

*If you're an individual planning to buy a bird overseas, learn about the strict regulations for bringing one into the United States. Obtain a free copy of the pamphlet, "Importing a Pet Bird," Pet Bird Pamphlet, USDA-APHIS, Room G-100, Federal Building, Hyattsville, MD 20782. (APHIS Facts, January 1988 as reported in Veterinary Newsletter, University of Georgia, College of Agriculture, No. 238, VM2326-2335, May 1988).

PARENTAL GENTAMICIN FOR CATS

Based on recent experimental data comparing IV, IM and SC injections of 5 mg/kg gentamicin, and serum concentration versus time, 3 mg/kg TID was calculated to be the recommended gentamicin dosage. An average steady-state serum gentamicin concentration of 4 ug/ml was induced by this dosage. Ease of administration, rapid absorption and good bioavailability made the SC route of administration preferred. (From A.D. Jernigan, DVM, PhD, et al, "Pharmacokinetics of Gentamicin after Intravenous and Subcutaneous Administration in Cats", Am J Vets Res Vol. 49, No. 1, Jan. 1988, pp. 32-35; as reported in JAVMA, Vol. 192, No. 1, Jan. 1, 1988, p. 84, as reported in Texas Agricultural Extension Service Veterinary Quarterly Review, Vol. 3, No. 1, Winter 1987-88).

SUCCESS IS NO ACCIDENT

The importance of continuing study and frequent updating for members of the professional and paraprofessional staff of any practice should be self evident. A reference library, however small, should be an essential part of every progressive veterinary facility. And just having it isn't enough - all members of the practice team should be encouraged to use it with the professional staff members setting the example.

No time to use it? Not a valid excuse in any practice that emphasizes client education, differential diagnoses and specific therapy. Appropriate journals and reference books are needed and useful every working day. Their availability can be important to clinical success and says a lot about the practice commitment to quality medicine.

The study of veterinary medicine most certainly doesn't end with graduation from veterinary college. The importance of continuing study can best be realized with an in-house reference library. The habit of regular library use can be important to success. Why not acquire the habit?--Kent Roberts, DVM, VA-MD Regional College of Veterinary Medicine, Blacksburg, VA.

THOUGHT FOR THE MONTH

Learn from the mistakes of others - you can never live long enough to make them all yourself.

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE
VIRGINIA TECH - BLACKSBURG, VA
CONTINUING EDUCATION - FALL 1988

<u>Date</u>	<u>Program</u>	<u>Location</u>	<u>Contact Hours</u>
Sept. 14-15	Small Animal Medicine Update	Tidewater	4
	Tidewater (14)	Charlottesville	4
	Charlottesville (15)		
*Sept. 23-24	Small Animal Diagnostic Endoscopy	Blacksburg	8
	Lecture/Wet lab		
*Oct. 14-15	Mare Infertility Workshop	Leesburg	10
	Lecture/Wet Lab		
Oct. 20	Local Associations Meeting	Blacksburg	2
*Oct. 21-22	Bovine Abdominal Surgery	Blacksburg	10
	Lecture/Wet lab		
Nov. 3-4	Bovine Practitioners Fall Conference, Sheraton Inn	Frederick, MD	10
*Nov. 11-12	Small Animal Urogenital Surgery	Blacksburg	10
	Lecture/Wet Lab		
*Dec. 2-3	Small Animal Clinical Nutrition	Blacksburg	10
	Lecture/Wet Lab		
*Dec. 9-10	Practical Eye/Ear Surgery	Blacksburg	10
	Lecture/Wet Lab		

*Limited Enrollment

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

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VMRCVM STUDENT SPONSORED PROGRAMS - FALL 1988

Oct. 1	Horseman's Symposium on Equine Reproduction	Blacksburg
Nov. 12-13	Exotic Animal Medicine Seminar	Blacksburg

Virginia-Maryland Regional College of Veterinary Medicine Extension Staff:

Dr. J.M. Bowen - Extension Specialist - Equine
Dr. C.T. Larsen - Extension Specialist - Avians
Dr. K.C. Roberts - Extension Specialist - Companion Animals
Dr. W. Dee Whittier - Extension Specialist - Cattle

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