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VIRGINIA-MARYLAND VETERINARY NOTES



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

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Thought of the Month

The future arrives an hour at a time



Greenies® Causing Esophageal Obstructions in Dogs

Greenies® are tooth-brush shaped, molded or plastinated, dental chew treats manufactured for dogs. They have been reported to reduce tartar and plaque accumulation, gingivitis, and halitosis, and have the acceptance of the Veterinary Oral Health Council. They are thought to be the most popular dog treat sold in the United States. According to the manufacturer's website more than 300 million have been purchased recently. The major ingredients are processed wheat gluten, glycerin, and powdered cellulose fiber. They contain chlorophyll, which helps to improve breath odor, and a natural proprietary flavor, which makes them taste good. There are similar oral health products for dogs available on the market. These products are green, may contain chlorophyll, may be tooth-brush shaped, and can be molded or compressed.

The author endoscopically removed one from the esophagus of a Yorkshire terrier in August 2004. In June of 2005, during the American College of Veterinary Internal Medicine (ACVIM) Special Interest Group GI Endoscopy: What's your diagnosis?, esophageal foreign body obstruction with Greenies® was discussed; particularly that they were difficult to endoscopically remove. Reports of small bowel obstructions also surfaced. The author conducted two informal surveys of the small animal listserv of the ACVIM, and additional cases were identified. This apparent rise in the number of cases with foreign body obstruction, probably reflected the popularity of Greenies® as a dental chew / treat. The true incidence of Greenies® esophageal obstructions per treat consumed, compared to other esophageal foreign bodies (rawhides, "pig ears", and bones etc.) is not known. However, A Veterinary Information Network survey identified more cases of esophageal obstruction due to Greenies® than meat bones, or rawhide chews. Because of the potential severity of this problem, the author decided to collect data from these cases for publication. Internists that responded to the informal ACVIM listserv surveys were asked to fill out a worksheet. At the time of this writing, data collection is still in progress.

Esophageal obstruction with a Greenie® was reported by Cohn, et. al. in 2003 in the AAHA journal. In December 2005 a law suite was filed in New York by owners of a dachshund that died of an intestinal obstruction with a Greenie®. Media attention increased all over the United States. The author was interviewed by CNN for a prime time story about Greenies® that aired on the Paula Zahn show. Several other law suites have been filed. The manufacturer has reported on their website and in media interviews that most adverse effects of Greenies® could be avoided if the appropriate size chew was used, if owners observed their dogs while they chewed Greenies®, and if Greenies® were not given to dogs that "gulped". One media report indicated that the manufacturer had received only 8 complaints in the previous 8 years. Greenies® have recently been sold to a pet food manufacturer and the product has been reformulated to reduce the possibility of esophageal or intestinal obstruction (discussed later).

At the time of this writing, the author has collected data from 25 cases of esophageal obstruction with Greenies®. Most cases were seen after March of 2003. The median age was 5 years and the median weight was 4.1 kg. There were only 2 large dogs and no medium sized dogs. Common clinical signs included gagging, regurgitation, vomiting, and anorexia. In most cases, survey radiographs identified a soft tissue density within the esophagus or were suspicious of one. Most of the Greenies® were located in the distal esophagus. Successful endoscopic removal was difficult and infrequent. Many Greenies® were pushed into the stomach. Thoracotomy was necessary when the esophagus was perforated or if the Greenie® could not be pushed into the stomach. Moderate to severe esophageal lesions were seen endoscopically, including perforation, ulceration, and necrosis in most cases. About 50% of the cases recovered without major complications. Approximately 30% died (The VIN survey reported approximately 20% mortality). Esophageal strictures developed in approximately 20% of dogs. Compared to other esophageal foreign bodies reported in the veterinary literature and the author's experience, it appears that Greenies® are harder to endoscopically remove, cause more severe esophageal damage, are associated with a higher mortality rate, and result in more esophageal strictures. Further data is necessary to evaluate the incidence of small bowel obstructions and to further characterize esophageal obstruction with Greenies®.

Greenies® have been reformulated to improve their safety. The new formulation still promotes canine oral health. The new product is much more soluble than the previous product; it should break down into smaller

and softer pieces if swallowed. Biometric research that evaluated the biting forces of the canine jaw was used to optimize the hardness of the new product. In addition, surface shape and contour alterations were included to encourage complete chewing of the Greenie®. Hopefully, these changes will reduce the chances that the dog will swallow large pieces, and will reduce the possibility of esophageal or intestinal obstruction with the pieces ingested. **Mike Leib, DVM, MS, DACVIM: Internal Medicine, VMRCVM, Blacksburg, VA**

DATES

Dates are a rather unattractive, thick-skinned fruit, but they are also a key food source for millions of people living in the Middle East and Africa. Date palms have thrived along many of the ancient rivers in this region for thousands of years.

In the early 1900s, date palms were brought to southern California's desert region, where they flourished. Unfortunately, their future is uncertain. In Iraq, the date palm's birth place, war and neglect are taking a toll as the number of trees dwindle. Damaging insects and a lack of research are also problems.

Egypt is the world's top date producer and hopes to increase production by reclaiming land and promoting the planting and cultivation of date palms.

In this country, we are most likely to encounter dates in cereals and fruit bars. They are a high calorie fruit and a superb energy source, packed with anti-oxidents, more than most other fruits and vegetables. While consumption in the Middle East is measured in pounds per person, in the U.S. our consumption averages only a few dates per person.

The desert valleys of California contain only about 6,000 acres of date palms. This is less than the small country of United Arab Emirates. Research currently under way in California should help with date palm knowledge and conservation.

Agricultural Research, July 2006, USDA, ARS, abstracted by K.C. Roberts, D.V.M., Blacksburg, VA

GREENLAND

Greenland is warming up! Average temperatures have risen 2.7 degrees Fahrenheit over the past 30 years. This is more than double the global average. This is having a significant impact on the 57,000 people on this huge island (roughly 840,000 square miles) which is about 80% covered with ice. During the long, dark winter temperatures in the southern part of Greenland routinely run 20-25 degrees below zero. The short growing season, when the sun can shine for up to 20 hrs, has been extended by two weeks. It begins in May and has helped improve crop production and the grazing season.

Greenland's farmers raise reindeer, sheep, potatoes and vegetables. Their gross domestic product is \$1.1 billion. This self governing territory of Denmark depends upon the Danes for half their governments operating expenses.

Fishing is a major industry and shrimp are Greenland's largest export. Cod have returned to the waters off southern Greenland which has been a great boom to the fishermen of the island.

Regardless of the warnings so prevalent about global warming, the people of Greenland are enjoying their warmer weather even if the polar bears aren't.

Wall Street Journal, July 18, 2006

Fall Toxicoses of Small Animals

Fall is upon us and with it comes an increased seasonal exposure to certain toxicants. Both cats and dogs have their own specific toxicants that they are most at risk from.

Certainly, ethylene glycol tops the list as one of the most common and toxic compounds for both cats and dogs in the fall. Practitioners observing depressed, lethargic, and ataxic animals (i.e. drunken) with polydipsia should have ethylene glycol on a differential list. Unfortunately, most animals are not brought in until the later renal stage, which may be accompanied by convulsions and coma. A more recent discovery about ethylene glycol treatment is that fomepizole (Antizol-Vet®) may also be beneficial in cats with a loading dose of 125 mg/kg IV followed by 31 mg/kg IV at 12, 24 and 36 hours after the initial dose.

Another concern in the fall for dogs is consumption of moldy black or English walnut hulls. The tremorgenic toxin, penitrem A, may be present in these. Possible clinical signs with the tremogenic syndrome include muscle tremors, increased salivation, ataxia, hyperesthesia, nystagmus, vomiting and clonic-tonic convulsions. Diazepam may be ineffective in treating these convulsions. Methocarbamol might be a better choice as an initial treatment.

Fall mushrooms are also everywhere. Many of these are just GI irritants. Some, like *Amanita muscaria*, cause a dramatic CNS syndrome. Other Amanita species (*A. phalloides*, *A. virosa*) cause initial GI signs approximately 6-12 hours after consumption followed in several days by liver and possibly kidney failure. Both cats and dogs are at risk from mushroom toxicoses.

Rats and mice also tend to move indoors in the fall. Increased use of rodenticides brings increased chance of exposure for both dogs and cats. The majority of rodenticides are anticoagulant-based and are mainly a problem in dogs. Other types of rodenticides include the CNS toxicant, bromethalin. Bromethalin is a problem for both cats and dogs. Vitamin D₃, cholecalciferol, is also marketed as a rodenticide. Dogs consuming cholecalciferol present with hypercalcemia and hyperphosphatemia accompanied by GI and renal problems.

Finally, fall brings flu season and increased use of NSAIDs and acetaminophen. Both can be problems for dogs and cats. NSAIDs cause GI and renal problems, whereas acetaminophen causes methemoglobinemia and liver necrosis. Cats are more susceptible than dogs to both ibuprofen and acetaminophen. **Dennis Blodgett, D.V.M., Ph.D., Diplomate, A.B.V.T., Toxicology, Virginia-Maryland Regional College of Veterinary Medicine, Va. Tech, Blacksburg, VA**

Foals Are Interferon Gamma-Deficient At Birth

The increased vulnerability of foals to specific pathogens such as *Rhodococcus equi* is believed to reflect an innate immunodeficiency, the nature of which remains poorly understood. Previous studies have demonstrated that neonates of many species fail to mount potent Th1 responses. The current research investigates the ability of circulating and pulmonary lymphocytes of developing foals to produce interferon gamma (IFN γ). Peripheral blood mononuclear cells (PBMC) were prepared from up to 10 horse foals at regular intervals throughout the first 6 months of life. Bronchoalveolar lavage (BAL) samples were collected at 1, 3 or 6 months of age from three groups of five foals. The PBMC and BAL cells were stimulated in vitro and IFN γ production was measured by intracellular staining. In addition, RNA was extracted from freshly isolated and in vitro stimulated PBMC and BAL cells for quantitation of IFN γ gene expression by real time PCR. Newborn foals exhibited a marked inability to express the IFN γ gene and produce IFN γ protein. This deficiency was observed in both circulating and pulmonary lymphocytes. However, IFN γ gene expression and protein production increased steadily throughout the first 6 months of life, reaching adult levels within the first year of life. These findings suggest that foals are born with an inherent inability to mount a Th1-based cell mediated immune response which may contribute to their susceptibility to intracellular pathogens. **C. C. Breathnach, T. Sturgill-Wright, J.L. Stiltner, A. A. Adams, D.W. Horohova, Gluck Equine Research Center, Dept. of Vet Science, Univ of Kentucky, D.P. Lunn, Dept. of Clinical Sciences, Colorado State Univ. Veterinary Immunology and Immunopathology, Volume 112, Issues 3-4, 15 August 2006, Pages 199-209, as reported in Penn State Veterinary News, June – August, 2006, University Park, PA**

Evaluation Of The Relationship Between Causative Organisms And Clinical Characteristics Of Infective Endocarditis In Dogs: 71 Cases (1992-2005)

Objective - To evaluate microbiologic findings in dogs with infective endocarditis (IE) and determine whether there were differences in clinical features of disease caused by different groups of infective agents.

Design - Retrospective case series.

Animals - 71 dogs with suspected or definite IE.

Procedures - Medical records were reviewed for results of bacterial culture and susceptibility testing, serologic assays for vector-borne disease, and PCR testing on vegetative growths. Cases were grouped by causative organism and relationships among infectious agent group, and various hematologic, biochemical, and clinical variables were determined. Survival analyses were used to determine associations between infecting organisms and outcome.

Results - Causative bacteria were identified in 41 of 71 (58%) dogs. Gram-positive cocci were the causative agents in most (21/41; 51%) infections, with *Streptococcus canis* associated with 24% of infections. Gramnegative organisms were detected in 9 of the 41 (22%) dogs. Infection with *Bartonella* spp was detected in 6 of 31 (19%) dogs with negative results for microbial growth on blood culture. Aortic valve involvement and congestive heart failure were more frequent in dogs with endocarditis from *Bartonella* spp infection, and those dogs were more likely to be afebrile. Infection with *Bartonella* spp was negatively correlated with survival. Mitral valve involvement and polyarthritis were more frequent in dogs with streptococcal endocarditis.

Conclusions and Clinical Relevance - Streptococci were the most common cause of IE and were more likely to infect the mitral valve and be associated with polyarthritis. Dogs with IE

secondary to *Bartonella* spp infection were often afebrile, more likely to develop congestive heart failure, rarely had mitral valve involvement, and had shorter survival times. **J. E. Sykes, M. D. Kittleson, P. A. Pesavento, B. A. Byrne, K. A. MacDonald, B. B. Chomel. Univ. of CA., Journal of the American Veterinary Medical Association, June 1, 2006, Vol. 228, No. 11, Pages 1723-1734, as reported in Penn State Veterinary News, June – August, 2006, University Park, PA**

Your Taxes

The average civilian employee of the federal government is paid \$106,579 a year from Uncle Sam's annual payroll of \$200 billion. The government employees get \$2 for every dollar that private sector employees are paid. Federal pay is up 38% 2000 to 2005, more than double the 15% increase for private workers over the same period.

Federal jobs are immune to the ups and downs of the business cycle. Over 1.8 million federal employees enjoy recession proof employment unaffected by outsourcing. Figures indicate that only one in 5,000 federal employees is ever fired for cause each year. Public employee unions seem to have the Congress well under their control – **Wall Street Journal, August 15, 2006**

The Grand Canyon

Cutting across 277 miles of northern Arizona, the Grand Canyon of Colorado is 18 miles wide at its widest point and 6,000 feet deep at its deepest point. Over the past six million years, the Colorado River has exposed geologic rock strata covering nearly two billion years of North America's history. More than four million people visit this natural wonder each year.

The Workplace

Has the relationship between workers and the workplace changed, perhaps indicating a workplace “revolution”? Recent experiments suggest workers need a workplace/space to match their needs, which can vary widely. An emphasis on teamwork and collaboration may mean that traditional offices and cubicles aren’t creating the necessary or desirable environment. Perhaps employees shouldn’t be tied to a desk or other fixed location. More latitude about where people can work, and even when they can work, may be important in improving productivity and job satisfaction.

An experiment called the Future of Work has abolished the personal desk for most workers and encourages communication with cell phones, blackberries and wireless laptops. They can work at home or the local Starbucks as their physical presence often isn’t required at “the office”. When they do need a desk, office or meeting room, they call and reserve one. This approach may allow 100 workers to make effective use of a building designed to accommodate 50.

Behind this approach is the premise that employees are more autonomous in their work than ever before because of the tremendous wave of technological innovation, particularly in communication. A laptop can serve as a desk while people stay connected by e-mail and voice.

Technology companies have invested huge dollar sums on the means to move our economy to knowledge-intensive jobs, which can create new products and services. These jobs require close and intensive interaction with colleagues, customers and suppliers as complex problems are worked out. These interactions do not necessarily require an office or other fixed location.

A rapidly increasing percentage of the workforce can be considered “mobile” – meaning they can perform their jobs away from an office. This trend will only increase and accelerate as mobile technology improves and matures.

Studies suggest a mobile workforce is more productive as it allows people to work where they can best get the job done. These studies also suggest a mobile workforce has a higher level of job satisfaction. Workers have more flexibility and a better work/life balance.

The mobile workforce may be better able to avoid the stress of rush hour commuting, which could conceivably reduce traffic congestion on certain roads at rush hour.

All these factors point toward some very basic changes in how many people will perform their jobs. Are we seeing the start of a workplace “revolution”?

Kent Roberts, DVM
Derived from Bacon's Rebellion July 25, 2005

Virginia Elections

Candidates for state wide elections in Virginia spent a combined total of more than \$67 million in the 2005 election cycle. On average, it now costs \$127,000 to run for the House of Delegates. Six candidates spent a half million each and 26 candidates spent \$250,000 (or more) in 2005 Virginia campaigns for the House of Delegates

School Lunch

The Federal school lunch program feeds 29 million children across the U.S., most of them from low income families. Only about 9 million get a school breakfast under the program.

The USDA reports that in 2004 an estimated 13.9 million children lived in households that didn't provide an adequate balanced diet for them throughout the year. This is up from 12.7 million in 2001.

The federal school lunch program was established in 1946. This was a result of complaints from the U.S. armed services that too many World War II draftees were failing induction physicals because of poor childhood nutrition.

The school breakfast program began in 1966 and was passed by Congress in 1975 with the goal of ensuring a healthy meal before school for poor family's children. Both school breakfast and lunch are federal entitlement programs with mandatory funding to reimburse school districts for meals that meet USDA nutritional guidelines. These meals are free, reduced price or full price depending on the child's economic situation.

**Kent Roberts, D.V.M.
Blacksburg, VA**

Continuing Education Opportunities

Date	Topic	Location	Contact Hours
October 6 & 7, 2006	Applied Ultrasonography	Blacksburg	10
October 13 & 14, 2006	Introductory Echocardiography	Blacksburg	10
November 17, 18 & 19, 2006	Advanced Echocardiography	Blacksburg	21
October 23 - 25	3-Day Soft Tissue Surgery	Blacksburg	24
January 13, 27 and February 10, 2007	Urinalysis & Hematology for Technicians	Blacksburg	6
Spring 2007	3 – Day Gastrointestinal Endoscopy	Blacksburg	24
Spring 2007	Radiology for Technicians	Blacksburg	6

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, (540) 231-5261; or to register for a program, please contact Conference Registration, Continuing Education Center, (540) 231-5182.

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