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24th Annual Feline Symposium

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Feline Symposium



The 24th Annual Feline Symposium was held on Saturday, March 24 at VHUP. The event was generously supported by **Sheba®** and **Mrs. R.V. Clark, Jr.** and **Mrs. Edith Young**. Five faculty gave presentations. This year the Parade of Breeds focused on four related breeds which were presented and explained by their breeders. The day ended with the traditional wine and cheese reception, hosted by Liz Clark and Edith Young.

Following are summaries of the faculty presentations:

Feline Hyperthyroidism — Diagnosis and Treatment

Hyperthyroidism is the most common endocrinopathy in cats. It is also one of the most debilitating, said **Dr. Cynthia Ward**, associate professor of medicine at VHUP. Dr. Ward discussed the pathogenesis, clinical manifestations, diagnosis and treatment options for feline hyperthyroidism.

Unrecognized in cats until 1979, hyperthyroidism has since become an increasingly common diagnosis. Although the etiology is unknown, recent evidence has linked the disease to the use of canned cat food (2-3-fold risk) and cat litter (3-fold risk). With no reported breed or gender predilection, hyperthyroidism usually occurs in cats older than seven years of age.

Thyroid hormone, which is manufactured by the thyroid gland, produces widespread systemic effects emanating primarily from its role in increasing metabolic rate. In the hyperthyroid cat, the thyroid gland is overproductive as a result of either benign (98% of cases) nodular or generalized hyperplasia.

“The hormone released by these cells that become unregulated makes the cat change in so many ways,” Dr. Ward explained. While sometimes subclinical, feline hyperthyroidism may produce clinical signs that include elevated activity level, ravenous appetite, weight loss, polyuria/polydipsia and vomiting. On physical exam, affected cats may be thin and have a palpable thyroid gland and abnormal cardiac auscultation (tachycardia, gallop rhythm, heart murmurs).

Most cases are diagnosed by an elevated T4 level. For those that cannot be diagnosed by T4 measurement alone, a T3 suppression test or T4 in combination with a free T4 by dialysis

measurement is usually diagnostic. Since thyroid hormone has multisystemic effects, supplemental tests should be performed in confirmed cases to evaluate other organs and systems that may be affected, particularly the kidneys, heart, nervous system and gastrointestinal tract.

Feline hyperthyroidism can be treated medically, surgically or with radiotherapy (131I), which is the treatment of choice in cats without concurrent renal disease. One subcutaneous injection of 131I, which kills hyperfunctional follicle cells, is curative in 95 percent of cases. The medical treatment of choice is methimazole (Tapazole), which works quickly to regulate thyroid hormone production. The third option is surgery, in which both thyroid glands are usually removed.

Feline Behavior — Common Problems

There exist a variety of behavior disorders to which cats are predisposed. In order to minimize suffering for cat and owner alike, these problems should be promptly addressed, said **Dr. Diane Frank**, whose lecture focused on feline elimination disorders. Feline elimination disorders can be categorized as medical and behavioral. Medical causes, which must be ruled out first, can include feline lower urinary tract disease (FLUTD), renal disease, diabetes mellitus, hyperthyroidism, colitis, constipation, arthritis and neoplasia. If medical etiology for a feline elimination disorder is suspected, a variety of tests may be performed, including urinalysis, urine culture and abdominal radiographs. The primary behavioral causes of feline elimination disorders are litter box-associated aversions/preferences and aggression. Aversions can be associated with litter box type, number, location(s), odor, cleanliness and substrate (type, texture, depth). Preferences, likewise, can be associated with the same variables, particularly substrate factors. How to differentiate a location from a substrate preference? Dr. Frank recommended placing a litter box on the soiled location and then monitoring whether the cat eliminates in the litter box or next to the box. If it is a location preference the cat will use the box. If it is a substrate preference the cat will not use the litterbox in the new location.

If a substrate preference is suspected, Dr. Frank explained, one might “ask the cat what

the cat prefers” by making available three (different) litter boxes, each with a different litter type.

In multicat households, active and passive intercat aggression may be the root of elimination disorders. Aggression, particularly when passive, can be covert and easily missed. Owners must carefully observe their cats for aggressive behaviors. Elimination disorders can also be manifest as marking, which can occur for various reasons, including social interactions between household cats, presence of outdoor cats, household changes (i.e., new pet or person) and other anxiety-provoking situations.

Treatment for feline elimination disorders varies with the cause. For litter box issues, changes may be made in the box type, number, location(s) or substrate. For intercat aggression, options include no intervention, separating the cats, and interrupting aggressive interactions. Severe aggression requires environmental changes, behavior modification and medication. To curb marking, psychotropic medications are generally also required.

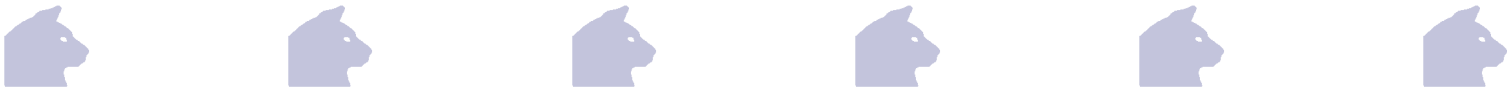
Diabetic Ketoacidosis: Diagnosis and Treatment of a Diabetic Emergency

Diabetic ketoacidosis (DKA) is the most severe — and sometimes deadly — sequela of diabetes mellitus (DM). **Dr. Rebecka Hess**, assistant professor of medicine, presented an overview of DM and DKA.

The pancreas produces a variety of critical enzymes and hormones. One of these is insulin, an anabolic hormone that facilitates cellular uptake of glucose, fatty acids and amino acids for storage as carbohydrate, fat and protein. Insulin is the most important problematic hormone in DM. DM occurs in one of two forms. Type I — or insulin-dependent — DM is the form typically seen in cats and dogs. Here, the pancreas does not secrete adequate amount of insulin due to destruction of the beta cells that produce the hormone.

The primary clinical signs of DM, which usually occurs in middle-aged to older cats, are polyuria/polydipsia, weight loss and hind limb lameness. Abnormalities that may be present on physical exam include obesity, hepatomegaly, lethargy, plantigrade stance and acetone breath.

Diagnosis of DM involves documenting glucosuria and persistent hyperglycemia. Other



diagnostics, such as CBC, chemistry panel, urinalysis, and urine culture should also be performed to detect the presence of concurrent diseases like hepatic lipidosis, acute pancreatitis, urinary tract infection, hyperthyroidism and cancer.

Treatment of DM in cats may incorporate several therapeutic modalities: insulin administration, dietary regulation, and oral hypoglycemics. In cats, human ultralente (long-acting) insulin — at a starting dose of 0.5 units/kg BID — is most commonly used. The patient must consume its entire meal prior to each insulin dose. The optimal diet for the diabetic cat contains increased amounts of insoluble fiber and complex carbohydrates, and restricted amounts of fat and protein. Additionally, a urine dipstick should be performed twice daily to monitor for glucosuria and ketonuria, and glucose curves should be done periodically to determine whether the insulin dose needs to be adjusted.

“It’s a lot of work to maintain proper regulation of the diabetic cat,” warned Dr. Hess, who added that the prognosis for these patients is good.

However, DKA a potentially fatal consequence of DM — carries a guarded prognosis. DKA is caused by the breakdown of intrinsic fat stores into ketoacids, resulting in acidosis. As a result of extreme electrolyte alterations, affected cats may vomit and become weak, dehydrated, depressed, tachypneic and hypothermic. Emergency treatment with IV fluids/electrolytes and insulin is necessary to correct the acidosis.

Common Feline Emergencies

Cats present to the ER for a variety of reasons. **Dr. Reid Groman**, lecturer in emergency and critical care medicine at VHUP, highlighted three common and potentially serious feline emergencies: feline lower urinary tract disease (FLUTD), feline bronchial asthma, and acetaminophen toxicosis.

FLUTD is a very painful condition wherein a cat “blocks,” or becomes unable to urinate. Most common in neutered males, FLUTD can occur in females as well. FLUTD is a multifactorial disease; causes include diet, infection, parasites, anatomic abnormalities and urinary crystals. Cats are prone to developing struvite crystals, which are induced by high dietary magnesium. However, with the introduction of

magnesium-reduced, acidified, commercial diets, the incidence of struvite crystals has dropped and that of calcium oxalate crystals has increased.

Nonobstructive FLUTD, more common than obstructive FLUTD, typically presents with bloody urine and frequent, painful urination. It usually resolves spontaneously within a week. Obstructive FLUTD, which occurs almost exclusively in male cats, may be manifested as vomiting, vocalization and depression/collapse. Diagnosis is made by history, clinical signs, palpation (firm bladder) and laboratory data. Treatment is with IV fluids to perfuse the kidneys and correct electrolyte abnormalities, sedation and catheterization to relieve the obstruction, and close observation for 24–48 hours. The prognosis for recovery is excellent, although some cats are prone to reblocking.

Feline bronchial asthma, a reversible, obstructive airway disease occurring most commonly in one- to six-year-old cats, is manifested by widespread narrowing of the airways. Possible causes include dusts, molds, pollen, smoke and parasites, although, said Dr. Groman, “We almost never know what sets off asthma in a cat.”

Clinical signs include wheezing, respiratory distress, increased respiratory rate and cyanosis. Diagnostic tests include radiography and orotracheal lavage. The condition may be treated with oxygen, and injectable/oral/ inhaled corticosteroids, bronchodilators and antibiotics. While the prognosis is generally good, Dr. Groman added that “Cats in respiratory distress are amongst our most fragile patients.”

“Acetaminophen toxicosis is one of the most devastating feline emergencies, Dr. Groman explained, “largely because it’s so preventable.”

Cats are uniquely sensitive to acetaminophen, present in most over-the-counter, aspirin-free pain relievers; a single Tylenol is lethal in the absence of rapid treatment. Clinical signs of acetaminophen toxicosis include cyanosis, facial/appendicular edema, respiratory distress and seizures. Affected cats may be treated with orally-administered activated charcoal (if within two-three hours after ingestion) to decrease gastrointestinal absorption, oxygen, IV fluids, vitamin C, acetylcysteine and blood products. The prognosis for recovery is good if treatment is instituted within four to six hours after ingestion.

Feline Nutrition: An Update for Well and Ill Cats

Cats have evolved as true carnivores and thus have distinct dietary requirements. **Dr. Kathryn Michel**, assistant professor of nutrition at VHUP, discussed the unique aspects of feline nutrition.

Because cats have adapted to a diet consisting primarily of animal flesh, they have lost the ability to synthesize a number of amino acids, fatty acids and vitamins that are contained in their natural diet. Perhaps the most important of these are taurine (an amino acid found only in animal protein; taurine deficiency in cats can cause heart disease, retinal degeneration and reproductive failure), arginine (detoxifies the nitrogenous by-products of protein metabolism, a key metabolic pathway in cats) and vitamin A (cats have lost the ability to convert beta-carotene, found in fruits and vegetables, into vitamin A).

While the cat was perfecting its hepatic synthesis of glucose from dietary amino acids (protein), it cast aside its need for dietary carbohydrates. Although highly speculative, links between carbohydrates — which are present in substantial amount in commercial dry foods — and obesity and diabetes mellitus have been made.

For this and other reasons, said Dr. Michel, “People are looking for alternatives to commercial pet foods because they have some concerns about their wholesomeness.”

Hence, raw food diets have come into vogue as of late. However, after analyzing a number of these diets, Dr. Michel found disturbing nutritional imbalances and potentially-dangerous microorganisms therein. Therefore, she does not recommend these diets.

For cats that are on such non-conventional diets or that have increased nutritional demands, dietary supplements may be important. The main supplements thought to benefit cats are L-carnitine, chromium, vanadium and S-adenosyl methionine. However, Dr. Michel cautioned, the benefits of most dietary supplements are highly speculative. Few studies on their safety and efficacy in cats have been performed. And because they are not regulated by the FDA, these products should be used with discretion and under the advice of a veterinarian.

J.C.G.