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EXTENSION DIVISION - VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY - BLACKSBURG, VIRGINIA 24061

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LYMPHOSARCOMA IN THE CAT

Lymphosarcoma is generally defined as the neoplastic proliferation of lymphocytes with solid tissue infiltration of lymph nodes and other organs. Although lymphosarcoma occurs in all animals, it is most common in cattle and cats.

Lymphosarcoma is the most common neoplasm in cats of all ages. Several forms of lymphosarcoma, based upon the anatomical distribution of the neoplastic infiltrate, are described.

Thymic lymphosarcoma usually occurs in younger cats. Clinical signs include dyspnea and lethargy, but occasionally a cat will die without clinical signs having been noticed. At necropsy the diagnosis is obvious. A red to tan, slightly firm mass is present in the anterior ventral mediastinum, causing caudal displacement of the lungs. There may be pleural effusion, resulting in pulmonary atelectasis. It is recommended that a piece of tissue, fixed in 10% neutral buffered formalin be submitted for histologic examination to confirm the diagnosis since thymomas and mast cell tumors may have the identical gross appearance.

In the intestinal form, the wall of the stomach or the small intestine is thickened due to neoplastic infiltration. Normal segments of bowel are interspersed among affected segments. All the neoplastic infiltrate is often diffuse and occasional discrete neoplastic nodules may be present. The liver and mesenteric lymph nodes are frequently involved in this form of the disease. Liver involvement may be diffuse or nodular or both. With diffuse hepatic involvement there is discrete generalized hepatomegaly. The liver is paler than normal. If discrete nodules are present they are of variable size and are randomly scattered throughout the parenchyma. The masses are tan-red and slightly firm. Lymph node involvement may also be diffuse or nodular.

Any organ or organ system may be involved in multicentric form of lymphosarcoma, including the gastrointestinal tract, urinary tract, spleen, or brain. The kidneys are frequently involved with either a diffuse or nodular neoplastic infiltrate. It is common for a diffuse infiltrate to affect only the cortex or only the medulla. Overall the kidney will usually be enlarged and the affected area will have a tan-grey hue.

It is possible for a cat that has tested FeLeuk negative to develop lymphosarcoma. The test may have yielded a false negative result or perhaps not all forms of lymphosarcoma in the cat are associated with feline leukemia virus.--**Lois Roth, DVM, PhD, Diplomate ACVP, Virginia-Maryland Regional College of Veterinary Medicine.**

THOUGHT FOR THE MONTH

This time, like all times, is a good one if we but
know what to do with it.

R. W. Emerson

CATS AND PHARMACEUTICALS

Editor's Note: This is the fourth of a series of articles on cats and their special pharmaceutical problems. These articles are taken from Veterinary Topics, University of Illinois, Vol. 11, No. 1, 1986.

Antiparasitics

Clinical impressions indicate that cats are highly sensitive to organophosphates. In acute organophosphate intoxication, signs referable to acetylcholine accumulation are produced: miosis, frequent defecation and urination, salivation, vomiting, muscle fasciculations, convulsions, and death due to respiratory paralysis. Signs may be seen from minutes to in excess of 24 hours post-exposure. Additionally, cats appear to be more susceptible to the delayed form of neurotoxicity, in which minimal exposure to an organophosphate results in axonal degeneration days to weeks later. The degeneration and consequent signs of paresis and paralysis begin peripherally and progress toward the central nervous system. It is not known why cats are more susceptible than most other domestic animals to this form of toxicity. Finally, dichlorvos-impregnated flea collars have been reported to cause dermatitis in cats and should be used with particular caution in debilitated cats.

Treatment of acute organophosphate intoxication is supportive and may entail the use of enterogastric lavage. Additionally, atropine at 0.1 to 0.2 mg/kg given slowly IV is a specific antidote. To avoid ventricular fibrillation, atropine should not be given to a cyanotic patient; rather resuscitative efforts should be instituted first. In more serious cases of poisoning, IV 2-PAM at 20 mg/kg should be given in conjunction with atropine.

Malathion is one organophosphate approved for use in cats and considered safe and efficacious for the treatment of ectoparasites. Its rapid metabolism in mammals compared to insects may account for the increased safety relative to other organophosphates.

Cats appear to be very sensitive to chlorinated hydrocarbons, thus their use is contraindicated. Chlordane, lindane, dieldrin, aldrin, and endrin cause apprehension, belligerence, hyperesthesia, hypersalivation, convulsion, and death in cats. These signs may occur from minutes to weeks post-exposure and the clinical course of the intoxication may be prolonged, for these compounds are readily stored in fat depots. Treatment entails washing the product off the fur and/or enterogastric lavage. Additionally, sedation with diazepam and housing the animal in a dark, quiet environment are recommended to control seizure activity. Because chlorinated hydrocarbons are excreted by the kidneys, it is important that adequate urine production be maintained.

FERRET INFORMATION

Ferrets are becoming increasingly popular as pets. For the veterinarian unfamiliar with ferrets, the following is a guideline for routine prophylactic procedures.

Ferrets must be protected against canine distemper by vaccination with MLV of chick embryo origin. Killed vaccine provides only short term immunity that is slow to develop and that is not effective in all ferrets. Distemper vaccine prepared from ferret cell culture should not be used because attenuated virus may possibly retain its virulence for its natural host.

Only killed rabies vaccine should be used. The ferret is assumed to be highly susceptible to rabies and capable of transmitting the virus.

Ferrets are not susceptible to disease produced by feline panleukopenia, mink virus enteritis, canine hepatitis, feline rhino tracheitis or feline calicivirus and do not require vaccination against these diseases. There is no definitive evidence that ferrets are susceptible to canine parvovirus.

Female ferrets not intended for breeding should be spayed at six to eight months of age as estrous females have high endogenous estrogen levels which causes a greater than 50% prevalence of fatal bone marrow depression. Male ferrets not intended for breeding should be castrated at six to eight months of age to reduce their aggressiveness and to remove some of their musky odor. The testes are present in the scrotum only during the breeding season, usually from July to December.

The paired musk glands lateral to the anus may be removed at the time of neutering or spaying. Excision of the glands in addition to neutering will reduce, but not eliminate, the ferret's musky odor.

Schedule of Vaccination and Routine Prophylactic Care

Age	Plan
6-8 weeks (4-6 weeks if dam unvaccinated)	First CDV (canine distemper vaccine)
9-12 weeks	Second CDV
12 weeks	Rabies (killed)
6-8 months	Spay/castrate
	Remove musk glands
1 year	Rabies booster (annual)
3 years	CDV Booster (triennial)

The Compendium Collection: Exotic Animal Medicine in Practice. Reported in Animal Health Beat, University of Nevada-Reno, Vol. 3, No. 3, March 1987.

CANINE DISTEMPER VACCINE FAILURE

A number of factors may contribute to canine distemper vaccine failures by having a negative effect on a dog's immunocompetence.

1. High levels of maternally-derived antibodies is the most important cause of vaccine failure. Maternal antibody levels greater than or equal to 1:20 (virus neutralizing titer) protect against distemper and neutralize vaccine virus. Only 50% of puppies can respond to distemper vaccination by 6 weeks of age. Approximately 90% will develop active immunity at 12 weeks of age.

2. Inherited immunodeficiency syndromes account for some distemper vaccine failures.

3. Canine parvovirus is immunosuppressive. Vaccine-induced distemper has been reported in pups simultaneously vaccinated for distemper and infected with canine parvovirus. It has been suggested that live parvovirus vaccine in combination with distemper should be avoided.

4. Certain parasitic infections such as demodectic mange may be immunosuppressive.

5. Pups with elevated body temperatures do not develop a normal immune response to distemper vaccination. Do not vaccinate pups that are febrile.

6. Broad spectrum antibodies such as tetracycline or chloramphenicol should be avoided at the time of vaccination.

7. Vitamin E and selenium deficiencies are immunosuppressive in dogs.

8. Stress induced by overcrowding, transportation, environmental changes, and rapid fluctuation of ambient temperature or relative humidity may inhibit the immune response. (Iowa State University, Veterinary Medical Extension, Communications in Continuing Education, #320, V-667, February 1987).--**Reported in Animal Health Beat, University of Nevada-Reno, Vol. 3, No. 2, February 1987.**

EFFECTS OF PRAZIQUANTEL (DRONCIT^{R}) ON <u>DIROFILARIA IMMITIS</u> MICROFILARIAE

Because of many recent calls from practitioners who were of the opinion or who had heard that praziquantel was an effective microfilaricide, an experiment was conducted to study the effects of praziquantel in infected dogs.

Four dogs, naturally infected with <u>Dirofilaria immitis</u>, were selected for the study. All had a microfilaremia that ranged from 175 to 38,625 per ml. One dog served as a control; the others received 1, 2 or 3 times the recommended dosage of praziquantel for cestodes. The recommended dosage of praziquantel varies with the animal's weight, with smaller dogs receiving a relatively higher dose.

Animals received an oral preparation of praziquantel every other day for 6 days, then daily for 12 days. The number of microfilariae present in the blood was determined the day after treatment. None of the dosages of praziquantel had any effect on the number of microfilariae present.

Praziquantel is effective against schistosomes, some other trematodes and adult and larval cestodes. Trematodes and cestodes exhibit an immediate and profound contraction of their musculature as well as rapid destruction of the tegument. It does not have this effect on nematodes.--**by Kenneth S. Todd, Jr., PhD, and Allan J. Paul, DVM, MS, Veterinary Topics 1986, Vol. 11, No. 4, University of Illinois.**

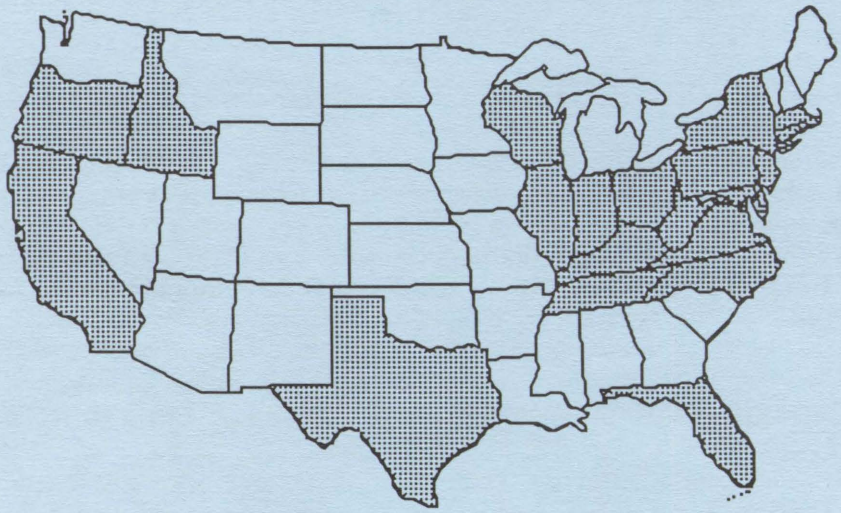
POTOMAC HORSE FEVER UPDATE

It is about to be Potomac Horse Fever season again.

Incidence

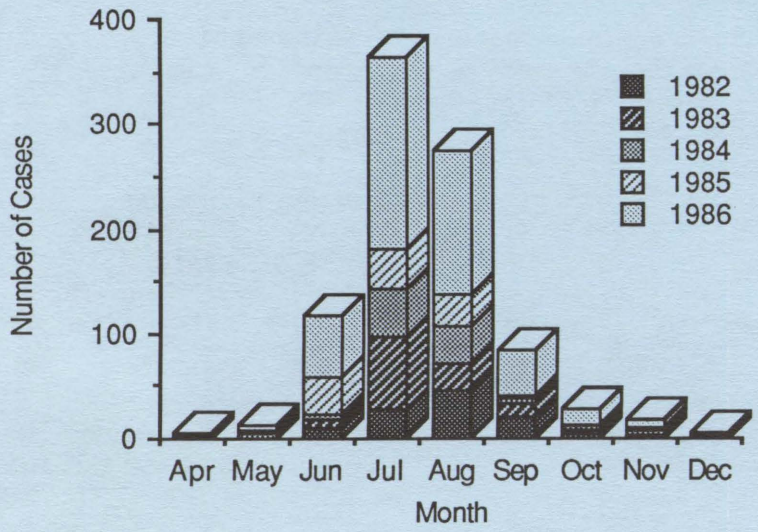
Potomac Horse Fever, a relatively recently recognised acute diarrhœic disease of horse, is on the move. Last year it was found to be present in the Ohio Valley, at River Downs racetrack, and in central Kentucky. There is now serological evidence that horses which have been exposed to this disease have been found in 21 states. (Fig 1.)

Location of Seropositive Horses by State



The disease is thought to be transmitted by an arthropod vector, probably an insect or a tick, though the exact mode of transmission is yet to be worked out. Potomac Horse Fever is highly seasonal. (Fig. 2.)

Reported Monthly Incidence of Potomac Horse Fever in Maryland 1982-1986



Diagnosis

Until other tests such as the ELISA test are widely available, positive identification of this disease can be confirmed when there is evidence from two serial serum samples of a rising titer to *Ehrlichia risticii* with the indirect fluorescent antibody test. A single sample showing a titer is only evidence that the horse has been in contact with *E. risticii* at some stage of its life.

At a recent meeting it was decided, that until further notice, all blood (serum) samples submitted for testing with the indirect fluorescent antibody test for *Ehrlichia risticii* from Virginia and Maryland, should be sent to:-

Department of Agriculture,
State of Maryland,
Animal Health Laboratory,
4901, Clavert Road,
College Park,
MD. 20740.

Telephone. (301) 454-3631.

Two samples should be taken from suspected cases, the first as soon as possible during the acute phase of the disease. As serum antibodies have often not reached detectable levels when the acute phase of the disease is manifest, a second sample should be drawn during the convalescent period, approximately two weeks after the original sample. The Maryland Animal Health Laboratory will in future report the titers of all paired samples submitted to aid clinicians in their interpretation of results. This year the cost will be $30.00 for processing the two samples ($10.00 for a single untitrated sample) and this will be charged to the referring veterinarian.

This will be the only laboratory which will carry out this test for practicing veterinarians in Virginia and Maryland, and your cooperation in labelling and identifying the samples correctly, will greatly enhance the speed with which you will receive the results.

Treatment

In the treatment of Potomac Horse Fever, the early use of supportive therapy, particularly intravenous fluid replacement, is essential. The drug of choice is Oxytetracycline, given promptly intravenously, at a dose rate of 5 - 10mg/kg (250 - 500mg/50kg), daily for a period of at least 5 days. Other drugs, such as trimethoprim-sulfa have been used with some success, but the liberal use of fluid therapy is of primary importance.

Prevention

A vaccine has been developed and is presently being tested by the USDA. Schering Animal Health are to market this vaccine.

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Electrocardiogram required

The Rhulen Agency Inc. Insurance now requires that an electrocardiogram be performed on all horse valued at $100,000 or more, as part of their standard pre-insurance veterinary examination. This will automatically entitle horse owners to a 5% credit on their Rhulen Mortality Insurance Premium. Owners of Quarter Horses, Appaloosas and Tennessee Walking Horses will **not** be eligible for this 5% credit. Horses valued at less that $100,000, provided that they are **not** Quarter Horses, Appaloosas or Tennessee Walkers will also be eligible for this new 5% credit.

Rhulen will accept an electrocardiographic evaluation from private veterinarians, veterinary schools or the services offered by Cardiopet of Roslyn, New York, a company which Rhulen uses for second opinions in the interpretation of irregular ECG results. If you have any questions about this new ruling, please contact Rhulen at 1-800-431-1270, Ext 438 or 122.

CONTINUING EDUCATION OPPORTUNITIES

May 8-9, 1987	The Canine Hip - Lecture/Wet Lab Dr. Marvin Olmstead - Blacksburg, VA
May 9, 1987	Food Animal Practice Workshop The Red Carpet Inn - Waynesboro, VA
June 26-28, 1987	Virginia Veterinary Medical Association Summer Sojourn - Williamsburg, VA

EXTENSION SPECIALIST NAMED DEPARTMENT HEAD

Dr. J.M. Bowen, Equine Extension Specialist, VA-MD Regional College of Veterinary Medicine, has been named as chairman of the Department of Large Animal Clinical Studies by Peter Eyre, Dean of the College. Dr. Bowen is a boarded theriogenologist and a specialist in equine reproduction.

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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Barbara B. Jones, Managing Editor of VIRGINIA VETERINARY NOTES

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