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

VIRGINIA-MARYLAND
REGIONAL COLLEGE
OF
VETERINARY MEDICINE

VIRGINIA VETERINARY NOTES

May-June, 1988 No. 33

Kent C. Roberts, DVM
Extension Veterinarian

VEGETATIVE ENDOCARDITIS

Vegetative endocarditis occurs in all animal species. Although some texts suggest that the left heart is involved more commonly in small animals and the right heart in large animals, this fact does not hold up when the hearts of many affected animals are examined. The primary lesion appears as an irregularly shaped, usually friable, red-yellow mass attached to the heart chamber wall (mural vegetative endocarditis).

Secondary cardiac lesions are common. These may include ventricular and/or atrial dilatation due to the obstruction of blood outflow caused by a large vegetative mass or because of the incompetency of the affected valve that results from even a small vegetative lesion. In some cases, hypertrophy of the myocardium may occur.

Extracardiac lesions may be observed in the lung, liver, and kidney. Often these lesions depend upon which side of the heart is involved. If vegetative lesions are present in the left heart, embolic abscesses may be seen in the kidney. In some cases emboli may also be found in the brain. The lungs are usually red-brown and edematous due to passive congestions. Occasionally, lesions of passive congestion may be observed in the liver in an animal with left sided heart lesions, without evidence of passive congestion of the lung. With right sided vegetative endocarditis, passive congestion of the liver is more common. Embolic abscesses are often scattered in both lung lobes. Other lesions associated with heart failure, including ascites, ventral edema, and edema of the brisket region may occur. In a few cases there may be gangrenous necrosis of the extremities, particularly the tips of the ears and the tip of the tail. Some erroneously believe that these lesions are due to emboli breaking off the primary lesion and blocking the vessels that supply these areas. It is more likely that these infarcts occur as a result of peripheral vasoconstriction in an animal with a high fever attempting to maintain a high body core temperature.

Vegetative endocarditis usually occurs in association with other findings. These include heart anomalies, joint disease (particularly chronic arthritis) or chronic infections of any type. While some associate specific bacteria with vegetative endocarditis, potentially any organism may be cultured from these lesions. Typically, however, the same organism is repeatedly cultured from animals coming from the same location. One theory is that the potentially pathogenic organism is present in the environment and infects susceptible animals.

Finally, one must differentiate between this lesion, vegetative endocard<u>itis</u>, that identifies an often septic infection of the heart and verrulous endocard<u>iosis</u> that identifies a degenerative, smooth, wart-like thickening, of the atrioventricular valves.--**Lois Roth, DVM, PhD, Diplomate ACVP, Assistant Professor of Pathology, VA-MD Regional College of Veterinary Medicine.**

FAILURE OF ANTICONVULSANT THERAPY

Numerous reasons exist for the inadequate control of epilepsy by anticonvulsant therapy. If a patient is not responding to anticonvulsants to your satisfaction the following questions should be addressed.

Was an appropriate anticonvulsant prescribed? At the present time, phenobarbital and primidone are the only 2 anticonvulsants that are recommended for use in dogs to treat almost all cases of epilepsy. Both are effective, inexpensive, and should be administered twice daily. Recent studies on phenytoin pharmacokinetics in the dog indicate that it has a short half-life (4 hours) and that it must be used at 20-60 mg/kg TID or QID. At these dosages, it can be expensive. This information, coupled with its questionable efficacy, make it a poor choice in most cases.

Is the dose correct? Phenobarbital and primidone must be administered at least twice daily and occasionally three times daily. Other anticonvulsants such as diazepam, carbamazepine, valproic acid, and phenytoin must be administered 3-4 times a day in the dog.

Is the owner following the instructions? Make sure that the proper dose is being administered at the appropriate times. Seizures may occur if a dose is missed or if the dog regurgitates or spits the medication out.

Has tolerance developed? Most anticonvulsants cause induction of the hepatic microsomal enzymes resulting in faster metabolism of the drug. The serum levels of the anticonvulsant may decrease to below those necessary for seizure prevention. To achieve effective serum levels again, increase the dose of the anticonvulsant or increase the frequency of its administration.

Are other drugs being administered? Since some drugs can cause a decrease in the serum concentration of anticonvulsants, a drug interaction book should always be consulted before prescribing additional medications. Amphetamines and phenothiazine drugs have been reported to stimulate seizures.

Is a progressive disease process present? Dogs that have recurrent seizures caused by brain tumors, encephalitis, portosystemic shunts, insulinomas, hypoglycemia, or liver dysfunction may not respond well to anticonvulsants. Evaluation of a hemogram, blood chemistry profile, and urinalysis should be performed. Other diagnostic tests (liver function tests, insulin assay, electroencephalography, cerebrospinal fluid analysis, etc.) may be necessary to support or eliminate one of the above etiologies.

Is estrus interfering with proper seizure control? Seizure activity may become more frequent or severe in intact females at estrus.

Is a systemic disease present? Any disease that causes vomiting or diarrhea may result in decreased absorption of the anticonvulsant in the gastrointestinal tract.

Is primary epilepsy present? Seizures that start between 1 and 4 years of age in large breeds of dogs (especially German Shepherds, Irish Setters, and St. Bernards) can be difficult to control. Some neurologists believe that these cases represent primary epilepsy, in which an intrinsic, biochemical and presumably hereditary cerebral hyperexcitability exists. All diagnostic tests including brain histopathology do not yield any abnormalities. Many of these dogs eventually become refractory to anticonvulsant therapy despite adequate and often toxic serum levels of anticonvulsants.--**Linda Shell, DVM, Diplomate ACVIM (Neurology), Assistant Professor of Internal Medicine, VA-MD Regional College of Veterinary Medicine.**

CLIENT EDUCATION: ANTICONVULSANTS

Your dog has had a series of frequent seizures or convulsions, commonly called epilepsy. Anticonvulsant drugs will be employed in an attempt to control the seizures. You should be aware of the following:

1. Epilepsy can not be cured but it can usually be controlled with anticonvulsants. Control means that the frequency and/or severity of the seizures will be reduced with the anticonvulsant.

2. Medication may be required for life.

3. No single drug or drug combinations will work in all dogs. Every case is different. The dose or drug may have to be adjusted from time to time. Successful management of some cases may require the usage of more than one anticonvulsant.

4. If the medication is to be effective, the usage directions must be followed.

5. Oral medication may take several days for therapeutic effect to occur. Don't be alarmed if your dog has a single, short seizure within the first few days of administering the anticonvulsant.

6. Common side effects of many anticonvulsants include sedation, ataxia, excessive sleep, increased thirst, urination, and appetite. These side effects usually disappear several days after starting the drug. If other side effects appear or if the above side effects do not disappear please call and discuss them with the veterinarian.

7. Never abruptly discontinue anticonvulsant drugs. Mild or prolonged seizure activity (status epilepticus) could occur because many of the anticonvulsant drugs cause dependence or addiction.

8. A diary should be kept of all seizure activity, noting the date, the description and number of seizures, the drugs given and their doses, and any change in the dog's environment. This record or chart should be reviewed with the veterinarian yearly or sooner if the seizure activity appears to increase.

9. Changing patterns of seizure activity may indicate ineffective or improperly administered medication, or the presence of other disease. Reviewing the diary or chart of your dog's seizures activity will help your veterinarian decide if other diagnostic or therapeutic steps need to be taken.

10. There are some cases that eventually become refractory to anticonvulsants but anticonvulsant drug therapy may control the seizure activity for months to years.--**Linda Shell, DVM, Diplomate ACVIM (Neurology), Assistant Professor of Internal Medicine, VA-MD Regional College of Veterinary Medicine.**

PRIONS AND SCRAPIE

"Prion" has an operational definition -- i.e., "small proteinaceous infectious particles which resist inactivation by procedures that modify nucleic acids."

Prions are novel infectious agents considered to be the cause of several neurodegenerative diseases of man and animals. Kuru, Crutzfeldt-Jakob disease (CJD) and the Gerstmann-Sträussler syndrome in man share many pathological features with scrapie of sheep and goats, transmissible mink encephalopathy and chronic wasting disease of mule deer and elk.

Attempts to demonstrate that the scrapie agent contains a nucleic acid have been unsuccessful.

Although both prions and viruses multiply, their properties, structures and methods of replication have some fundamental differences. Viruses contain a nucleic acid genome that encodes progeny viruses that include most or all of the proteins in their protective shell. Prions contain little or no nucleic acid and the prion protein (PrP) is encoded by a cellular gene. Viruses evoke an immune response during infection and prions do not.

Whether prions are composed only of PrP oligomers or whether they contain additional macromolecules, such as polynucleotides, remains unresolved.

Taken from Prions and Neurodegenerative Diseases. S.B. Prusiner. The New England J. of Med. V. 317, No. 25:1571-1581. 1987.--**Submitted by Luis V. Melendez, Professor of Virology, VA-MD Regional College of Veterinary Medicine.**

ART AND ARCHIVES GROUP FORMED IN VETERINARY COLLEGE

An Archives and Art Committee has been established in the Virginia-Maryland Regional College of Veterinary Medicine to gather pertinent historical documents, artifacts and memorabilia pertaining to the origins of veterinary medicine and the creation and development of the college, according to Dr. Carl J. Pfeiffer, coordinator of the committee.

The group plans to work with experts in Virginia Tech's Newman Library to establish the veterinary archives in Newman's Special Collections Department. Eventually, the archives is expected to house copies of the enabling legislation, the agreement between Virginia and Maryland to establish the regional college, and other benchmark historical documents.

The archives may also house some of the founding documents and historical records of the Virginia Veterinary Medical Association.

The Archives and Art Committee has also been asked to coordinate the acquisition and display of both veterinary and general interest art around the college of veterinary medicine campus at Virginia Tech, according to Dr. Pfeiffer.

"This committee warmly solicits the help of all veterinarians and friends of the college who wish to contribute to these historic and artistic goals," said Pfeiffer, who has authored a text on early 19th century human medicine and extensively studied the origins of equine medicine.

Contributions may consist of any documents pertaining to the establishment and early development of the college, antiquarian veterinary medical instruments, pre-1920 veterinary textbooks, veterinary and general artworks or financial contributions which could be directed toward the acquisition of these materials.

Persons interested in learning more about the college's art and archives project or wishing to make a contribution should contact Dr. Carl Pfeiffer at (703)961-7112.

CONTINUING EDUCATION OPPORTUNITIES

		Contact Hours
*April 29-30	Canine Joint Surgery Lecture/Wet Lab - Blacksburg, VA	10
April 30	Food Animal Practice Seminar Holiday Inn North - Staunton, VA	6
May 1	Pet Bird Medicine - Dr. Clubb Springfield Hilton - Springfield, VA	6
September 14-15	Small Animal Medicine Update Tidewater (14) Charlottesville (15)	4
*September 23-24	Small Animal Diagnostic Endoscopy Lecture/Wet Lab - Blacksburg, VA	8
October 20	Local Associations Meeting Blacksburg, VA	2
*November 11-12	Small Animal Surgery Lecture/Wet Lab - Blacksburg, VA	10
*December 2-3	Small Animal Clinical Nutrition Lecture/Wet Lab - Blacksburg, VA	10
*December 9-10	Practical Eye/Ear Surgery Lecture/Wet Lab - Blacksburg, VA	10

*Limited enrollment course

For further information on these CE courses, please contact:

Kent Roberts, DVM
VA-MD Regional College of Veterinary Medicine
Blacksburg, VA 24061
(703)961-7666

Note: Program brochures are normally mailed out approximately six weeks prior to the course date.

THOUGHT FOR THE MONTH

It is one of the most beautiful compensations of this life that no man can sincerely try to help another without helping himself.

Emerson

PRACTICE INTEREST SURVEY

The large animal clinical and Extension faculty members, Virginia-Maryland Regional College of Veterinary Medicine, are interested in determining practitioner interest in continuing education programs on the health care and management of sheep, swine, goats and llamas. If interested, your input will help in program planning for these species.

Please return this completed survey form as soon as is convenient.

1. In my practice, I see cases on a regular basis of these species:

   swine _____
   sheep _____
   goats _____
   llamas _____

2. I am definitely/slightly interested in CE programs on these species:

   swine _____
   sheep _____
   goats _____
   llamas _____

3. I prefer the following type of program as a CE format:

   lecture only _____
   lecture/wet lab _____
   wet lab only _____
   other _____

4. I suggest the following CE program topics for courses on these species:

5. Other comments:

Please return the completed form to:

Kent Roberts, DVM
College of Veterinary Medicine
Virginia Tech
Blacksburg, VA 24061

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. C.F. Shipley - Extension Specialist - Swine & Small Ruminants
Dr. W. Dee Whittier - Extension Specialist - Cattle

K.C. Roberts, Editor
Barbara A. Baber, Production Manager of VIRGINIA VETERINARY NOTES

COOPERATIVE EXTENSION SERVICE
U.S. DEPARTMENT OF AGRICULTURE
VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY
BLACKSBURG, VIRGINIA 24061

BULK RATE
POSTAGE & FEES PAI
USDA
PERMIT NO. G268