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"Pearls" of Veterinary Medicine

THE CAPSULE REPORT® FOR VETERINARIANS

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Volume 34, Number 9 December 2015

A practitioner's approach to feline diabetes

The approach to the feline diabetic that is recommended in veterinary schools and by academic speakers does not consistently produce the promised results when applied to a primary care practice setting. This author and a group of board certified feline practitioners, concluded that if board-certified feline practitioners get only about 25% of their feline diabetics into remission, the expectation of a significantly higher remission rate is not realistic and ***practitioners should not feel guilty about not achieving high remission rates*** in their patients. The most realistic goal for managing a diabetic cat is restoring quality of life so the cat can interact normally with its owner, and part of this is developing a treatment protocol that is workable for the clients who have other obligations in their lives. It was also noted that the author has been feeding cats with chronic kidney disease a low carbohydrate, high protein diet for over 2 years and has not seen a decline in renal function, as we have all been taught to expect. In fact, these cats have a better overall quality of life and quit having muscle loss that is so typical in older cats.

Gary Norsworthy, DVM
Vet Pract News, 26:11

Transfusing dog blood to cats

Xenotransfusion, a potential life-saving option when compatible feline blood is not available for anemic cats, was examined in this review of 4 studies and 1 case report involving transfusion of canine blood to 62 cats. Acute severe adverse reactions were not reported in cats receiving a single transfusion of whole canine blood, likely because cats do not appear to have naturally occurring antibodies to canine RBCs. However, within 4-7 days of transfusion, the cats seemed to develop these antibodies, causing delayed hemolytic reaction. Repeat transfusion of canine blood 4-6 days after the first transfusion caused an acute severe reaction, often fatal. Transfused canine RBCs do not last >4 days in feline patients, whereas transfused feline RBCs can last up to 30 days. A single transfusion of canine blood to a cat can be safe and effective in an emergency, but compatible feline blood is always recommended over canine blood.

C. Bovens and T. Gruffydd-Jones
NAVC Clin Brf, 10:13

Valuable Information Inside

Side effects of Apoquel

According to the manufacturer, "Apoquel may increase the susceptibility to infection and demodicosis and may exacerbate neoplastic conditions." What's important about that statement is if a client calls because the dog is getting worse while receiving Apoquel with either pruritus or lesions, you need to get the dog in for an examination to determine if the Apoquel is causing or promoting a pyoderma or demodicosis. Many clients will call wanting to increase the dose because it helped so much at first, but before doing that, ***check the patient for pyoderma or demodicosis***. In the Target Animal Safety Study performed by the manufacturer, dogs over 12 months of age were given Apoquel at one, three and five times the labeled dose twice daily for six weeks and then once daily for 20 weeks with no cases of demodicosis reported in those dogs. The author has had to discontinue Apoquel in several patients because serious bacterial pyoderma developed while they were receiving it. The author has found that it can exacerbate otitis, and, in some cases, the drug has to be temporarily discontinued to start the dog on corticosteroids for the otitis or interdigital pyoderma.

Alice M. Jeromin, RPh, DVM, Dip ACVD
DVM News Mag, Aug 2015

What pet owners are reading on the internet

Some information on the Internet may seem factual or scientific but is not. *To wit* 1) *Natural pet foods are better*—Although descriptors (e.g., natural, organic, holistic, human grade, premium, super premium) may sound beneficial, only *natural* and *organic* fall under regulatory guidelines. *Organic* suggests that 95% of the product is organic; labels may imply a food is organic when it only partially contains organic ingredients. 2) *By-products are unhealthy*—By-products include heads, feet, viscera,

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or other rendered clean parts of a carcass; these parts actually contain vitamins and minerals and are often eaten first by predators in the wild. 3) *Flaxseed is a good source of omega-3 fatty acids*—Dogs and cats cannot efficiently convert alpha-linolenic acid in flaxseed to EPA and DHA. These fatty acids must be delivered in a fish-, krill-, or algal-oil source. 4) *Grain-free diets are better*—This is not supported in clinical studies; some studies report that obesity is associated with high-fat foods and not high-carbohydrate foods. 5) *Raw food pathogens do not make animals sick*—Concern for human zoonotic disease has been documented, especially regarding asymptomatic pets that shed *Salmonella* spp into the environment. 6) *Commercial pet foods contain euthanized dogs and cats*—There is no scientific evidence to support this.

A.J. Fascetti
NAVC Clin Brf, 11:10

Emergency kit for hunting dogs

Sporting dog owners will too often either have an overstocked emergency kit with a confusing amount of supplies, or fall on the other end of the spectrum and carry nothing with them in the field. Many of the commercially available kits are inadequately supplied or contain very low quality materials in order to keep costs down. A very basic, but effective kit for most hunting dog owners would include: digital thermometer, 4x4 gauze sponges, surgical soap, Vet Wrap, one inch tape, triple antibiotic ointment, cotton swabs, staple gun, tissue glue, needle nose pliers, hemostats, clean white t-shirt (for packing off large wounds), saline eye wash, ophthalmic antibiotic ointment, 50% dextrose, hydrogen peroxide or apomorphine. In addition, for certain clients it may make sense to include certain antibiotics (i.e. for wounds and GI issues) and other gastrointestinal medications.

Joseph W. Spoo, DVM, Dip ACVSMR
SD VMA Conf, 2015

The paradox of healthy obesity

Obesity in humans, is typically associated with metabolic dysfunction and increased inflammation. Unhealthy obese individuals typically exhibit at least 3 risk factors (e.g., type 2 diabetes mellitus, dyslipidemia, hypertension) for metabolic syndrome. There are some individuals (estimated at 10%-30% prevalence), however, who have high insulin sensitivity, no sign of hypertension, and normal lipid, inflammatory, and hormonal profiles (i.e., low triglycerides and C-reactive protein concentrations, high HDL cholesterol and adiponectin concentrations). These individuals seem to be at less risk for cardiovascular and metabolic disease than "unhealthy" obese individuals. One proposed hypothesis for the mechanism behind this protective effect of obesity is extra lean-body mass associated with obesity (i.e., obese individuals have both extra adipose and muscle tissue) may actually provide a greater reserve in catabolic diseases. In veterinary medicine, research is beginning to identify cases in which ***there may be an association between higher body weights and survival***. For example, in cats with congestive heart failure, shorter survival times were associated with low-body-weight individuals than those with moderate or higher body weights.

P.J. Armstrong
NAVC Clin Brf, Sep 2015

Cats, dry food, dental health

Cats lack occlusal surfaces for grinding. The scissor-like action of the canine teeth is ideal for delivering the cervical neck bite used to transect the spinal cord and immobilize or kill prey. The "blood grooves" on those teeth allow the predator to disengage from the prey. Because of interdigitation of teeth, feeding dry food has little impact on dental health as cats do not actually chew. Unless the diet has an enzymatic formulation for dental hygiene, or is so large that the tip of the tooth penetrates the kibble deeply before the kibble fractures, ***dry food does not make much of a difference in dental hygiene***.

Margie Scherk, DVM, Dip ABVP
SW Vet Symp, 09:13

Wound cleaning

To remove grime and particulates that do not rinse off, a mild detergent can be used. Use of a ***0.05% castile soap*** solution (purchased for surgical lavage or made by adding 30 mL of liquid castile soap to 1 L of saline) has been reported. Other mild detergents may be effective without causing undue tissue damage, but most have not been studied. Adding antibiotics, antiseptics (e.g., iodinated solutions of chlorhexidine), or hydrogen peroxide to lavage solutions should be avoided. Use of these products in higher concentrations (i.e., with less water) can cause tissue damage.

Karl H. Kraus, DVM, MS, Dip aCVS
NAVC Clin Brf, 11:10

Selecting food for dietary trials

There has been an increase in pet owner interest in using over the counter (OTC) commercial diets for a diagnostic dietary elimination trial because of price and convenience. Some veterinarians have acquiesced to such client requests, not fully understanding the difference and value in product quality control between veterinary therapeutic and OTC commercial lines of pet foods. The pet owner may select OTC diets based on the name of the product, e.g. venison and sweet potato, which ensures nothing more than the product will contain at least 3% of those ingredients. Pet owners and veterinarians also make the assumption that if food proteins or isolates of a food protein are not named in the product ingredient list, then the product does not contain those food proteins and therefore, is a suitable diet to be used in a diagnostic elimination trial. This author conducted two ELISA testing studies for common food proteins in various diets to determine the suitability of such diets in a food elimination trial. The findings were as follow. 1) If the four OTC venison products selected in the first study are representative of OTC

products, then OTC venison dry dog foods should not be used for elimination trials in suspected food allergy patients. 2) OTC dog food diets that claim to contain 'no soy' may actually contain high concentrations of soy protein antigen and therefore should not be considered for soy elimination trials. 3) The veterinary therapeutic diets chosen for a soy elimination diet trial needs to be carefully selected to ensure no soy protein present in the diet. 4) ***Gelatin capsules may contain both beef and/or pork proteins*** and therefore gelatin capsules of any product should not be fed during a dietary elimination trial.

Rebecca L. Remillard, PhD, DVM, Dip ACVN
18th NC Vet Conf

Heartworm testing in the cat

Antibody testing, (AB) while not a panacea, is more useful in screening cats than antigen (AG) testing. A positive result on a heartworm antibody test tells the veterinarian that a cat has—or *has had*—a heartworm infection (HWI); of cats positive on an AB test, 10%-20% will have a mature infection. The AB test can detect larval infections with either male or female worms as early as 2 months post-infection, vs. the antigen test, which cannot pick up an adult infection until roughly 8 months post-infection. It casts a wide diagnostic net, capable of capturing most feline infections—past or present—while assessing risk of exposure. When trying to diagnose an adult infection, it can be useful to follow an AB test with an AG test or to use them concurrently. It is not unusual to have an AB-positive/AG-negative result in a cat with mature HWI. Since worm maturation increases the chances of a positive AG test, repeating a test in 1-2 months in suspected cases is often helpful, while heat-treating samples prior to testing can increase sensitivity.

Clarke Atkins, SVM, Dip ACVIM
NAVC Clin Brf, Sep 2015

Seizures in cats

Seizure control is defined in the literature as a "greater than 50% reduction in seizures". Phenobarbital (Per Os) remains the drug of choice for feline seizures, regardless of the underlying cause. Recently, this author showed that 93% of cats with seizures of any cause obtained seizure control with a phenobarbital level between 15-45 µg/ml. *Cats do not have the same elevation in liver values as dogs, making this medication easier to tolerate long-term.* Serum biochemistry analysis was normal in 95% of the cats in the recent study. Additionally, side effects such as sedation, lethargy, polyphagia and polydipsia can be occasionally noted but these are typically transient and stabilize following the 2 week adjustment period. Bromide is not recommended for cats due to an irreversible eosinophilic bronchopneumonia. The listed dosage of phenobarbital is 3-5 mg/kg, BID.

Heidi Barnes Heller, DVM, Dip ACVIM
100th WI VMA Conf, Oct 2015

Treating cats with CKD and hyperthyroidism

In cats that develop azotemia after treatment of hyperthyroidism, a TT_4 concentration in the lower half of the laboratory reference interval remains the therapeutic goal despite the development of azotemia. Treatment trials with reversible therapy (antithyroid medication or dietary therapy) in initially non-azotemic hyperthyroid cats (i.e., before definitive treatment options, such as thyroidectomy or radioiodine treatment) are therefore no longer routinely recommended in hyperthyroid cats that are non-azotemic at the time of diagnosis. However, normalization of the TT_4 using antithyroid medication would be beneficial prior to general anesthesia for thyroidectomy. In cats that develop azotemia after treatment of hyperthyroidism, IRIS guidelines for the management of feline CKD should be followed.

Tim Williams, MA, VetMB, PhD, FRCPath, MRCVS
NAVC Clin Brf, Sep 2015

Fresh water algal blooms poisoning

Freshwater harmful algal blooms (HABs) of cyanobacteria (blue-green algae) are occurring with increasing frequency and wider geographic distribution in lakes, ponds, and rivers worldwide. Freshwater HABs usually occur in nutrient-dense, warm, slow-moving water, typically during summer and fall. Blooms can appear as visual discolorations in water or as surface scum, appearing as paint-like slicks or clotted mats; they are usually light green to dark brownish green but can range from red to reddish brown. Cyanobacteria can produce cyanotoxins that affect persons, pets, livestock, and wildlife that swim in or drink water from algae-contaminated sources. Dogs are at high risk because they often are attracted to the odor of algal scum and might eat algae mats, swallow contaminated water, or lick their fur after water contact. Commonly reported signs of hepatotoxin poisoning include vomiting, diarrhea, anorexia, jaundice, abdominal tenderness, and dark urine. Neurotoxins cause excessive drooling, disorientation, seizures, and respiratory failure. Dermatotoxin poisoning can result in a rash or hives in exposed animals. Cyanobacterial toxin poisoning can be fatal in animals if untreated. Prompt veterinary care is critical for animals with hepatic or neurologic signs and should include supportive care. No antidote to these toxins exists, but experimentally, ***oral administration of cholestyramine (Questran) has shown promise in dogs***.

Cara Cherry, DVM, MPH et al.
JAVMA Nov 1, 2015

Gluten-free diets

Myth: Gluten-free diets are better for pets. **Reality:** Gluten is the protein portion remaining from grains such as wheat, barley and rye once the starch has been removed, and it is what gives dough its elasticity. Only 1%-2% of humans have celiac disease and require a gluten free diet. Gluten-sensitive enteropathy has been documented in Irish Setters, but is otherwise rare in dogs and cats. Wheat gluten can be up to 99% digestible and contain up to 80% protein. It has an amino acid profile

similar to animal proteins, including the amino acid glutamine which helps conserve muscle mass during intense activity and is the preferred fuel for the small intestinal mucosa. **Key point:** There is no inherent benefit to a gluten free diet in pets.

Melenda A. Wood, DVM, MS, Dip ACVIM
So Cal VMA Pulse, 59:8, 2015

Ethylene glycol tests

The Catachem (catacheminc.com) and Kacey (kaceydiagnostics.com) ethylene glycol tests are patient-side tests. The Catachem test is a colorimetric qualitative test. It will be positive for any *cis-1-diol* (ethylene glycol, propylene glycol, glycerol, sorbitol, etc.). It has both canine and feline tests. The Kacey strip test will be positive for any alcohol (see above, plus ethanol, methanol, etc.). It has both canine and feline tests on the same strip. The most reliable means of diagnosing ethylene glycol exposure would be having ethylene glycol levels run at a human hospital on a STAT basis. Any level above 20 mg/dl in cats and 50 mg/dl in dogs should be considered significant. ***Observation, via Wood's lamp***, of fluorescence in urine, stomach contents or on paws/muzzle may suggest exposure (fluorescein dye is added to automotive antifreeze to help in detecting radiator leaks).

Tina Wismer, DVM, Dip ABVT, Dip ABT
98th WI VMA Conf

Vaccination intervals

Unlike the canine core live viral vaccines and the killed 3 year rabies which can be administered every 3 years or longer (except rabies), the non-core vaccines must be administered annually after the puppy series. For dogs requiring the non-core vaccines (e.g. Leptospira, Borrelia (Lyme), Bordetella, etc.) the initial vaccines regardless of age when first given must include 2 doses, 2 to 6 weeks apart, then annually with one dose. If for whatever reason the annual revaccination is discontinued for 2 or more years for Leptospira or Lyme, then 2 doses should be given 2 to 6 weeks apart followed by annual revaccination. If the animal is not revaccinated for many years when and if vaccination occurs again, one dose is adequate with core vaccines whereas 2 doses would be required with the non-core products (e.g. Lepto, Lyme)!

Dr. R.D. Schultz
SD VMA Conf, 2015

Dosing regimens for feline IBD

In cats with idiopathic inflammatory bowel disease, if the response to prednisolone alone is not optimal, chlorambucil can be used as an adjunctive treatment. There are several dosing protocols that have been reported. For cats that are relatively easy to pill-a dose of 2 mg per cat, PO, three times a week, can be used. In smaller cats or cats that don't tolerate chlorambucil well the dose frequency can be reduced to twice weekly. For cats that are harder to pill, pulse dosing can be used. This entails giving a dose of 20 mg/m^2, PO, once every 2 weeks. Generally this drug is very well tolerated in cats but it may cause myelosuppression so complete blood counts should be monitored periodically. Some cats with IBD or lymphoma also have comorbid conditions, such as diabetes, that mean the use of prednisolone is contraindicated. Budesonide is a corticosteroid, which is extensively metabolized on its first pass through the liver. This means it causes fewer systemic side effects than prednisolone. In these cases budesonide can be used instead of prednisolone. However, there may still be some systemic side effects associated with this drug. A dose of 1 mg per cat, PO, q24 hours has been recommended.

Jonathan Lidbury, BVMS, Dip ACVIM, Dip ECVIM, MRCVS
19th Tex A&M CVM Fel For, 2015

Care of orphaned kittens

Orphaned kittens require proper health, growth, development, and socialization before weaning. Kittens <4 weeks of age cannot regulate body temperature and must be kept warm via safe measures (i.e., to avoid injury or burns). Kittens <3 weeks of age must have anogenital stimulation for defecation and micturition. If no lactating foster queen is available, kittens must be fed via nursing bottles or orogastric tubes, the proper positioning and placement of which are critical to prevent aspiration. Kittens should be weighed q12-24h for the first 6-9 weeks of age to ensure proper weight gain (~10-15 g/day). If colostrum is not ingested within 12-18 hours of age, kittens are at risk for failure of passive transfer, predisposing them to fatal illnesses. Failure of passive transfer may be corrected through healthy adult feline serum administered IP or SQ. Weaning begins at 3-4 weeks of age by increasing canned kitten food mixed with milk replacer***; by 6-9 weeks of age kittens can fully eat a dry diet***.

S. Little
NAVC Clin Brf, 11:10

Treating cluster seizures

Animals with severe cluster seizures or status epilepticus with some inter-ictal time (i.e., non-continuous) usually respond to a constant rate infusion (CRI) of diazepam (0.1-2.0 mg/kg/hour, IV). The CRI can be started at the low end of the range (0.1-0.25 mg/kg) and gradually increased as necessary to control seizure activity. Once controlled, a seizure-free state is maintained for 12 hours, after which the infusion is gradually tapered (usually reduce dose by half every 4-6 hours) and stopped. The CRI can be administered with a syringe pump, if available, or by mixing with 0.9% saline in a small IV bag or Buretrol system. Diazepam is degraded by light and binds to plastic; the syringe and tubing should be covered with brown plastic or aluminum foil, if possible. Midazolam can be substituted in this scenario, and is less likely to cause thrombophlebitis.

Christopher L. Mariani, DVM, PhD, Dip ACVIM
SD VMA Conf, 2015