Virginia Cooperative Extension Service

VIRGINIA VETERINARY NOTES

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE

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WHAT'S INSIDE!

THOUGHT FOR THE MONTH

When all is said and done, much more is said than done.

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LEPTOSPIROSIS IN HORSES - ON THE INCREASE?

For the past few years we have seen an increase in leptospirosis in many animal species including the horse. Leptospira pomona has been the predominant serovar as detected by serology. We know that the prevalence of different serotypes differs considerably from region to region in our country. However, recent information indicates that there are a variety of animal hosts likely to become infected with the same leptospira serovar so that there is probably not the same strict host-species specificity and susceptibility as we once thought. Many areas including Canada, Kentucky, Great Britain, and Australia have reported problems with equine leptospirosis.

There is a continued need to examine aborted equine fetuses for leptospirosis. Discussions held at recent US Animal Health Association meetings have concluded that leptospira infections in the equine fetus have been underestimated by diagnostic laboratories. The major serovars reported in the horse are Leptospira pomona, grippotyphosa, and bratislava.

Since June of 1990 we have used a new polyvalent fluorescent antibody (FA) test reagent produced by the National Veterinary Service Laboratory's (NVSL) National Leptospira Reference Center. We have also been conducting a survey of deer in New York for the past five years and have noticed a high prevalence of L. pomona infections. Concurrently, we have observed an increase in Pomona infections in many other species such as the dog and cow as diagnosed by the microscopic agglutination (MAT) test. Most of our specimens at the Diagnostic Laboratory come from New York, New England, Pennsylvania, Ohio, New Jersey, Maryland, and Virginia. Since June of 1990, we have had 11 FA positive equine specimens: 6 fetuses, 1 stillborn, 2 one day old foals, 1 uterus from an adult horse, and 1 kidney from an adult horse. It is interesting to note that 2 of the fetuses and the stillborn foal were positive for EHV-1 (there is evidence in the literature for dual infections with herpes and leptospira).

While leptospira abortion is difficult to diagnose in the mare because there are often no clinical signs observed in aborting mares, we are able to attempt a laboratory diagnosis based on postmortem findings in the placenta and fetus; suspect cases are usually confirmed by examination of fetal tissues and the placenta by FA tests, special stains of fixed tissue, and bacterial culture of urine or organs (See Table 1). Recent work has also shown the value of testing fetal fluids and the mare's serum for leptospira antibody, and the examination of the mare's urine for spirochetes by darkfield microscopy and FA. Gross pathology and histopathological services are offered by the College's Necropsy Service. We need your help to further evaluate the extent of leptospirosis in our equine population.

We need more information on leptospira infection in horses including epidemiology, clinical significance and cost effectiveness of preventative measures such as vaccination. Recent reports from Kentucky state that the number of confirmed cases of leptospira abortion increased from 0.6% in 1987 to 5.9% in 1990 (36th Am Assoc of Equine Pract, 1990). In order to control infection, we must use a combination of management with good sanitation so as to reduce the chances of contact by susceptible animals with urine, fetuses, and contaminated water and feed. Thorough cleaning of stalls must be performed after they are occupied by an infected animal. Areas to avoid are low lying areas and runoff from barns and corrals, as well as contact of horses with rodents and wildlife. Leptospira infections are found commonly where the climate is warm and humid, the soil is alkaline, and where there is an abundance of surface water. Urine is usually the major source of contamination for the horse because clinically recovered animals often shed leptospira for a long time in urine. Leptospira has been reported for up to 4 months in horses. Reported forms of leptospirosis in the horse include the relatively mild subacute form which may include the clinical signs of icterus, fever, anemia, some depression, and jaundice; the chronic form with abortion at 7 to 10 months; and periodic ophthalmia with recurrent attacks of ocular signs which may terminate in blindness. Often ocular disease occurs 14-16 months post-exposure to disease. **--Dr. Patrick L. McDonough, Veterinary Update, Cornell University Extension, March, 1992, as reported in Alabama Veterinary Notes, Vol 3, No 1, April, 1992, Auburn University.**

TABLE 1
APPROACH TO DIAGNOSIS OF LEPTOSPIROSIS IN THE HORSE

SPECIMEN	TEST	SUBMISSION/TRANSPORT	COMMENTS*
urine	darkfield exam FA culture	submit 1/2 fresh in vacutainer; submit 1/2 with few drops formalin	submit from ill and well animals
fetus/body fluids placenta; body organs (kidney/ liver)	gross pathology exam histopathology exam FA culture MAT serology	submit fresh fetus with membranes intact and placenta on ice; ship by fastest means possible; notify lab of shipment	
serum (mare)	MAT serology	vacutainer	

***NOTE:** submit serum from clinically ill animals, mares that abort, and 15-20% of the "normal" animals on the premises; submit acute and convalescent sera when possible. If submission of the entire fetus is not possible, you can use one of the bovine abortion kits for submission. Submit urine and serum from any mares that abort. A uterine biopsy for FA analysis may also be helpful.

RABIES VACCINE FIELD TEST

USDA is asking for comments on a proposed field test of a genetically engineered rabies vaccine in New Jersey. The vaccine was first field-tested, and successfully, on Parramore Island, Va., 2 years ago and in Sullivan County, Pa., last year. The idea is to immunize raccoons in the wild. Raccoons are the main reservoir for rabies in the Northeast.

The rabies vaccine is inserted into a capsule which is enclosed in a bait. The proposed test in Atlantic, Cape May, and Cumberland Counties, N.J., will use a bait to attract raccoons. The test will be part of the process to show that the vaccine is pure, safe, potent, and effective, and is not threat to humans or the environment. Wildlife and people in the area will be monitored for a year after the trial.

The vaccine is a biotechnology product. It is a variation of the safe small pox vaccine used for humans. The weakened, altered vaccine virus has been induced to wear not only its own coat, but also the harmless but distinctive glycoprotein coat of the rabies virus. The raccoon's cells respond to the genetic instructions in the vaccine virus and start reproducing the virus with the distinctive coat containing the rabies glycoprotein. This alarms the raccoon's immunity system. It rushes into action to do battle with the vaccine virus.

This calls immunity "soldier cells" into action. They set upon the weak, altered vaccine viruses, and kill them. Henceforth, these "soldiers" will cruise around the bloodstream for a year or so looking for viruses wearing the glycoprotein coat. If the soldiers encounter real-life rabies viruses, they will pounce on them and kill them before they can induce the raccoon cells to reproduce the rabies virus. That's what gives the animal immunity. **--USDA 3/27/92, as reported in Veterinary Newsletter, May, 1992, Utah State University, Logan, Utah.**

CONTROLLING CAT BOX ODOR

Despite the growth of the cat care products industry, owners concerned about cat odor do not have a guide for cat box odor control. Many are dissatisfied and give up their cats rather than ameliorate the odor. This activity occurs even though there are an increased number and more effective products for controlling odor than ever before. Owners are bewildered by the range of choices and the claims made for the products. Veterinarians can assist in the selection of appropriate products.

Cat odor is basically caused by the action of bacteria and air on the ammonia in cat urine. Regardless of the litter used, daily waste removal is necessary to control odor.

Cat litterbox fillers work by:

- absorbency and containment to reduce exposure to bacteria and air,
- odor-masking by deodorants, or
- antimicrobial agents to inhibit or neutralize bacteria action on ammonia.

Commercial cat litterbox filler may include many ingredients ranging from sand to newspaper pellets. Most now are clay-based. The traditional clay littler fillers contained course-grained clay. The newer clumping types contain fine-grained clay such as attapulgite, bentonite, and some forms of fuller's earth. Multiple cat/heavy duty clay litter filler often contains sodium bentonite. Sodium bentonite has greater affinity for moisture and forms clumps that remain solid. Attapulgite clumps break apart more easily and are often sold as flushable.

Diet may influence the level of odor emanating from a cat or its waste. Soybean meal and cereal grains in high dietary levels promote flatulence. Low quality proteins and fish products tend to intensify waste odor. A potent urea inhibitor contained in the extract of the Yucca plant (*Y. schidigera*) has apparently been found to impede the enzymatic breakdown of urea to ammonia. Use of this material in pet food is said to reduce waste odor about 25%. **--Abstracted from Veterinary Forum, September, 1991, as reported in Veterinary Newsletter, May, 1992, Utah State University, Logan, Utah.**

MANAGEMENT OF FELINE MILIARY DERMATITIS

Of ten cats with miliary dermatitis, six showed a good response to treatment with a dietary supplement of essential fatty acids, two showed no response and two were lost to follow-up. The analysis of serum fatty acids revealed significant abnormalities in cats with miliary dermatitis compared with normal cats.

Feline miliary dermatitis is characterized by a papulocrustous cutaneous reaction and has a predominantly dorsal distribution. It is the cutaneous manifestation of several underlying causes, including flea bite hypersensitivity, other ectoparasitic infections, atopy and food hypersensitivity. The management of miliary dermatitis is directed towards the elimination or control of the underlying cause, when it can be identified. In some cases, particularly those due to flea bite hypersensitivity, this may be difficult, and in particularly sensitive individuals systemic glucocorticoid therapy may be required to control the clinical signs.

In people and dogs, supplements of essential fatty acids, particularly gamma-linolenic acid, have been shown to be useful in the management of certain chronic, inflammatory dermatoses, particularly atopy. In this study, 10 cats with miliary dermatitis due to a flea bite hypersensitivity were treated with a commercial preparation containing essential fatty acids. **--Abstracted from R.G. Harvey, Vet. Record 128 (1991), p. 326-329, as reported in Animal Health Beat, Vol 5, No 5, May, 1992, University of Nevada, Reno, NV.**

MORE TICKS SUSPECTED OF SPREADING LYME DISEASE

Researchers at St. Louis University, St. Louis, MO, have identified the *Borrelia burgdorferi* organism, the bacterium causing Lyme disease, in two more species of ticks -- the lone star tick and American dog tick. Tests are being conducted to determine whether these ticks will be efficient transmitters of the disease. If this proves to be true, it would expand the list of proven Lyme disease transmitters to include tick species covering nearly the entire United States. Scientists suspect that the lone star tick may be responsible for the transmission of the Lyme disease causing organism in the eastern and south central parts of the United States.

Currently, there are two primary vectors of Lyme disease. They are the deer tick, found in the northeast and Midwest United States, and the Western black-legged tick found in the Pacific Coast areas, such as California and Oregon. Both ticks are members of the tick genus *Ixodes*. St. Louis University researchers, among others, have identified the *Borrelia* organism in previous studies of the lone star tick, but have not proved they are capable of actually transmitting the disease. However, the St. Louis researchers suspect his may be true, because Lyme disease cases have been identified in Missouri and other states where *Ixodes* ticks do not exist and the lone star tick does.

"If the lone star tick is proven to be a competent Lyme disease vector, it could be a serious problem, because it is widespread throughout the eastern and south central United States, an area previously thought to be only a minor Lyme disease risk," according to Professor Dorothy Feir, PhD, of the St. Louis University Biology Department. "While the initial tests show that a small percentage of the lone star ticks actually carry the bacteria, this tick occurs in great numbers and should be considered a major threat," Feir said.

The department is studying the incidence of Lyme disease in dogs. The recent introduction of a canine Lyme disease vaccine has generated considerable interest in this information. To date, only human cases of Lyme disease must be reported to the Centers for Disease Control, but because dogs can pick up ticks so easily, a better understanding is needed of how this affects the prevalence of Lyme disease in these animals and its possible impact on humans.

Another outgrowth of the lone star tick research may be expanded transmission research to study the possibilities of other blood-sucking insects as Lyme vectors. This includes other tick species, as well as fleas, flies and mosquitoes. Researchers have identified the Lyme disease bacteria in each of these insects, but it has not been proven whether they transmit Lyme disease. **--As reported in Large Animal Veterinary Report, Vol 3, No 5, May, 1992.**

DID YOU KNOW? THE HUMAN BODY IS COMPOSED OF MORE THAN 64% WATER

- Ninety-seven percent of the Earth's supply of water is contained in our oceans. Two percent is frozen. Only one percent remains available for our use and that comes from lakes, rivers, streams or groundwater, which is often unsuitable for drinking without extensive treatment. Put another way, imagine that the Earth's supply of water is represented in a one-gallon jug. Less than one ounce is suitable for drinking.
- A one-year supply of food for one person requires more than 1.5 million gallons of pure water to produce. A lunch consisting of a hamburger, order of french fries and a carbonated beverage requires 1,500 gallons of pure water when it is processed.
- More than half of our nation's original wetlands have been destroyed. Wetlands are an important natural cleansing mechanism for our groundwater.
- A gallon of spilled toxic chemicals can render one million gallons of water unsafe for drinking.

--Pure Water 2000 as stated in the University of Georgia Cooperative Extension Service WATER RESOURCE ISSUES, July, 1991

EHRLICHIA RISTICII IN BROODMARES

New studies confirm that *E. risticii* can cross the equine placenta, can cause infection in the unborn fetus, and suggest that *E. risticii* may cause equine abortion.

M. T. Long, et al. investigated the fetal infectivity of *E. risticii* in 8 broodmares, negative for antibodies against *E. risticii* at 120-days gestation. Six mares were infected intravenously with *E. risticii* grown in canine monocyte cell culture and 2 mares served as noninfected controls.

Each aborted foal was necropsied and tissue samples from the liver, bone marrow, spleen and mesenteric lymph nodes were inoculated into canine monocyte cell cultures. Each infected mare developed clinical signs of equine monocytic ehrlichiosis (EME), was confirmed to be ehrlichemic, and developed a high IFA titer against *E. risticii.*

Four infected mares aborted between 75 and 100 days post-infection and *E. risticii* was isolated from 3 of the fetuses. All of the aborted fetuses had similar histologic findings including enterocolitis, periportal hepatitis, and lymphoid hyperplasia of the mesenteric lymph nodes and spleen. None of the control mares developed clinical signs of EME, became ehrlichemic or seroconverted.

Two of the infected mares delivered normal, healthy, term foals, one had a positive presuckle antibody titer against *E. risticii* and one was seronegative. **--In *Proceedings*, Conference of Research Workers in Animal Diseases; from Society for Theriogenology Newsletter, as reported in Large Animal Veterinary Report, Vol 3, No 5, May, 1992.**

COLLEGE NEWS

Dr. Erin Champagne joined the faculty on May 1, 1992 as an assistant professor of ophthalmology. She received her DVM from Louisiana State University, was a small animal intern at Texas A&M, did a residency at the Animal Ophthalmology Clinic, Dallas, Texas, and completed her residency at the School of Veterinary Medicine, LSU. She comes to Virginia Tech from the University of Georgia Veterinary Teaching Hospital and Clinic.

Dr. Kathryn Savage, a native of Australia, became a resident in large animal medicine in January, 1992. She received her BVSc and PhD from the University of Melbourne where she worked on the influence of nutrition on equine skeletal growth.

Dr. Korinn Saker arrived in January, 1992 as a graduate student in nutrition. She received her DVM from the University of Georgia and an MS in nutrition from Purdue University. She worked in a mixed practice in New Hampshire before coming to Virginia Tech.

On July 1, 1992, the following interns started work in the Veterinary Teaching Hospital:

Large Animal Medicine & Surgery

Janet Helms	University of Minnesota	1992
Toi Pedrick	University of Georgia	1992
Thomas Wilson	Kansas State University	1991

Small Animal Medicine & Surgery

Maria Doherty	Atlantic Veterinary College	1992
Lizel Spencer	Tuskegee University	1992
Karen Klein	University of California-Davis	1992

CONTINUING EDUCATION OPPORTUNITIES
Fall 1992

Date	Program	Location	Contact Hours
September 24	Small Animal Medicine Update	Charlottesville	4
*October 2-3	Orthopedic Surgery - Canine Hindlimb	Blacksburg	10
*October 9	Blood Banking & Transfusion Medicine	Blacksburg	5
*October 9-10	Gastrointestinal Endoscopy (Intermediate)	Blacksburg	10
*October 30-31	Acute Abdomen (Small Animal)	Blacksburg	10
*November 6-7	Anesthesiology for Practitioners	Blacksburg	8-12
*December 4-5	Practical Eye Surgery	Blacksburg	10
*December 18-19	Small Animal Dentistry	Blacksburg	10

*Limited enrollment course featuring hands-on experience.

Note: Program brochures are mailed 6-8 weeks prior to course dates. Course reservations cannot be accepted until the brochures are mailed. For CE course information, please contact:

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(703) 231-7181

FALL CONFERENCE - BOVINE PRACTITIONERS

The 1992 annual Bovine Practitioners Conference will be held in Frederick, MD, October 29-30 at the Holiday Inn, Francis Scott Key Mall, Route 85.

For more information, contact: Dr. Douglas Carmal, VMRCVM, University of Maryland, College Park, MD 20742. Telephone (301) 935-6083.

HEARD AT MEETINGS

- Nitrofuran topic products labeled for dogs, cats and horses were not affected by the removal of oral Furazolidone and Nitrofurazone. However, these ointments, creams and powder products may not be used in an extra-label manner on food producing animals. Furazolidone aeorsol and nitrofurazone powder are allowed for topical use on the bovine.

- Mystery Swine Disease (MSD) has been renamed to Swine Infertility and Respiratory Syndrome (SIRS). Practitioners report a reduced incidence of "classical" SIRS over the past two years. Reasons for such decrease is not known, but may be related to the rapid increase in prevalence of serologic positive herds. **--Iowa State University Veterinary Medical Extension Newsletter, MAY 92.**

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