VIRGINIA-MARYLAND VETERINARY NOTES

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

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WHAT'S INSIDE!

Thought for the Month

If you don't have time to do it right, when will you have time to do it over?

Anonymous

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UNIVERSITY OF MARYLAND

Flea Antigen Intradermal Skin Test and Flea Bite Sites

Flea bite hypersensitivity is the most common dermatologic allergic disease affecting cats in geographical areas where fleas are present. It causes a variety of common clinical syndromes in cats, including, but not limited to, eosinophil plaque, alopecia without primary lesions, and miliary dermatitis. Correlation of clinical, gross, and histological characteristics of intradermal skin test (IDST) and flea bite reactions in cats has not been studied in a controlled manner. The purposes of this study were (1) to characterize the sequential, subjective gross (i.e. clinical) and histological changes found in the skin of normal and flea allergic cats after exposure to flea bites and ID flea antigen; and (2) to determine whether confirmed flea-allergic cats developed delayed IDST reactions to flea antigen.

Seven cats diagnosed as flea allergic by specific criteria and seven normal control cats were exposed to flea bites in a controlled manner and were given intradermal injections of 1:1000 w/v flea antigen. Subjective evaluation of gross lesions and documentation of histological changes at flea antigen intradermal skin test

(IDST) and fleabite sites were performed at 15 minutes, 24 hours, and 48 hours after IDST or flea exposure. Control cats did not develop an immediate gross reaction to either flea bites or the intradermal injection of flea antigen.

All seven flea-allergic cats had an immediate gross reaction at the site of IDST with flea antigen; five of these cats also developed an immediate erythematous or nonerythematous wheal at the site of flea bites. In 4 of 5 cats, lesions persisted or developed into an erosion at 24 or 48 hours. Three of seven flea-allergic cats developed a gross 24 hour and/or 48 hour delayed reaction at the flea antigen IDST sites characterized by an erythematous macule. These three and one other cat had both an immediate and delayed gross reaction to fleabites.

Histological examination of 15 minute skin specimens from IDST and flea bite sites of flea-allergic cats were similar wit mild lymphocytic, histiocytic and mastocytic superficial perivascular dermatitis. Histological examination of 24 hour and 48 hour skin specimens from IDST and flea bite sites of flea-allergic cats showed that they were often indistinguishable. Histological features of IDST and flea bite sites of flea-allergic cats at 24 hours consisted of a perivascular to diffuse predominately eosinophilic dermatitis and mural folliculitis with variable epidermal necrosis and ulceration.
Taken from: Lewis, D. T., et al., VetDermatol 10:29-37, l999, as reported in VetMed, Vol. 5, Issue 6, Nov. 1999,

West Nile Virus Vaccine for Horses

The United States Department of Agriculture (USDA) has approved manufacture of a vaccine to protect horses from the potentially fatal West Nile Virus. Sixty cases of the equine version of this disease were reported last year nationwide; of those, 23 either died or were euthanized. The viral organism spreads when a mosquito feeds on an infected bird, and then passes it on to another animal. Humans can also contract the disease. The USDA issued the conditional license to manufacture the vaccine to Fort Dodge Animal Health, a division of American Home Products, which is based in Overland Park, Kansas. Scientists from the USDA and the Centers for Disease Control expedited the review of the vaccine, due to the potential threat of the disease to horses. State veterinary authorities must ultimately approve use of the vaccine in their states. (Contact: Denise Charpentier 913-664-7034 or 1-800-533-8536)

Taken from: AVMA Animal Health News and Feature Tips, Winter 2001, p 3, as reported in VetMed, Vol.8, Issue 3, April 2002, Iowa State University, Ames, IA

Diagnostic Investigation of Dogs with Pyrexia

Records from 101 dogs presented to Queen's Veterinary School Hospital (Cambridge, England) for investigation of unexplained pyrexia were reviewed. These dogs had temperatures in excess of 40°C (i.e., >1.5°C above normal) on more than one occasion. Dogs were divided retrospectively into six groups according to the final diagnosis: 1) immune-mediated disease (22% of all cases), with immune-mediated polyarthritis accounting for 20 of 22 dogs in this category; 2) primary bone marrow abnormalities (22%); 3) infectious diseases (16%); 4) neoplasia (9.5%), 5) miscellaneous conditions (11.5%); and 6) pyrexia of unknown origin (19%). The frequency of positive results obtained in investigative tests was also assessed.

The most common diagnosis by far was immune-mediated polyarthritis and, in the absence of any other findings, this diagnosis should be ruled out before proceeding with other investigations. A number of the dogs in this study had inflammatory joint disease (detectedby cytological examination of joint aspirates) and yet had no clinical evidence of joint pain or periarticular swelling. However, it should be borne in mind that (secondary) immune-mediated polyarthritis may be associated with other diseases such as neoplasia and bacterial endocarditis. Further investigation may be required to rule out underlying causes, particularly infection, in cases of immune-mediated diseases before immunosuppressive therapy is commenced.

The most useful diagnostic procedures in this study were radiography and cytological examination of synovial fluid and bone marrow. A diagnosis was made on the basis of radiological examination in 24% of all cases in which a final diagnosis was made. Cytological examination, primarily of joint fluid, but occasionally of aspirates from lymph nodes, was also found to be a highly successful diagnostic technique in the present study. Where a definitive diagnosis was made, it was based on cytological findings in over one-third of the cases. Joint aspirates should be routinely performed in dogs with unexplained pyrexia where a diagnosis is proving elusive.

Hematological and biochemical screening tests were essential because problems were often identified towards which further investigation (e.g., bone marrow aspiration or bile salt assays) could e directed. It would appear that the presence of a significant neutrophilia is a more likely indicator of inflammation or immune-mediated disease (particularly polyarthritis) and that few animals with chronic infectious processes have a significant neutrophilia at the time of referral. Neutropenia, if associated with pyrexia, certainly warrants bone marrow evaluation.

Although few positive results were obtained in this study, blood culture should be performed in all cases of unexplained pyrexia where a diagnosis is elusive.

Taken from: Dunn, K., and J. Dunn J Small An Pract 39:574-580, 1998, as reported in VetMed, Vol. 5, Issue 2, March 1999, Iowa State University, Ames, IA

Would You Believe?

During the 1900s a record 11 million foreigners immigrated to the USA. Even with this immigration the country's poverty level dropped from 13.1% to 12.4%. Single mothers and their children make up the largest group of poor Americans.

In parts of Saudia Arabia, 39% of all marriages are between first cousins.
In the U.S., 24 states ban the marriage of first cousins.

In 1790 the General Assembly of North Carolina decreed that anyone convicted of the theft of "any horse, mare or gelding shall suffer death without benefit of clergy."

Transmission of *Neospora Caninum* Between Dogs and Cattle

Neospora caninum is the most important cause of abortion in cattle. Asexual stages of *N. caninum* are efficiently transmitted vertically in cattle for several generations. Although such vertical transmission may contribute significantly to the persistence of the infection in cattle herds, post-natal infections in cattle have been documented as well. The dog can act as a definitive host. Dogs can shed *N. caninum* oocysts after being fed placenta from *N. caninum* seropositive cows. *N. caninum* oocysts have been isolated from the feces of a naturally infected young dog with diarrhea, which had been fed uncooked beef repeatedly. Cattle can be infected orally by *N. caninum* oocysts produced in a dog. Bovine and canine *N. caninum* isolates are identical.

The presence of a farm dog is a risk factor for the occurrence of *N. caninum*-associated abortions in dairy herds. Abortion outbreaks following postnatal *N. caninum* infections in cattle occurred within 1.5 years after the introduction of a new dog or the birth of puppies on the farm. The purpose of this study was to obtain more detailed information on the natural routes of post-natal transmission of *N. caninum* between farm dogs and cattle.

Twelve dairy herds with evidence of postnatal infection with *N. caninum* were compared with 21 control herds with no evidence of post-natal infection. On the former farms, dogs consumed placenta or licked uterine discharge in 75 and 67% of the farms, respectively, while on control farms these activities occurred in 38 and 24% of the farms, respectively. On all control farms and all but three post-natally infected farms the dogs were fed colostrum or milk. Defecation of dogs on the feeding alley was observed in 92% of the post-natally infected farms and in 24% of the control farms. The same trend was observed for defecation of dogs in grass-silage, in 75% of the post-natally infected farms and in 19% of the control farms; and in corn silage, in 50% of the post-natally infected farms and in 10% of the control farms. Consumption of placenta, material of aborted fetuses or uterine discharge in combination with defecation on the feeding alley, storage of grass or corn silage was observed in 19% of the control farms and in 75% of the post-natally infected farms.

This study supports the hypothesis that farm dogs may become infected by fetal fluids or placental material of infected cattle, and may subsequently cause a post-natal infection of cattle in the herd by shedding oocysts. The degree in which the dogs are allowed to eat bovine placentas and uterine discharge, and in which they are allowed to access feed areas, may determine the degree of infection. It is also prudent to protect feed and water from contamination with dog feces due to a variety of pathogens.

Taken from: Dijkstra, Th., et al Vet Parasit 105:99-104, 2002, as reported in VetMed, Volume 8, Issue 4, July, 2002, Iowa State University, Ames, IA

The *E. coli* Problem

The FDA estimates that 15-20% of American consumers like their hamburgers pink in the middle. This can be a dangerous choice because of the *E. coli* 0157:H7 organism which is a normal inhabitant of the bovine intestinal tract. Contamination of beef products can occur during the slaughtering process and may not be detected in testing these products (primarily ground beef). Meat packers use steam and chemical washes to kill the pathogens but they are not 100% effective. Only irradiation will do a thorough job, but this process can cause the fat in the meat to take on an unpleasant odor. Cooking the meat to 160 degrees Fahrenheit is the best insurance against *E. coli* contamination for consumers. Use of a meat thermometer is the best way to insure against improperly cooked meat.

K.C. Roberts, August 2002

Diagnosis of Hyperadrenocorticism in Dogs: A Survey of Internists and Dermatologists

Objective: To determine testing protocols used by board-certified internists and dermatologists for diagnosis of hyperadrenocorticism (HAC) in dogs.

Study Population:Board-certified internists and dermatologists.

Procedure:A questionnaire was mailed to 501 specialists to gather information pertaining to diagnosis of HAC.

Results: 206 surveys were returned. Only 26% of respondents indicated they would screen a dog for HAC if the dog had only a few laboratory abnormalities consistent with HAC and no clinical signs consistent with the disease; 31% indicated they would not, and 43% indicated they would sometimes. Overall, 55% of respondents indicated they preferred to use the low-dose dexamethasone suppression test for routine screening of dogs suspected to have HAC. However, many respondents indicated they would use a different screening test than usual in particular circumstances. Sixty-eight percent of respondents indicated they would perform a second screening test for confirmation if results of an initial screening test were positive but there were few clinical or laboratory abnormalities consistent with HAC. Most respondents used some sort of test to differentiate pituitary dependent HAC from HAC secondary to an adrenal tumor (AT), but no 1 test was clearly preferred. Ultrasonography was commonly used, whereas computed tomography and magnetic resonance imaging were not, even if available.

Conclusions and Clinical Relevance: Results suggest that the low-dose dexamethasone suppression test is the test most commonly used to screen dogs for HAC but that other tests may be used in certain circumstances. A variety of tests were used to differentiate pituitary-dependent HAC from HAC secondary to an AT.

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J Am Vet Med Assoc 2002. 220:1643-1649, as reported in Veterinary News, July 2002, Pen State University, University Park, PA

No one can be a whole person except by possessing
compassion, reverence and intellectual integrity.
Leo Bustad, DVM

Food for Thought

One way to prevent the rampant deforestation of the tropics in Central America could be the domestication of the iguana. Dagmar ("Iguana Mama") Werner has researched the problem and estimates that farmers could produce as much iguana meat per acre of rain forest as they could beef per acre of cleared pastureland. It is the burning of tropical rain forests to create pastures that is considered a major contributor to atmospheric green house gases.
Latin Americans have been eating iguanas for centuries (it tastes like chicken) and they often call them the "gallina de palo" (chicken of the trees).

Arthur Squires, University Distinguished Professor Emeritus
Virginia Tech, Blacksburg, VA

Dental Caries in the Dog

The dental records of 435 dogs seen in a dental referral practice were reviewed. Twenty-three dogs (5.3%) had one or more caries lesions. Of the 47 caries lesions, 19 (40%) were pit and fissure caries, 17 (36%) were smooth surface caries, and 11 (23%) were root caries. Twelve dogs had symmetrical lesions. The teeth most commonly involved were the fourth premolar and first and second molar teeth. Twenty affected teeth were extracted and 17 were treated by cavity preparation and restoration with composite or glass ionomer materials. Ten restorations in four dogs were examined one year or more following treatment; all of the restorations were intact and there was no progression of the caries.

Dogs are generally resistant to caries; most dogs live their entire lives with none at all. Therefore, for most dogs, no preventive measures are needed. Although anti-caries activity of fluoride is well documented, fluoride is a toxin, and while humans can be instructed to rinse and spit after brushing, dogs will swallow. Therefore, general use of fluoride-containing products as oral home-care products for pets is not indicated.
Individual susceptibility is suggested by the fact that some dogs have symmetrical or multiple lesions. The finding that lesions were symmetrical in many dogs suggests that anatomical, physiological or microbiological risk factors present on both sides of the mouth are important. In particular, pit and fissure caries were seen symmetrically, indicating that these anatomical features such as grooves, when deep, may be an important risk factor for the development of caries. Another indication of individual susceptibility is the finding that 50% of dogs with restored teeth had developed another lesion on a different tooth when reexamined one year or more later.

The most common single location for caries lesions in the dogs surveyed was the occlusal pits of the maxillary first molar teeth. These pits occur in the center of the occlusal tables of these teeth and are subject to high masticatory compressive forces. Although the compressive resistance of composite restorations is less than that of amalgam, the results of this survey indicate that bonded composite restorations can withstand the occlusal forces to which they are subjected. Bonded composites generally require less tooth destruction during cavity preparation, as they are retained by the bonding agents rather than relying on mechanical undercuts. Composites also have the advantage of being less biohazardous compared to amalgams, which contain mercury.

Taken from: Hale, F. J Vet Dent 15:79-83, 1998, as reported in VetMed, Vol. 5, Issue 2, March 1999, Iowa State University, Ames, IA

Water-Borne Pathogen Not Always What It Appears To Be

The water-borne parasite *Cryptosporidium parvum* was thought to be a single species that infects humans and more than 150 animal species. Now Agricultural Research Service zoologist Ronald Fayer and his colleagues have described a unique species of this pathogen, *C. canis*, originally found in dogs.
C. canis can be transmitted by--and infect--dogs, humans and cattle. Scientists originally thought the new species was *C. parvum*. Identifying this and other Cryptosporidium species can help pinpoint potential sources of infection. Cryptosporidium is a single-celled parasite that lives in the intestines of animals and people. This microscopic pathogen causes a disease called cryptosporidiosis, which is characterized by mild to life-threatening diarrhea. Disease is spread by a form of Cryptosporidium called an oocyst, which is excreted in the feces of infected humans and animals. The tough-walled oocysts survive under a wide range of environmental conditions. Studies by Fayer and cooperators at the Animal Waste Pathogen Laboratory in Beltsville, Md., found that *C. canis* oocysts differ markedly at the molecular level from those in known species of Cryptosporidium.

Based on this and other research, scientists now believe *C. parvum* is not one woven cloth, but something of a quilt made of different blocks. Each block represents a biologically distinct and unique organism. Using powerful, new genetic tools, it is becoming clear that there are numerous Cryptosporidium species previously thought to be *C. parvum*. The slight genetic differences that distinguish one species from another have great implications for predicting which host species may become infected by the pathogen.

Other scientists have found, within the *C. parvum* classification, several unique genotypes associated with specific hosts such as humans, mice, pigs, marsupials, dogs and ferrets, based on genetic data. ARS is the U.S. Department of Agriculture's chief scientific research agency.

ARS News Service, Agricultural Research Service, USDA April 23, 2002, as reported in Veterinary News, July 2002, Penn State University, University Park, PA

Virginia-Maryland Veterinary Notes on the Web

Please visit the Virginia-Maryland Regional College of Veterinary Medicine's website for this and other newsletters. www.vetmed.vt.edu

Opportunities in Continuing Education
Fall 2002

Date	Topic	Location	Contact Hours
September 6 & 7	**Applied Ultrasonography**	**Blacksburg**	**10**
October 4 & 5	**Introductory Echocardiography**	**Blacksburg**	**10**
October 28 – Nov. 1	**Soft Tissue Surgical Week**	**Blacksburg**	**40**
November 8 & 9	**Applied Ultrasonography**	**Blacksburg**	**10**
November 15 & 16	**Practical Eye Surgery**	**Blacksburg**	**10**
Dec 6 – 8	**Advanced Echocardiography**	**Blacksburg**	**21**
December 9 - 13	**Intensive Orthopedic Surgical Week**	**Blacksburg**	**40**

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 Clapsaddle**, aclapsad@vt.edu (540) 231-5261; or to register for a program, please contact **Conference Registration**, Continuing Education Center, (540) 231-5182.

We Still Need Your Help

In our continuing attempt to reduce the printing and mailing costs of this newsletter, we humbly request your assistance in updating our mailing list and in sending Virginia-Maryland Veterinary Notes electronically to those readers who prefer this delivery mode.

Several readers e-mailed us their IP address but neglected to include their names so we could adjust our mailing list as necessary.

I personally spend several hours prior to each issue updating our mailing list, but many of our readers are relocating frequently and fail to notify us of their address change. Keeping us advised of your current address would be a great help. We prefer to mail to practice addresses rather than home addresses.

We welcome your comments regarding the newsletter and appreciate your efforts to help us maintain an accurate mailing list.

To make address changes or to request the electronic edition, please e-mail your name, and mailing address to Anne Clapsaddle, aclapsad@vt.edu. Thank you.

Kent Roberts, DVM

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