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THE CAPSULE REPORT On Animals

Small Animal/Exotic Edition

Our 32nd Year

Volume 33, Number 6 September 2014

Senior diet and protein

Although there is a common belief that protein restriction is helpful for older animals, there is no scientific evidence to show that reduced dietary protein is beneficial for the healthy older dog or cat. In fact, reduced-protein diets for older dogs and cats may have adverse effects by contributing to sarcopenia, the muscle loss that occurs with aging. Therefore, dogs and cats ***should not be fed a reduced-protein diet*** just because they are aging. The "optimal" protein level for older dogs and cats, however, is still controversial. Some companies manufacture "senior" diets with reduced protein, and some companies hold the nutritional philosophy that older dogs and cats require a higher protein level than younger animals. For older animals without moderate to advanced renal or hepatic disease, reduced-protein diets (i.e., those with protein levels below the AAFCO minimum of 5.1 gm/100 kcal for dogs; 6.5 gm/100 kcal for cats) should be avoided. Conversely, if protein restriction is desired (e.g., for a dog with IRIS stage 3 chronic kidney disease), none of these diets would have sufficient protein restriction.

AVMA Conf 08:12
Lisa M. Freeman, DVM, PhD, and Cailin R. Heinze, DVM, MS

INSIDE THIS ISSUE

Compounded buprenorphine

Buprenorphine is an opioid that is very effective for treating pain in cats. Buprenorphine comes in a form that may be injected or placed in the oral cavity. The drug lasts about 8-12 hours so repeated hospital or home treatments are required. A compounded formulation exists that ***provides analgesia for 3 days*** after an injection (www.zoopharm.net). Potential side-effects include sedation and constipation, both of which resolve when therapy is terminated. This drug is widely used.

Gary D. Norsworthy, DVM, Dip ABVP and Lisa Restine, DVM
Vet Pract News

Perioperative efficacy of buprenorphine

Buprenorphine is frequently used in cats during the postoperative period to manage signs of pain and has the advantage of only rarely causing dysphoria or vomiting. Results of this study involving healthy cats undergoing ovariohysterectomy suggest that it is also appropriate for perioperative use. Administration of buprenorphine (0.02 mg/kg [0.009 mg/lb], IM) before surgery and during wound closure provided adequate analgesia for 6 hours following surgery, whereas administration of butorphanol did not. All cats from the butorphanol group required rescue analgesia.

Leon N. Warne, DVM et al.
JAVMA, July 15, 2014

ALERT

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Bill Collins, DVM, Editor

Getting the sick cat to eat

Avoid inducing food aversion. Recognize subtle signs of nausea: if the cat sniffs then touches the lip commisure or swallows or averts its head, this suggests nausea. Remove untouched food after ~20 minutes; IMMEDIATELY if the cat acts nauseous. Avoid medication-induced taste aversion by washing down all oral medications with something like vanilla flavored non-dairy coffee creamer or hiding bitter meds in gelatin capsules!!! Other tricks that occasionally stimulate eating are to add butter or oil to meals; add "tuna gravy" (puree canned tuna in clam juice; freeze as cocktail ice cubes; thaw and garnish other foods); sprinkle with dry shrimp powder. As a last ditch effort consider offering a tidbit of raw hamburger, calves' liver or shrimp

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but evaluate the benefits in light of the risks of possibly exposing the cat to *E. coli* and toxoplasmosis.

Hazel C. Carney, DVM, MS, Dip ABVP
SW Vet Sym, 09:12

Cerenia as an analgesic

There is good, reasonably well-controlled data that the drug we all know and love as the cure for vomiting, maropitant (Cerenia) also has anti-nociceptive properties, at least in anesthetized patients. In a 2012 study, parenteral maropitant decreased the MAC of sevoflurane in a pain-response model. (Epidural administration had no effect). It has also been shown to decrease the MAC of sevoflurane in a cat spay and dog spay model. Whether it has analgesic properties in awake animals remains to be proven, but anecdotal evidence indicates that it is being ***used for analgesia by many veterinarians***. Its mode of action is through inhibition of substance P (the main neurotransmitter responsible for pain transmission) binding at the NK1 receptor.

Tony Johnson, DVM, Dip ACVECC
2014 VECCS Symp

Radiographic features of animal abuse

Radiographic features of 19 dogs with abuse fractures and 135 dogs with accidental fractures were retrospectively assessed. The study identified 5 fracture features that should ***raise suspicion of non-accidental injury*** (NAI): the presence of multiple fractures, fractures occurring on >1 region of the body, transverse fractures, fractures presenting with radiographic evidence of healing, and multiple fractures at different stages of healing. In some cases, NAI features in the study dogs correlated with features of NAI in children. Other important considerations included relative absence of spiral fractures and over-representation of American Staffordshire Terriers. Unless the clinical history is obvious, physical abuse of animals is rarely considered when an animal presents with traumatic injury. Radiographic findings consistent with multiple fractures indicative of blunt trauma may help the astute practitioner in identifying these cases, but further action must be pursued with caution. A conversation with the local ASPCA officer may be warranted so practice teams know the process of reporting a case.

Heather Troyer, DVM, Dip ABVP, et al.
NAVC Clin Brf, Jul 2014

Food oxidizer pack toxicosis

Food oxidizer packs are often found in beef jerky (for human consumption), cookie containers (e.g., Kashi) or rawhide bags and may contain iron. When ingested in large amounts, these packs can potentially result in iron toxicosis. The powder within these oxygen absorbers is often black in color and magnetic. Treatment for iron toxicosis includes antacid therapy (e.g., milk of magnesia), symptomatic supportive care, monitoring of blood iron levels, and potential chelation (in severe cases). The use of activated charcoal is not warranted with iron toxicosis, as it does not reliably bind to heavy metals.

Justine A. Lee. DVM, Dip ACVECC
81st AAHA Conf, 2014

Replacement fluids with magnesium

Some replacement fluids contain calcium and others contain magnesium. Given that hypomagnesemia is considered to be a concern in critical patients it may be advantageous to use a replacement fluid containing magnesium rather than calcium, unless the patient is predisposed to hypocalcemia. Calcium-containing fluids as well as magnesium-containing fluids should not be administered concurrently through the same line as blood products anticoagulated with citrate since the resultant precipitate may be detrimental to the patient.

Jennifer J. Devey, DVM, Dip ACVECC
33rd SD VMA Conf Jun 2014

Trazodone for post-surgical confinement

Often, a prolonged period of exercise restriction is recommended following orthopedic surgery in dogs, but complying with this recommendation may be difficult, especially for owners of active dogs. Starting the day after surgery, dogs were administered trazodone (~3.5 mg/kg [1.6 mg/lb], PO, q12h) with tramadol (4-6 mg/kg [1.8-2.7 mg/lb], PO, q8-12 h) for pain management. After 3 days, administration of tramadol was discontinued, and the trazodone dosage was increased (~7 mg/kg [3.2 mg/lb], PO, q12h) and maintained for at least 4 weeks. If needed, trazodone dosage was increased (7-10 mg/kg [3.2-4.5 mg/lb], PO, q8h). Results suggested that oral administration of trazodone was safe and efficacious and may be ***used to facilitate confinement*** and enhance behavioral calmness of dogs during the critical recovery period following orthopedic surgery.

Margaret E. Gruen, DVM, MVPH et al.
JAVMA, Aug 1, 2014

Iatrogenic hypothyroidism in the cat

The findings of this author suggest that the development of iatrogenic hypothyroidism contributes to the development of newly detected azotemia, at least in cats with mild underlying chronic kidney disease that has been masked by the hyperthyroid state. More importantly, the hypothyroidism may shorten survival after treatment of hyperthyroidism. Whatever treatment option for hyperthyroidism is considered, this author believes it is *extremely* important to try and avoid iatrogenic hypothyroidism, as it may have its own detrimental effects on GFR. If a cat with post-treatment azotemia develops a low to low-normal T4 (T4 <1.5 µg/dl) a serum TSH level should be measured to

help exclude overt or subclinical hypothyroidism. If iatrogenic hypothyroidism is diagnosed the methimazole dosage should be reduced. Although once daily administration (0.1 mg) may be adequate in some cats, most cats respond better to twice daily treatment (0.075 mg, BID) given on an empty stomach. Most cats will show improvement in their azotemia as the hypothyroidism resolves and euthyroidism is restored.

Mark E. Peterson, DVM, Dip ACVIM
ACVIM For, Jun 2014

Using trilostane

Compounded trilostane products are not regulated by the FDA, and serious concerns exist about their pharmacologic properties. In a recent study many products were found to contain substantially different amounts of trilostane than the labeled amount. In addition, the dissolution characteristics of many of the compounded products were sub-standard, which may impact drug uptake. Liquid compounded products are particularly suspect, due to the inherent solubility issues with this drug. Trilostane should be given with food. If the dog is reluctant to eat, do not give trilostane, as this may be a sign of hypocortisolemia. Also, instruct the client very clearly to discontinue trilostane if the dog seems unwell. If the animal vomits or is weak, the client should seek ER assistance. The author sometimes sends clients home with a small supply of prednisone, to be given at 0.5 mg/kg if the dog is 'blah'. This will effectively address transient hypocortisolemia, and the patient will feel markedly better within 2 hours. The down-side to this option is that the prednisone will interfere with adrenal function testing if that is necessary.

Dr. Audrey K. Cook
N Amer Vet Derm For, 04:13

Analgesia for dog and cat neuter

Pre-emptive: hydromorphone (0.2 mg/kg, IM) or morphine (0.5 mg/kg, IM) + 5 µg/kg dexmedetomidine, IM; and pre-op approved NSAID of your choice (e.g., carprofen, 4 mg/kg, SQ). *Intraoperative*: field block of incision and block of testicles or ovarian ligament. *Postoperative*: assessment of comfort level and bolus of hydromorphone (0.1 mg/kg), morphine (0.2-0.5 mg/kg) and/or dexmedetomidine (1-5 µg/kg) if painful and/or dysphoric. Send home on same NSAID as preoperative (e.g., 4 mg/kg carprofen, PO, SID) x 4 days. Use the exact same protocol for cats but decrease hydromorphone (0.1 mg/kg) or morphine (0.2-0.3 mg/kg) and increase dexmedetomidine (10 µg/kg, IM). Use 0.2 mg/kg meloxicam (instead of carprofen or other canine NSAID) pre-emptively and do not repeat dose or use robenacoxib for 4 days. Send home on 0.01 to 0.02 mg/kg, TM buprenorphine, BID x 4 days.

Tamara Grubb, DVM, PhD, Dip ACVA
N Amer Vet Conf, 01:13

Predictors of kidney disease in the cat

Researchers found these risk factors to be associated with the development of chronic kidney disease in cats: a) being a neutered male; b) having a thin body condition; c) having a history of periodontal disease or cystitis, anesthesia, or documented dehydration in the past year. Median weight loss in the preceding 6 to 12 months was 11% and 2% among the chronic kidney disease and control cats, respectively. In a study subset, thin body condition was present in 66% of cats with kidney disease and 38% of control cats. Researchers say these early indicators may point to the need for increased screening for chronic kidney disease before overt clinical signs develop. While these findings are not evidence of a cause-and-effect relationship, they do provide a sound basis for recommending more aggressive screening of older cats. Specifically, evidence of weight loss greater than 10%, which may have previously simply been attributed to aging, should now prompt more aggressive screening.

DVM, Jul 2014

Breeder myths

"Breed on the 10th through 14th day of heat." Many novice breeders take this old "rule of thumb" as factual. A major cause of infertility is improperly timed breedings. This author sees many bitches presented because AI or forced matings on day 10-14 resulted in no pups and has seen bitches bred on days 10-14 shipped back from long distances only to remain in heat for 1-2 weeks upon their return. This is a costly mistake. Proper timing can involve something as simple as closer observation and a better understanding of estrual behavioral indicators in the bitch OR (preferably) more accurate testing such as vaginal cytology AND vaginoscopy combined with progesterone and LH testing. A breeder investing money in breeding should never rely solely on "counting days." Many bitches are ovulating well before 10 days and others not until well past 20 days of observable heat. "Breed when the bitch's vaginal discharge changes from bright red blood to straw colored." This is another "rule of thumb" which too often does not work. Many bitches discharge bright red blood until diestrous. Others may discharge none at all.

Kit Kampschmidt. DVM
SW Vet Symp, 09:13

Zoonotic salmonellosis in pet reptiles

Pet bearded dragons and frozen feeder rodents being used to feed pet reptiles were among the sources of recent outbreaks of salmonellosis in humans in the U.S. As of late May, the Centers for Disease Control and Prevention had released three other reports of Salmonella outbreak investigations from 2014. The sources were live poultry; chicken products; and raw cashew cheese, a nondairy product made from raw

cashews. While *Salmonella* outbreaks have many sources, the Association of Reptilian and Amphibian Veterinarians states that carriage of *Salmonella* species appears to be highly prevalent in reptiles. The ARAV advises veterinarians to consider reptiles to be nonclinical carriers. Veterinarians treating reptiles play an important role in informing reptile-owning clients about salmonellosis and advising them on precautions for reducing the risk of acquiring Salmonella infection from reptiles. According to the ARAV, attempting to treat reptiles with antimicrobials to eliminate *Salmonella* species from their intestinal tracts has not been effective. An ARAV handout for reptile owners provides a list of precautions to prevent the spread of Salmonella organisms from reptiles to humans. The handouts are available at www.arav.org/special-topics. The CDC warns reptile owners additionally to take precautions to prevent the spread of *Salmonella* organisms from live and frozen feeder rodents to humans. The agency offers a brochure on the subject of "Feeder Rodents, Reptiles, and *Salmonella*" at www.cdc.gov/ healthypets/publications.

JAVMA, Jul 15, 2014

Vaccine fallacies

FICTION: Vaccines are safe and effective when given at, for example, weekly intervals. FACT: Vaccines can be "safely" administered at weekly intervals...HOWEVER, doing so poses the risk that the innate immune response to the first dose (cytokines, etc) will interfere with the second dose given a week later... it is currently recommended that vaccines be administered at a MINIMUM interval of 2 weeks...regardless of the antigen. FICTION: Giving half of a vaccine dose will reduce the risk of reactions in small dogs. FACT: There are no data to support the practice of reducing the volume of vaccine in small breed dogs. In fact, it is possible that doing so may result in a sub-immunizing response...i.e., not enough antigen to effectively protect the patient. Furthermore, there is no evidence that doing so actually reduces the risk of causing an adverse reaction...if the patient is truly hypersensitive to one of the constituent proteins, the patient could still react if given 10% (0.1 ml) of the dose.

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

Resistant Staphylococcus

We know the gene that encodes for resistance in *S. intermedius*, but we do not know why we are seeing what appears to be increased expression of that gene in our veterinary patients. It is possible that there is transference of the mecA gene from human *S. aureus* to *S. pseudintermedius*. There is also some evidence that *S. pseudintermedius* can acquire resistant genes from other species of bacteria (Enterococci) under laboratory conditions. Interestingly, there is a significant relationship between the development of MRSA and previous exposure to some fluoroquinolones in human medicine. While this relationship has not been shown in veterinary medicine, it is alarming that we are seeing an increase in methicillin resistance during a time when fluoroquinolones have become so available. The author's philosophy has been to utilize fluoroquinolone antibiotics for Staphylococcus ONLY when there is documented resistance to other antibiotics. ***FQ's should never be a first or second choice antibiotic for pyoderma***. The low cost of ciprofloxacin is not a reason to choose it for treatment of a routine pyoderma.

Dennis W. Crow, DVM, Dip ACVD
SW Vet Symp, 09:13

Pioglitazone use in diabetic cats

The authors of this study concluded that pioglitazone (Actos) at 3 mg/kg, q24h improves insulin sensitivity and lipid metabolism in obese cats. For cats with absolute insulin deficiency, pioglitazone is not likely effective, as it requires the presence of insulin to work. However, even in insulin-dependent cats, it ***may lower the dose requirement***. Of particular interest is potential pioglitazone use in cats with hepatic lipidosis. The alterations in lipid metabolism documented in healthy but obese study cats with this disease may prove helpful in reducing illness severity.

Jennifer Ginn, DVM, Dip ACVIM et al.
NAVC Clin Brf, Jul 2014

No benefit of plasma in pancreatitis

Although fresh frozen plasma (FFP) administration has been historically used to treat patients with pancreatitis, studies have shown ***no benefit from plasma*** in this disease process and it may even contribute to higher mortality. Coagulopathy and prolonged clotting times from acute rattlesnake envenomations should be treated with antivenin, not plasma. Plasma transfusions are not effective treatment for hypoalbuminemic patients with ongoing losses. One would need to administer 40 ml/kg of FFP to a patient in order to raise their albumin by one gram/dl and this is assuming no ongoing losses. Since plasma is a colloid, it may contribute to volume overload, therefore it should be used judiciously in cats, patients with pre-existing heart disease, or any other cause of hypervolemia.

Renee K. Fenty, DVM, Dip ACVECC
So Cal VMA Pulse, Jun 2014