THE WINN FELINE FOUNDATION
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HEALTH NEWS

Summaries by Betty White 1/07

"Pain Control in Cancer Management." Writing for *Veterinary Practice News*, Kevin A. Hahn, DVM, PhD, Dipl. ACVIM (Oncology), proposes a "pain ladder" to provide guidance in the management of cancer pain in companion animals. As cancer progresses, inflammation created by tissue destruction is painful. The pain itself can stimulate additional reactions in the body that lead to further cancer progression.

A pain management strategy aims to relieve pain and prevent or delay additional complications. In human medicine, a one-through-ten scale of pain severity is recommended by the World Health Organization to provide guidance in selecting appropriate medication for pain relief. Dr. Hahn proposes three categories for cancer pain relief in veterinary medicine.

1. Mild to Moderate Pain: The tumor compresses surrounding tissues and may be warm to the touch, but pain as general aches or stiffness does not seem to restrict a pet's activities. The first choice of medication would be a non-steroidal anti-inflammatory drug (NSAID), used cautiously but regularly. The use of antioxidants can prevent or lessen the severity of mild to moderate pain following some reconstructive surgical procedures or radiation protocols.
2. Moderate to Severe Pain: When NSAIDs no longer relieve pain or a pet's activities appear to be circumscribed because of pain, opiods should be considered. Opiates may include codeine, hydrocodone, fentanyl, torbutrol, and tramadol. The selection is often limited by cost, making tramadol an attractive option for pain. However, the responses to this drug are quite variable. The combination of an opiate and a NSAID provides the most consistent pain relief.
3. Severe Pain: Cancers associated with severe pain include those causing intestinal or pelvic obstruction, primary or metastatic bone tumors, and tumors causing oral ulceration. Temporary relief can sometimes occur with the modification of the type or dosage of a NSAID and opiate combination. Lasting pain relief and the halt of cancer progression may be achieved through tumor irradiation or intravenous bisphosphonates. The action of this latter class of drugs is mostly unknown, but these drugs continue to show promise for use in veterinary medicine.

[*Veterinary Practice News*, December 2006.]

NOTE: Winn Feline Foundation, in partnership with the Miller Trust, provided funding to Dr. Bruno Pypendop and Dr. Jan Ilkiw at the University of California, Davis, to investigate the use of tramadol for pain relief in cats.

"Feline Trichomoniasis: An Emerging Disease?" Veterinary researchers at Auburn University, in association with practitioners in Alabama and North Carolina, surveyed the known history, pathogenesis, prevalence, clinical signs/diagnosis, and treatment of *Tritrichomonas foetus (T. foetus)* in published case studies and laboratory analyses. The disease was first reported in cats in 1956, although the correct causative agent was identified only recently. Clinical signs include chronic diarrhea accompanied by large-bowel inflammation and fecal incontinence. Stools have been described as bloody and/or containing mucus, and the cat may suffer from flatulence and a constant urge to defecate. Because of the similarity in size and shape of the protozoan parasite, *T. foetus* is often overlooked or mistaken for *Pentatrichomonas hominis* or *Giardia* spp. Diagnosis of *T. foetus* is by direct observation of the live organisms in a direct smear or by special fecal culture using the InPouch™ system. A PCR assay may also be used in diagnosis. Treatment of the disease is seldom successful and relapses of diarrhea often occur. While no documented treatment successfully eliminates *T. foetus*, some drugs can reduce the clinical signs or reduce or eliminate trichomonads in feces. Medications currently under investigation include ronidazole and tinidazole.
[Stockdale, H., et al. (2006). *Comp Contin Edu Pract Vet*, 28(6):463-470]
NOTE: Winn Feline Foundation, in partnership with the Miller Trust, provided funding to Dr. Stanley Marks at the University of California, Davis, in 2004 for a research project involving drug therapy for *T. foetus.*

Underlying Medical Conditions in Cats with Presumptive Psychogenic Alopecia." Canadian veterinary researchers studied 21 adult cats with a presumptive diagnosis of psychogenic alopecia to determine if there might be a medical reason for their hair loss. An extensive number of tests were used, including a detailed behavior and dermatologic questionnaire completed by the owners as well as complete behavioral and dermatologic examinations by the researchers. Diagnostic testing included cytologic examination of skin scrapings, fungal culture of hairs, evaluation of responses to parasiticides, an exclusion diet, assessment for allergies and endocrine disorders, and histologic examination (microscopic evaluation) of skin biopsy specimens. Cats not responding to the elimination diet were treated with methylprednisolone acetate to determine if itching (pruritus) was a factor.

Medical causes for pruritus were identified in 16 (76%) of the cats. A combination of psychogenic alopecia and a medical cause for pruritus was found in 3 (14%) cats. Twelve (57%) cats had an adverse food reaction, and it was suspected in 2 more. All the cats with histologic evidence of inflammation in skin biopsy specimens were determined to have a medical condition. Of the 6 cats without histologic abnormalities, 4 had an adverse food reaction, allergies/endocrine disorders, or a combination of the two. Only 2 (10%) cats were found to have true psychogenic alopecia.

The results of this study suggest that psychogenic alopecia is over-diagnosed in cats. Thorough testing should be done before concluding that the cause of hair loss is behavioral.
[Waisglass, S. E., Landsberg, G. M., et al. (2006), *J Amer Vet Med Assoc* 228(11):1705-1709.]

"Pregnancy-Associated Congestive Heart Failure in a Cat." Tufts University School of Veterinary Medicine researchers reported a case study of a 4-year-old, late-term pregnant Himalayan queen diagnosed with biventricular congestive heart failure. The disease was characterized by pleural effusion and pulmonary edema. Four live kittens were delivered by cesarean section, with one surviving at discharge from the hospital. Following the surgery, the queen's congestive heart failure rapidly resolved. The queen remained asymptomatic for congestive heart failure for nine years. It was surmised that volume expansion secondary to pregnancy resulted in cardiovascular volume overload and resulted in the subsequent congestive heart failure.
[Stoneham, A. E., Graham, J., et al. (2006). *J Am Anim Hosp Assoc* 42(6):457-461.]

"Elimination Behavior Patterns of Domestic Cats (Felis Catus) With and Without Elimination Behavior Problems." Researchers at the University of Georgia, Athens, investigated the relationship of litter box location as it relates to cats' use of space in the house, elimination problems, and certain behaviors associated with elimination. A total of 40 cats were studied, half with elimination problems and half without. All were in single-cat households, and camcorders were used to observe and evaluate behaviors.

The results indicated that litter box location did not differ between cats with and those without elimination behavior problems. While cats with problems spent much less time pawing in the litter box than cats without any problems, there was no significant difference in the time spent by the two groups digging around in the litter box, sniffing, or covering the excreta.

It may be that the time spent digging in a litter box could be used as a way to test for litter preference and litter aversion. It may help identify cats with litter aversion before an elimination problem develops.
[Sung, W., and Crowell-Davis, S. L., (2006). *Am J Vet Res* 67(9):1500-1504.]

"The 2006 American Association of Feline Practitioners Feline Vaccine Advisory Panel Report." This long-anticipated report is replete with vaccine analyses and protocols. The entire 37-page document can be found online and is free to read and/or download. The URL is **http://www.aafponline.org/resources/practice_guidelines.htm.** Click on "The 2006 Feline Vaccine Advisory Panel Report." The recommendations for shelter environments have been summarized and modified for multi-cat/cattery facilities below.

Panleukopenia (FPV), Feline Herpesvirus-1 (FHV-1), and Feline Calicivirus (FCV) are considered core vaccines, and they are to be administered in combination in a single dose as early as 4 to 6 weeks of age. (The exception to this combination occurs if bivalent FHV-1 and FCV combined vaccine for intranasal [IN] administration is chosen. The use of modified live vaccines for IN may be preferable when rapid onset [48 hrs.] of immunity is desired. It should be noted, however, that postvaccinal sneezing, commonly seen following IN vaccination, may be impossible to distinguish from active infection.) The initial dose of vaccine is then repeated at 2- to- 4-week intervals until 16 weeks of age; the shorter interval should be used in high-risk environments. A single dose, or booster, of vaccine is given 1 year following the initial series, with boosters thereafter no more frequently than every 3 years.

Rabies virus vaccines should be administered in accordance with local or state statutes. In locations in which rabies virus vaccination is not required, the Advisory

Panel suggests that kittens receive a single dose of rabies virus vaccine between 12 and 16 weeks of age (as early as 8 weeks of age, depending on vaccine type); a booster vaccine should be administered 1 year later.

Certain non-core vaccines may be considered should a cat be at risk for the following diseases: Feline leukemia (FeLV), *Chlamydophila felis; Bordetella bronchiseptica.* The panel did not generally recommend feline immunodeficiency virus (FIV), *Giardia lamblia, or* FIP (FCoV) vaccines.
[Richards, J. R., Elston, T. H., et al. (2006) *J Am Vet Med Assoc* 229(9):1405-1441.]

"Whole Blood Cytokine Profiles in Cats Infected by Feline Coronavirus and Healthy Non-FCoV Infected Specific Pathogen-Free Cats." This study, funded in part by the Winn Feline Foundation, focused on basic research into the nature of cytokines, a class of regulatory substances that are secreted by cells of the immune system. Studies of these substances in cats with feline infectious peritonitis (FIP), a fatal disease induced by feline coronaviruses (FCoVs), have provided controversial results. No information has been available, however, about cytokine profiles of non-symptomatic, naturally FCoV-infected cats known to have changes consistent with a cytokine-induced protective immunity. In this study, researchers from the University of Milan, Italy, and the University of Zurich, Switzerland, investigated the cytokine profiles of healthy cats naturally infected with FCoV, of cats with FIP, and of specific pathogen-free (SPF) cats. Compared with SPF cats, cytokine production was upregulated, i.e., increased, in most of the blood samples from FCoV-positive, non-symptomatic cats. A case of FIP in a cattery was associated with an increased expression of cytokines in the other cats, particularly of two specific ones, suggesting that these two cytokines might protect infected cats from the disease. This theory was supported by the low levels of one of these cytokines in the blood from cats with FIP. It is hoped that larger, well-controlled studies in the future will investigate both the role of cytokines in FCoV-host interactions and the possibility of using cytokine profiles to identify cats susceptible or resistant to FIP.
[Gelain, M. E, Meli, M., et al. (2006). *J Feline Med Surg* 8:389-399.]

"Clinical Evaluation of Dietary Modification for Treatment of Spontaneous Chronic Kidney Disease in Cats." Researchers from the University of Minnesota and Hill's Science and Technology Center conducted a double-masked, randomized, and controlled clinical trial to determine whether a renal diet modified in protein, phosphorus, sodium, and fat content was superior to an adult maintenance diet in minimizing uremic episodes and mortality rate in cats with stage 2 or 3 chronic kidney disease (CKD). The trial included 45 client-owned cats with spontaneous stage 2 or 3 CKD. Twenty-three cats were fed the maintenance diet and 22 received the renal diet. Evaluations were made at 12- and 24-month intervals. A significantly greater percentage of cats fed the maintenance diet had uremic episodes (26%), compared with cats fed the renal diet (0%). While not all causes of death were identified, cats fed the renal diet had a significant reduction in renal-related deaths.
[Ross, S. J., Osborne, C. A., et al. (2006). *J Am Vet Med Assoc* 229(6):949-957.]

"The Effect of Ramipril on Left Ventricular Mass, Myocardial Fibrosis, Diastolic Function, and Plasma Neurohormones in Maine Coon Cats with Familial Hypertrophic Cardiomyopathy Without Heart Failure." This prospective, blinded, placebo-controlled study supported by the Winn Feline Foundation included 26 Maine Coon and Maine Coon crossbred cats with familial hypertrophic cardiomyopathy (HCM), but without congestive heart failure (CHF). Cats were evaluated at the beginning and at various intervals for a year. The results led to the conclusion that Maine Coon cats with HCM but without CHF treated with ramipril did not experience changes in left ventricular mass, improved diastolic function, altered myocardial fibrosis by delayed enhancement, or altered plasma brain natriuretic peptide or aldosterone concentrations in a relevant manner.
[MacDonald, K. A., Kittleson, M. D., et al. (2006). *J Vet Intern Med* 20(5):1093-1105.]

<u>Two Studies of Benazepril for Chronic Kidney Disease</u>:

"Tolerability and Efficacy of Benazepril in Cats with Chronic Kidney Disease." Benazepril, an angiotensin-converting enzyme (ACE) inhibitor, was tested in a clinical trial using 192 cats with chronic kidney disease (CKD). This drug has beneficial effects in humans with CKD. It reduces the loss of protein in the urine (proteinuria) and increases life expectancy. It was a double-blind, parallel-group, prospective, randomized clinical trial. Most of the cats were fed a diet containing low amounts of phosphate, protein, and sodium. Benazepril was well tolerated and decreased proteinuria in cats with CKD. There was, however, no difference in survival time between the two groups when all 192 cats were compared.
[King, J. N., Gunn-Moore, D. A., et al. (2006). *J Vet Intern Med* 20(5):1054-1064.]

"Evaluation of the Clinical Efficacy of Benazepril in the Treatment of Chronic Renal Insufficiency in Cats." There were 61 cats used in this prospective, randomized, double-blind, placebo-controlled clinical trial for a period of 6 months. Cats were classified into 4 stages of chronic renal insufficiency (CRI) according to the International Renal Interest Society (IRIS) classification method. The incidence rates of cats with IRIS classification of stage 2 or stage 3 that remained in those stages without progressing to stage 4 were higher with benazepril therapy as compared with cats given a placebo. These results suggest a potential for benazepril to delay the progression of disease and/or to extend survival time of cats with CRI.
[Mizutani, H., Koyama, H., et al. (2006). *J Vet Intern Med* 20(5):1074-1079.]

"Preventing Behavior Problems in Cats." Terry Marie Curtis, DVM, MS, DACVB of the University of Florida, discusses various problems well known to cat lovers everywhere and offers solutions.

<u>Inappropriate Scratching</u>: Scratching is normal feline behavior; confining this behavior to appropriate surfaces is the goal. The first thing to remember is to keep claws trimmed, because scratching is grooming to the cat. Cats and kittens like some textures/surfaces better than others. If there is a problem, try to find a comparable texture on an acceptable surface, post, or mat, and place it where the cat spends most of its time. If your substitution is ignored, try to discourage the inappropriate choice by applying any double-sided tape product or aluminum foil to off-limit items or by using

motion detectors that make a loud sound when the cat gets too close to that item. Punishment for scratching only works if the following conditions are met:

- The punishment must happen every time.
- The punishment must happen immediately after the behavior.
- The punishment must be appropriately intense so that the cat stops scratching but does not become afraid or aggressive.

More often than not, cats learn where NOT to scratch when an owner is not around because a motion detector or double-sided tape provides punishment when the cat is alone!

Inappropriate Elimination and Urine Marking: This problem is a pesky one for breeders, and one of the prime reasons for the return of kittens sold as pets. Medical causes should be eliminated first, except in the case of a kitten adjusting to a new home. Things to be considered are litter type -- some cats do have preferences for texture, granularity, and coarseness, litter box location, other pets, and acclimating to a new home. It is important in the latter case that the behavior does not become a habit. There may be an anxiety component to inappropriate elimination in the case of older cats – separation anxiety in which the cat eliminates outside the litter box while the owners are away or when they return. The litter box should be in a quiet, well-lighted location, away from the cat's food and water. Urine marking – staking out territory – is normal feline communication, but imperfectly understood. It is usually resolved (90% of the time) by spaying or neutering.

Aggressive Behavior: The most common causes of feline aggression toward humans are play and fear. Play that develops into a stalking stance and resulting pounce is play that needs to be terminated in favor of cat toys! Fear-motivated aggression occurs from a loud, unexpected noise and that aggression usually resolves quickly. If a cat is frightened and feels cornered, it may attack in order to get away. The socialization of cats is often restricted to early stages in life, called *sensitive periods.* This sensitive period is considered to be 2 to 7 weeks of age. Play begins in kittens by 3 weeks of age, increasing from 4 to 11 weeks of age. After that, play decreases. This is very important to remember in raising kittens.

[*Comp Contin Edu Pract Vet*, 28(2):119-121]