

VIRGINIA-MARYLAND VETERINARY NOTES



Veterinary Teaching Hospital, Virginia-Maryland Regional College of Veterinary Medicine

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Dean Eyre Retires

Peter Eyre, dean of the Virginia-Maryland Regional College of Veterinary Medicine, has retired effective October 1, 2003 and taken extended medical leave to recover from stress-related health problems. Dr. Gerhardt Schurig will serve as Acting Dean until a successor is named as dean of the VMRCVM.



VIRGINIA POLYTECHNIC INSTITUTE
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This newsletter is published quarterly in support of the outreach program of the Veterinary Teaching Hospital VMRCVM, Blacksburg, VA and is prepared for and distributed to veterinarians in the Mid Atlantic Region



Listeriosis: An Emerging Public Health Issue

On October 19th 2002, USDA Secretary Ann Veneman reported that over 400 food samples were tested during the last 2 months, none of the products could be traced to a recent *Listeria* outbreak in the Northeast. The eight-state outbreak resulted in 46 culture-confirmed human cases, including 7 deaths, and 3 stillbirths or miscarriages. Cases have been reported in Pennsylvania (14 cases), New York (11 in NYC, 7 in other locations), New Jersey (5), Delaware (4), Maryland (2), Connecticut (1), Massachusetts (1), and Michigan (1).

DNA fingerprint analysis of human isolates showed they all belonged to one single fingerprint pattern. The testing laboratory found *Listeria monocytogenes* in one intact food product and 25 environmental samples from a poultry processing plant. The DNA fingerprint pattern of *Listeria monocytogenes* isolated from the food product was different from the outbreak strain; however, two environmental isolates from floor drains shared a similar DNA fingerprint pattern from outbreak patient isolates, suggesting the plant might be the source of the outbreak. Investigation to identify a definite source or sources for this outbreak is ongoing. On the basis of these findings, the plant, operated by Pilgrim's Pride Foods and located in Franconia, PA, recalled 27.4 million lbs of fresh and frozen ready-to-eat turkey and chicken products on October 12, and the company voluntarily suspended operations. This was an expansion of an October 9 recall of 295,000 lbs of turkey and chicken products from the same facility. That recall was prompted by a product sample taken by FSIS at the facility that tested positive for *Listeria monocytogenes*. The products, produced between May 1 and October 11, were distributed to retail stores, restaurants, and institutions nationwide. They include approximately 1.8 million pounds of turkey products purchased by USDA for distribution to schools and other recipient agencies.

The last large *Listeria* outbreak occurred in 1998-99 when a Sara Lee-owned plant in Zeeland, MI failed to protect a hot dog processing line from environmental contamination caused by plant renovations (MMWR, 2002). The outbreak killed 20 people and sickened at least 100 others. About 2500 cases of listeriosis occur each year in the United States. The initial symptoms are often fever, muscle aches, and sometimes gastrointestinal symptoms such as nausea or diarrhea. The illness may be mild and ill persons sometime describe their illness as flu-like. If infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions may occur. Most cases of listeriosis and most deaths occur in adults with weakened immune systems, the elderly, pregnant women, and newborns. However, infections can occur occasionally in otherwise healthy persons. Infections during pregnancy can lead to miscarriages, stillbirths, and infection of newborn infants.

Listeria monocytogenes has long been known as a pathogen affecting animals. Although it does not cause clinical signs of food poisoning, it has recently been recognized as an emerging foodborne pathogen causing severe outbreaks of disease and deaths in humans.

Listeria monocytogenes can multiply in high salt concentrations of up to 10 per cent sodium chloride. *Listeria monocytogenes* is one of the few pathogenic bacteria able to grow under refrigeration temperatures (4-5°C). *Listeria monocytogenes* is worldwide in distribution and widespread in the farm environment, being found in animal feces, soil, water, silage and on plants. It can also be excreted in bovine milk. Animals and humans are infected mainly by the oral route, although infection can occur through breaks in the mucous membranes, skin, and by the respiratory and urogenital routes. Visceral or septicaemic listeriosis occurs in many species of young animals and birds, whereas abortion and neural listeriosis ('circling disease') most commonly occur in sheep, cattle and goats. In the majority of healthy adult humans the infection is subclinical.

Listeria spp., including *L. monocytogenes*, are most commonly recovered from improperly fermented silage. This relationship between listeriosis and the feeding of silage to dairy cattle, sheep, and goats, has been well documented, with most cases resulting from the consumption of low-quality, improperly fermented silage having a pH > 4.0. Reports of bovine listeriosis from silage feeding and of subsequent asymptomatic shedding of *Listeria monocytogenes* in milk are of obvious concern to the dairy industry (Ryser et al., 1997).

Incidence of listeriosis is highest in neonates, pregnant women, the elderly and in immunosuppressed individuals. Immunosuppression can occur in patients with conditions such as AIDS, malignancies and cirrhosis of the liver, or in people receiving corticosteroids or cancer therapy. The septicaemic and neural form of the disease tends to occur in neonates and the immunosuppressed, while pregnant women may suffer an influenza-like syndrome with subsequent abortion or premature birth. Listeriosis in humans is usually sporadic but epidemics have occurred, several of food-borne origin. The mortality rate in human listeriosis is estimated to be 30 percent.

SOURCES:

1. MMWR. October 24, 2002; FS Net, Reuters/ AP. October 17-18, 2002;
2. Quinn PJ, Carter ME, Markey B, Carter GR. 1994. Clinical Veterinary Microbiology.
3. Ryser ET, Arimi SM, Donnelly CW. 1997. Effect of pH on Distribution of Listeria Ribotypes in Corn, Hay and Grass Silage. Appl. Environ. Microbiol. 63:3695-3697.

Bhushan Jayarao, Extension Veterinarian, PSU, as reported in Herd Health Memo, Dec 2002, Penn State University, University Park, PA

Putative Drug-Related Pemphigus in Four Dogs

Canine pemphigus foliaceus is an autoimmune antibody-mediated skin disease whose etiology is unknown, although a genetic predisposition in some breeds has been noted. Pemphigus foliaceus caused by the administration of certain drugs has been a well-recognized disease entity in humans but reports in dogs are rare. In people, drug-related pemphigus may be categorized as either drug-induced (in which case discontinuance of the drug leads to regression of the disease) or drug-triggered (in which the drug is felt to have stimulated an inherent predisposition to the disease).

Reports of drug-related pemphigus foliaceus are rare in small animals: four cases have been previously been reported in dogs and three in cats. In all four dogs, trimethoprim-sulfonamides (sulfadiazine in three cases, sulfamethoxazole in one case) were implicated. In the cats, doxycycline, ampicillin and cimetidine were implicated. Skin lesions regressed in all animals following discontinuation of the suspect drug; in three dogs and one cat, a short course (1 week to 1 month) of corticosteroid treatment was also given. In one of the dogs given sulfadiazine, and in the two cats given doxycycline or cimetidine, inadvertent readministration of the suspect drug, which varied from 10 days to 6 months after initial drug withdrawal, resulted in a recurrence of clinical signs.

This report describes four cases of putative drug-related pemphigus foliaceus in dogs. Four dogs rapidly (3 days to 1 month) developed cutaneous lesions following the administration of cephalexin, trimethoprim-sulfadiazine, trimethoprim-sulfamethoxypryridazine, or oxacillin. Clinical signs consisted of papules, pustules, crusts and erythema, which rapidly became generalized. Histopathology of the lesions was compatible with pemphigus foliaceus, although apoptotic cells suggestive of erythema multiforme were seen in two cases. In two dogs the lesions resolved after 7.5-8.5 months of immune-suppressive treatment. No recurrence was seen during the follow-up period (3 and 4.5 years). The lesions in the other two dogs resolved within 3 weeks to 3 months following discontinuation of the antibiotic. No recurrence of clinical signs occurred during the follow-up period (1 and 4 years, respectively).

Suspect drugs in our cases plus those of dogs and cats in previous reports all have either a sulfur atom (and presumably subsequent thiol group formation) and/or an amide group. The sulfonamides, ampicillin, oxacillin and cephalexin have both sulfur atoms and at least one amide group in their structure; cimetidine has a sulfur atom and doxycycline has an amide group. Thiol groups are thought to cause acantholysis by binding the drugs to the cell membrane. This is followed by the formation of anomalous disulfides that are inadequate for maintenance of normal cell-cell adhesion; these anomalous disulfides may also change the conformation of cell-surface antigens, leading to autoantibody production. These antibodies recognize antigens that are identical to those in the idiopathic forms of pemphigus foliaceus or pemphigus vulgaris.

Taken from: White, S. D., et al Vet Derm 13:195-202, 2002, as reported in Vet-Med, Vol. 9 Issue 1, October 2002, Iowa State University, Ames, Iowa

Treatment of Vertebral Tumors in 20 Dogs

Canine spinal tumors may be primary or metastatic tumors, such as osteosarcoma, fibrosarcoma, chondrosarcoma, hemangiosarcoma, multiple myeloma, lymphoma, carcinoma, or liposarcoma. They are most common in middle-aged large and giant breed dogs. Dogs with vertebral tumors may present with clinical signs of local or generalized disease, depending upon tumor location. Clinical signs may include pain, paresis, paralysis, as well as signs from other primary or metastatic locations. Vertebral tumors produce their neurological effect by extradural cord or nerve root compression. Pathological fractures of vertebrae infiltrated with neoplastic disease may result in sudden onset of neurological signs.

Twenty dogs with histopathologically confirmed primary (n= 15) or metastatic (n=5) osteosarcoma (n= 14) or fibrosarcoma (n=6) of the vertebral column were treated with surgery (n=4), radiation therapy and chemotherapy (n=6), surgery and chemotherapy (n=2), or surgery, radiation, and chemotherapy (n=8) due to their disease; 15 died due to local failure, and five died due to nonvertebral metastasis. Overall median survival time was 135 days, with a range of 15 to 600 days. Of the factors evaluated, only postoperative neurological status had a significant influence on outcome by multivariate analysis. This study supports the overall guarded prognosis for dogs with vertebral neoplasia. Better combinations of surgery, chemotherapy, and radiation therapy remain to be defined for this difficult subset of animal cancer.

Taken from: Dernell, W. S., et al., J Am Anim Hosp Assoc 36:245-251, 2000, as reported in Vet-Med, Vol. 6 Issue 5, Sept 2000, Iowa State University, Ames, IA

Evaluation of the Importance of Centrifugation as a Component of Zinc Sulfate Fecal Flotation Examination

Fifty canine fecal samples were evaluated by 5 flotation procedures to compare the sensitivity of the zinc sulfate (ZnSO₄) centrifugation flotation test with ZnSO₄ flotation tests using benchtop incubation during the flotation period. The samples were obtained from dogs at a local animal shelter and from newly acquired research dogs at the Virginia-Maryland Regional College of Veterinary Medicine in Virginia, USA. One or more parasite species were detected in 40 samples. Results showed that centrifugation with ZnSO₄ solution was significantly more likely to detect a positive sample than benchtop procedures. The difference in procedures was due primarily to increased detection of *Trichuris* eggs and *Giardia* cysts by centrifugal flotation. No significant difference was seen in the ability of benchtop procedures to detect positive samples when tests sat either 5 or 10 minutes before examination.

A.M. Zajac, J. Johnson, S.E. King, Journal of the American Animal Hospital Association, 2002; 38:3:221-224, as reported in Animal Health Spectrum, Vol. 13, No. 4, Winter 2002, Mississippi State University, Starkville, MS

Medical CE

Thirty six states require that physicians take an average of 27 hours of medical Continuing Education each year to maintain their license to practice.

FDA Approves First Injectable Solution for Sterilization in Dogs

FDA has approved the first product for chemical sterilization of 3 to 10 month old male puppies. The drug, Neutersol Injectable Solution (zinc gluconate neutralized by arginine), provides an alternative to surgical castration and may prove to be a valuable aid in efforts to control burgeoning dog populations.

Neutersol, administered by direct injection into the testicles, is a necrotizing agent that has a local effect when injected into the testicle. Based on histopathology, one or more of the following actions accounts for the drug's effectiveness: 1) Atrophy of the testicles, epididymides, seminiferous tubules, and prostate gland and 2) Scar tissue formation which prevents movement of sperm from the seminiferous tubules to the epididymis. Neutersol does not require the use of general anesthesia, though sedation is recommended to prevent the dog from moving during injection.

The effectiveness of Neutersol was evaluated in a field study of 270 male puppies between 3 and 10 months of age. Of the 270 puppies enrolled, 224 completed the study to month 6 and were included in the analysis. One injection of Neutersol in each testicle produced successful chemical sterilization in 223/224 (99.6%) puppies, as determined by serial semen analyses. In a study conducted in laboratory beagles, effectiveness was confirmed up to 24 months post-injection.

Proper injection technique and postinjection care are critical for the safe use of the product. According to Dr. Elizabeth Luddy, veterinary medical officer at CVM, "The most serious reaction we saw in laboratory and field testing was ulceration of the scrotum at the injection site, associated with incorrect injection technique, movement of the needle during injection or the dog licking or biting the area after injection." To help educate veterinarians and dog owners about these and other safety issues and to prevent the occurrence of serious adverse events, the approved labeling includes an instructional videotape demonstrating the proper injection technique, and a client information sheet explaining the importance of postinjection monitoring and care.

Unlike surgical castration, dogs treated with Neutersol become sterile without removal of the testicles and, therefore, testosterone is not completely eliminated. Veterinarians and dog owners should be aware that diseases which occur as a result of or in conjunction with testosterone hormones (prostatic disease, testicular or perianal tumors) may not be prevented with this procedure. As with surgical castration, secondary male characteristics (roaming, marking, aggression, or mounting) may be displayed.

Neutersol is manufactured by Meridian Medical Technologies, Inc. for Technology Transfer, Inc., Columbia, MO and is available for use only by or on the order of a licensed veterinarian.

As reported in FDA Veterinarian, Vol. XVIII, No. IV, July/August 2003

Brain Drain

Reading is a much better brain stimulant than watching television

Sleep deprivation tends to stress the brain, affecting one's ability to concentrate, learn and recall.

Physical fitness seems to contribute to better brain (cognitive) function.

Hypertension can damage brain cells over time and may even result in mini strokes which impair memory

Metastatic Melanoma In Horses

Reports have estimated that as many as 80% of older gray horses will develop dermal melanomas, with the majority of these masses being benign. Over the time period of this study (1990-2001), approximately 64,000 equine patients were admitted to the teaching hospital at New Bolton Center and 101 cases of cutaneous melanoma were reported. The prevalence of metastatic melanoma in this population was approximately 14%. The purpose of this study was to describe the clinical and histologic characteristics of metastatic melanoma in 14 horses.

All were older gray horses, with an average age of 16 years. Horses with melanoma were 5 Thoroughbreds, 2 Arabians, 2 Oldenburgs, 3 draft crosses, 1 Trakehner, and 2 pony breeds. The age ranged from 10 years to 26 years, with a median age of 16.5 years. Twelve (86%) of the 14 horses were 14 years of age or older. The horses included 8 females, 5 castrated males, and 1 stallion. The most common sites of primary tumors were the ventral tail, perineum, and parotid salivary gland. Metastases were found in multiple locations and caused a variety of clinical syndromes. The most common sites for metastases were in the lymph nodes, liver, spleen, skeletal muscle, lungs, and surrounding or within blood vessels throughout the body. Many of the horses had dermal melanoma for years (range 1-6 years) before succumbing to metastatic disease. Metastasis can occur secondary to hematogenous and lymphatic spread. In contrast to other species, metastases may arise because of multiple sites of melanocyte proliferation in horses.

Diagnostic procedures that were useful in detecting metastatic disease in the current study included rectal palpation, ultrasonography, biopsy or fine-needle aspirate of a suspected internal mass, and a cytology of peritoneal fluid. Upper respiratory endoscopy was performed on the 2 horses that presented for epistaxis and melanoma was detected in the left guttural pouch of 1 and both pouches of the other horse. Thoracic ultrasonography was performed in 3 horses, including both horses with epistaxis, and abnormalities were detected in 2 of the 3 horses.

Treatment consisting of surgical debulking and administration of cimetidine, an autogenous vaccine, or both was attempted in 4 horses with no effect on outcome. Treatment of melanoma often is not pursued because of the benign, slow-growing nature of the neoplasm, size, proximity to major vessels and vital structures, or extensive local invasion. However, all dermal melanomas should be considered potentially malignant.

Taken from: K. MacGillivray, et al J Vet Intern Med 16:452-456, 2002, as reported in Vet-Med, Vol. 9, Issue 1, Oct. 2002, Iowa State University, Ames, IA

Would You Believe?

- New Zealand has a land area larger than England but has a total population less than that of Sydney Australia.
- According to the Alliance of Professional Tattooists, (Annapolis, MD) one of every ten Americans now has a tattoo. This compares with an estimated one of every 100 Americans thirty years ago.
- About 5,000 heart transplants are performed worldwide each year with over 2,000 of those done in the U.S.
- Dark chocolate contains twice as much actual chocolate as milk chocolate, and contains bioflavonoids, a type of antioxidant.
- The leading cause of acute liver disease in people in the U.S. is not hepatitis or alcohol – it is acetaminophen, the active ingredient in Tylenol.

Continuing Education Opportunities

<u>Date</u>	<u>Topic</u>	<u>Location</u>	<u>Contact Hours</u>
Oct. 27 – 31	Small Animal Soft Tissue Surgery	Blacksburg	40
Nov. 7 & 8	Applied Ultrasonography	Blacksburg	10
Dec. 5-7	Advanced Echocardiography	Blacksburg	21
March 5 & 6, 2004	Introductory Echocardiography	Blacksburg	10
April 9 & 10, 2004	Applied Ultrasonography	Blacksburg	10
April 16 & 17, 2004	Diagnostic Ultrasonography	Blacksburg	10
April 23,24 & 25	Advanced Echocardiography	Blacksburg	21
May 7 & 8, 2004	Introductory Echocardiography	Blacksburg	10

Please note:

The courses listed above are limited enrollment and feature a hands-on laboratory experience under the guidance of clinical faculty members. Program brochures provide course details. For more information, please contact **Anne Cinsavich**, aclapsad@vt.edu (540) 231-5261; or to register for a program, please contact **Conference Registration**, Continuing Education Center, (540) 231-5182.

College Update

The budget crisis at Virginia Tech (and all other state funded institutions of higher learning) has caused the need to make countless difficult decisions regarding the funding of our priorities and faculty/staff positions. The University has lost several outstanding teachers and researchers because of the budget short fall. Tuition increases have helped to limit the full impact of state funding cuts, but have caused considerable "heart burn" among students and their parents.

The College is trying to find funding for this newsletter with limited success. You can help by sending us your e-mail address so that the newsletter may be delivered via our listserv or the internet @ www.vetmed.vt.edu. Forward your name and e-mail address to Anne Cinsavich, aclapsad@vt.edu, or to me at KCRDVM@aol.com. Your comments regarding the newsletter are welcome, and your understanding and cooperation are appreciated.

Kent Roberts, DVM

Nickola J. Sojka

It is with sincere sadness that I note the passing of Nick Sojka, DVM. Nick was dedicated to our profession and used his talents wisely and well in serving veterinary medicine. He was an innovator and a great observer of both animals and people. He is, and will be, greatly missed.

Kent Roberts, DVM

Virginia-Maryland Regional College of Veterinary Medicine Extension Staff:

Dr. E. Hovingh

Extension Specialist -Dairy & Small Ruminants

Dr. W. Dee Whittier

Extension Specialist -Cattle

Anne Cinsavich

Continuing Education/Extension Coordinator

K.C. Roberts, Editor

Anne Cinsavich, Production Manager of VIRGINIA –MARYLAND VETERINARY NOTES

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COLLEGE OF VETERINARY MEDICINE
VIRGINIA TECH
BLACKSBURG, VIRGINIA 24061

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