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Bad press for carbohydrates

There has been a trend recently amongst some veterinarians, animal professionals and pet owners to malign carbohydrates as an unhealthful food source for dogs and cats. As an obligate carnivore, much of the focus and controversy has centered on the cat. The basis for the argument is that since starch and related carbohydrates were not part of the cat's natural diet, it is unhealthy for such products to be consumed. The simultaneous increase in the use of carbohydrates in many commercial pet foods and the increasing rates of obesity and diabetes mellitus in cats is frequently cited as evidence for this theory. However, the scientific evidence summarized below counters these claims. Insufficient insulin secretion and impaired insulin sensitivity are the major abnormalities of feline diabetes. The "Carnivore Connection" paradigm hypothesizes that these abnormalities are the result of long-term feeding of dietary carbohydrates. The amount of carbohydrates present in commercial diets has not been shown to induce hyperglycemia. Three recent population studies further refute the hypothesis that feeding dry-type extruded diets long-term are the cause of diabetes in cats. The association between obesity in cats and the development of diabetes mellitus has been well documented. However epidemiological studies report that obesity is associated with high fat foods and not high carbohydrate foods. In fact there are some studies that suggest that high carbohydrate, low fat diets have an obesity-protective effect. Exchanging dietary carbohydrate for protein does appear to be helpful for weight loss and managing diabetes in some cats; however, a similar macronutrient exchange does not appear to prevent weight gain in post-spayed cats. Current scientific evidence does not support the argument or negative press that carbohydrates in pet foods are currently receiving.

Andrea J. Fascetti, VMD, Ph.D., Dip ACVIM (SA)
Penn Vet Conf 2014

Stopping the bleeding in trauma cases

The little known potential lifesaver, tranexamic acid (Lysteda, Cyklokapron) is an inexpensive antifibrinolytic drug that blocks plasmin activation. It is a derivative of the amino acid lysine. It has been shown in several human studies to decrease the risk of blood loss during surgery and of death from hemorrhage after trauma. Results of the 2010 CRASH2 (clinical randomization of antifibrinolytic in severe hemorrhage) randomized controlled trial indicate a significant survival benefit to bleeding patients receiving tranexamic acid within 3 hours when compared to controls. It also possesses anti-inflammatory properties through inhibition of IL-6 and IL-8. A 2013 retrospective study from Israel demonstrated significantly lower blood product use in the treatment group when compared to controls, but this difference did not hold up under subgroup analysis. Doses used in this study were 7-10 mg/kg, IV, q6-8h, although pharmacologic data are lacking.

Tony Johnson, DVM, Dip ACVECC
2014 VECCS Spr Symp

INSIDE THIS ISSUE

Use of 'combination' (i.e., multivalent) products

FICTION: Giving too many vaccines at the same time to the same patient could "overwhelm" the immune system resulting in little or no immune response. FACT: Immunologists will point out that the immune system of a healthy dog or cat is quite capable of responding to all of the combination antigens in vaccines on the market today. 3-in-l and 4-in-1 products are commonly used….but even 5-in-1 and 6-in-1 products are considered efficacious.

Richard B. Ford, DVM, MS, Dip ACVIM
Music City Vet Conf, 2014

Heart disease and sodium

Much has been made about the need for sodium restriction in the context of CHF. Part of the reason is sodium retention. Although healthy animals can easily excrete excess dietary sodium in the urine, this response is blunted in animals with cardiac disease. Therefore, some authors have recommended changing to a low sodium diet when a heart murmur was

first detected, even before clinical signs are present; but there is a ***good reason not to initiate a severe sodium restriction*** in animals with asymptomatic cardiac disease or with early CHF. Very low sodium diets in animals with asymptomatic disease further activates the RAA and is not associated with improvements in cardiac size or function (this has been studied in dogs but not in cats). As heart disease progresses and CHF ensues, however, sodium restriction becomes more important although the use of newer and more effective medications has diminished the need for severe sodium restriction in many patients. For an animal with cardiac disease but without CHF (i.e., an asymptomatic cat with hypertrophic cardiomyopathy), it is best to avoid diets high in sodium. With the onset of clinical CHF, additional sodium restriction is recommended. This does not necessarily require a commercial cardiac diet. Be careful in selecting diets designed for cats with renal disease for cats with CHF (unless severe renal dysfunction accompanies CHF) as protein restriction can contribute to muscle loss, which is common in CHF. As CHF progresses, more severe sodium restriction may allow lower dosages of diuretics to be used to control clinical signs.

Daniel L. Chan, DVM, Dip ACVECC
19th Int VECCS Symp

Acquiring DEA forms more easily

The online DEA Controlled Substance Ordering System reduces the headaches of having to manage DEA Form 222. Visit http://www.deae-com.gov to find the forms.

Phil Zeltzman, DVM, Dip aCVS
Vet Pract News, 25:6

Intra-articular analgesia

Results of the study reported here reveal that there is a potential benefit of providing long-lasting analgesia when dexmedetomidine and morphine are given in combination intra-articularly. The combination may simplify postoperative management by reducing the frequency of repeated dosing of systemically administered analgesics. The reduction in repeated dosing of other systemic pain medication can potentially reduce the risk of CNS, gastrointestinal, respiratory, and cardiovascular adverse effects. The dosage used was a combination of morphine (0.1 mg/kg) and dexmedetomidine (2.5 µg/kg). Intra-articular injections of the stifle joint were performed after completion of the corrective osteotomy procedure, just prior to skin closure (stifle joint surgery).

Natalia Soto, DVM et al.
JAVMA, Jun 1, 2014

Treatment of status epilepticus

Diazepam remains the first drug of choice for the treatment of SE in dogs and cats. With its relatively brief duration of action, diazepam is not a definitive therapy for SE. However, because IV diazepam produces transiently high serum and brain concentrations of the drug, it can be a useful drug therapy. Because SE may end spontaneously, IV diazepam should not be administered to a patient presenting in a post-ictal state unless there is another seizure. It has been recommended to use 0.5-1.0 mg/kg, IV, up to a maximum dose of 20 mg, in dogs and cats. This dose can be repeated to effect or twice within two hours. If the diazepam does not control the seizures, the use of phenobarbital should be considered. Probably the ***most common and most dangerous error*** made in the management of SE is to treat repeated seizures with repeated doses of IV diazepam without administering an adequate loading dose of a longer-acting antiepileptic drug. In this situation, the patient will continue to have seizures, toxic concentrations of diazepam or diazepam metabolites will accumulate, and serious morbidity may result from diazepam over-dosage.

Simon R. Platt, BVM&S, MRCVS, Dip ACVIM
AVMA Conv, 08:12

A new free online journal

The "European Journal for Companion Animal Practice" (EJCAP), the official publication of the Federation of European Companion Animal Veterinary Association (FECAVA), is now ***free to all veterinarians*** and veterinary technicians worldwide. The online-only journal provides select peer-reviewed articles, special issues, and feature articles for those with an interest in companion animal practice. To conclude the year, the 2013 winter issue has been released with a focus on antimicrobial resistance and includes discussions on responsible use in companion animals and choosing the best treatment. In addition, the issue features an overview of osteoarthritis in geriatric cats and a case report and step-by-step slideshow of correction of a malocclusion.

NAVC Clin Brf, 12:1

Increasing cat visits

The most significant reason veterinarians don't see more cats is cost. The feline sector is the biggest untapped growth opportunity for companion animal veterinarians. When asked what would motivate cat owners to take their cat to the veterinarian more often, the top three were cost related: 1) A coupon for half off the next visit. 2) A wellness plan costing 10$-$15 per month. 3) A multi-pet discount. Remember, it is more profitable to see more cats annually and earn a bit less on each one than to not see them at all. Other ideas—Have the client see the same veterinarian each visit. Before each visit, provide information on how to acclimate their cat to the carrier and transport it to the clinic. Remember, the appointment doesn't start when

the client arrives at the hospital. It starts in the home and ends when the client returns home.

Marcus Brown, DVM et al.
DVM News Mag, May 2014

Arterial thromboembolism in the cat

Low-molecular-weight heparins (dalteparin and enoxaparin) have been recently used to prevent thrombus formation in cats at risk of arterial thromboembolism (ATE). The authors have used dalteparin (Fragmin; 160-175 U/kg), SQ, twice a day. Research has suggested that the high doses are needed to inactivate clotting factors for the entire day, and administration of the drug every 8 hours may be advisable in cats with active ATE. Another low molecular weight heparin option is enoxaparin, which has been studied at 1 mg/kg, SQ, every 12 hours. Both dalteparin and enoxaparin can be expensive to use on a long-term basis and these drugs must be given by subcutaneous injections. Yet, many owners prefer injections to oral medications in cats, and the drug is currently the authors' first choice for prevention of ATE in cats.

Lisa M. Freeman, DVM, PhD, and John E. Rush, DVM, MS
N Amer Vet Conf, 01:13

When to treat for hyperadrenocorticism

The following are opinions by the author. An "urban legend" exists that survival is the same whether or not a dog with hyperadrenocorticism (HAC) is treated. That claim has never been evaluated. It may be true for some dogs, but it is not true for all dogs with HAC. HAC is also a quality-of-life issue for both owner and dog. Not all dogs with positive tests for HAC need to be treated, however, and this decision should be made on a case-by-case basis. In deciding when to treat, look at the dog, the dog's quality of life, the owner, and clinical signs. None of the drugs are cheap, and neither mitotane nor trilostane are benign, so treatment is not to be taken lightly. If the only clinical sign truly is something like elevated alkaline phosphatase, do not treat. If the issue is only cosmetic (poor hair), the author also does not usually treat. If a dog has mild polyuria/polydipsia, and an owner can live with it, do not treat. But if a dog is getting the owner up in the middle of the night all the time to be let out, the author does treat. Go back and review with the owner questions that might relate to clinical signs, such as whether the dog has stopped jumping on furniture (a sign of possible muscle weakness). Also look for evidence of clinical signs the owner may not have noted. For example, look at urine specific gravity to see if there is evidence of PU/PD, and look for proteinuria (doing a urine protein/creatinine), and hypertension, as either or both of these are present in the majority of HAC dogs, and both can damage the body. If either or both are present, the author is more aggressive about treating. Having said all that, sometimes there are clinical signs an owner doesn't notice or has attributed to old age until the HAC is treated—for example, not playing—and when the HAC is treated, activity increases

Ellen N. Behrend, VMD, PhD, DipACVIM
80th AAHA Conf

Dosing SQ fluids

We often use SQ fluids in veterinary outpatient medicine to help hydrate a patient. Because fluids are so slowly absorbed when given in this manner, SQ administration is not appropriate for hypovolemic or severely dehydrated patients. SQ fluids are ideally utilized for outpatient medicine (e.g., the vomiting patient that needs to be fasted overnight but still needs to maintain hydration). But just how much fluid can you give SQ? The calculation for how many ml/kg to give SQ is typically maintenance fluids. The author does not adjust for dehydration or ongoing losses with SQ fluids. Examples: 4-kg, male castrated cat presents for four episodes of vomiting. Physical examination: no string on oral examination, non-painful abdomen. Amount of SQ fluids to potentially give: 4 kg x 60 ml/kg/day = 240 ml SQ; 30 kg, female spayed Lab presents for three vomiting episodes in 12 hours after ingesting garbage. Physical examination: non-painful abdomen, abdominal radiographs, no significant findings, no obstruction, but some fluid-filled loops of intestine. Amount to give: 30 kg x 50 ml/kg/day = 1500 ml SQ. Giving too small of an amount of SQ fluids often does not benefit the patient. Having owners give <50 ml/adult cat SQ fluids is often not aggressive enough (not worth the needle poke!). That said, if a patient has a heart murmur (particularly in cats), this maintenance amount should be reduced to prevent volume overload.

Justine A. Lee, DVM, Dip ACVECC
18th Int VECC Symp

Recurrent pyoderma and MRS

If you do identify an methicillin-resistant staphylococci (MRS) organism, especially if it appears to be very resistant, you should order a staph speciation test. If you have a patient with methicillin-resistant *Staphylococcus pseudointermedius* (MRSP) (i.e., the canine strain) in your hospital, you need not have the dog under full isolation procedures, but you should isolate the patient to the extent you can and eliminate traffic from this patient to other dogs in the clinic, especially the surgery and critical care areas. If the organism turns out to be a methicillin-resistant, human-origin *S. aureus* (MRSA), the owner should be notified of this fact so they can discuss the situation with their own health-care provider and gloves should be worn when examining the patient. This patient is a ***potential human health hazard*** and should be considered so until all lesions have completely resolved. The concern here is that without proper precautions, the MRSA could colonize the owner, you, your staff, or others. It is important to understand that merely becoming colonized with MRSA is not inherently dangerous. After all, 3% to 5% of people are

already colonized at any given moment, and colonization is dynamic and transient. Where the situation becomes potentially dangerous is if the colonized person becomes injured or immunosuppressed.

Douglas J. DeBoer, DVM
81st AAHA Conf

Intravenous lipid therapy

This study described three cases of feline permethrin toxicity treated with IV lipid emulsion (IVLE) as one component of therapy. All cases showed marked improvement of muscle tremors after IVLE administration. The goal of IVLE in permethrin toxicity is to reduce permethrin tissue concentrations, thereby decreasing hospitalization time and mortality rates. The recommended dose of 20% intralipid is a 1.5 mL/kg IV bolus over 30 minutes, then 0.25 mL/kg/min, IV, over 30-60 minutes through a dedicated IV set. Additional doses can be administered after 6-8 hours if signs have not resolved and the serum is not grossly lipemic. IVLE should be used with conventional therapies for permethrin toxicosis, and owners should be advised of its off-label use.

M.D. Haworth and L. Smart
NAVC Clin Brf, 12:3, 2014

Indications for Giardia antigen test

1) Cases of acute or chronic diarrhea in which zinc sulfate centrifugation tests are negative for parasites, including young dogs with suspected viral or bacterial enteritis. Giardia and other parasitic infections can significantly compromise animals with these conditions. This author recommends that all puppies with parvoviral enteritis be screened early for parasites with a combination of zinc sulfate with centrifugation and a Giardia antigen test. 2) Cases in which it is unclear whether Giardia cysts are being seen on flotation tests (e.g., vs. plant spores). 3) For evaluation of animals with unexplained weight loss, unthriftiness, abdominal pain. 4) Acute or chronic vomiting (some animals with disease related to Giardia have only vomiting as a clinical sign). 5) Many hospitals are now using the $ZnS0_4$ with centrifugation and Giardia antigen combination assay as a routine screening test for GI parasites and wellness testing. This is because there are animals that have Giardia but that do not have any GI signs (loose stools, vomiting, etc.) at the time of the exam. The addition of the antigen assay significantly improves the diagnostic sensitivity for Giardia. In summary, this approach offers: Better, more sensitive diagnostic testing, more convenience to the client (one sample only), and ultimately it is more economical.

Todd R. Tams, DVM, Dip ACVIM
Music City Vet Conf, 03:12

Steroids for spinal cord injury?

The use of corticosteroids such as high-dose methylprednisolone sodium succinate (MPSS) ***is falling out of favor*** in veterinary patients because studies have shown little therapeutic benefit and the potential for severe adverse effects. Corticosteroid administration is associated with the adverse effects of immunosuppression, hyperglycemia, delayed wound healing, gastric ulceration, and the exacerbation of the catabolic state. Methylprednisolone has been the most extensively studied corticosteroid in acute spinal cord injury. Studies have failed to show clinical improvement with high-dose methylprednisolone and it is not considered general standard of care. MPSS is considered to be an option with the acknowledgement that adverse effects are more consistent than clinical benefits. If therapy is elected, the initial dose is 30 mg/kg, IV, followed by repeated boluses of 15 mg/kg, IV at 2 hours and 6 hours, then every 8 hours up to 48 hours after trauma.

Rebecca Swimmer, DVM
So Cal VMA Pulse, May 2014

Lipid emulsion: ivermectin toxicosis

Recently, use of an intravenous lipid emulsion (ILE) has shown success in ameliorating clinical signs in patients with ivermectin toxicosis. The mechanism of action of lipid emulsion is not completely understood but is thought to provide a “lipid sink” that allows lipophilic agents to partition out of the plasma and accelerate elimination. The most commonly used ILE is a 20% emulsion with a tonicity of about 800 mOsm/L, which allows administration through a peripheral vein. The suggested administration protocol is as follows: Slowly administer an initial bolus of 1.5 ml/kg of 20% lipid emulsion. Begin continuous rate infusion at 0.25 ml/kg/min for 30-60 minutes. This may translate to a very high fluid rate, so pay attention to this calculation and consider administering over 1-4 hours to avoid fluid overload. Repeat this dose if necessary, but check the serum before administration. If the serum is lipemic, do not repeat as it is unlikely to provide any added benefit. Check the serum for lipemia again in 2 hours if another dose is still needed. Do not give more than 2 doses if no improvement in clinical signs is noted.

Jennifer L. Garcia, DVM, Dip ACVIM
Vet Med, Apr 2014

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