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"Pearls" of Veterinary Medicine

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Try acupuncture in chronic cancer pain

Currently there is limited data on the usefulness of acupuncture to alleviate pain in veterinary patients; however, in humans, it appears that this modality may be useful to help manage pain, and it is often inexpensive and safe. The author's experience has been positive in helping some cancer patients with chronic pain utilizing acupuncture. Thus the author recommends considering this modality in cancer patients and evaluating their response. Typically, four weekly sessions are recommended as a trial period; if a patient has not responded to acupuncture in this time, it is unlikely the patient will benefit. Specific training is required, and patients should be referred to someone with this training and certification. The following sites may be useful in helping you to find a veterinarian trained in acupuncture: International Veterinary Acupuncture Society, at ivas.org, and the Chi Institute, tcvm.com (click "Find a Vet").

Sara Allstadt Frazier, DVM, DACVIM (Oncology)
81st AAHA Conf

Affects of tryptophan in multi-cat households

A randomized, placebo controlled, double blinded study of 25 multi-cat households was conducted to evaluate the effect of dietary tryptophan supplementation on behavioral signs of anxiety and stress-related disorders. Cats were randomly assigned to receive either 12.5 mg/kg of tryptophan or a placebo control with their daily meal and behavioral observations continued for the next 8 weeks. Cats in the tryptophan supplemented group had significantly decreased displays of behavior associated with anxiety and stress [stereotypes (repetitive movements), vocalization, antagonistic (fighting), affiliative, exploring and sustaining behavior] compared with the placebo group. The authors concluded that supplementation of cats from multi-cat households with dietary tryptophan ***may be a beneficial adjunct*** to decrease signs of stress and anxiety and improve animal welfare.

Mark Brady, DVM, DACVECC
AAFP Conf, 09:14

Website for international travel

The Department of Agriculture's Animal and Plant Health Inspection Service launched a new website in July dedicated to international pet travel and helping travelers and accredited veterinarians ***easily determine country-specific requirements***. The goal is to ensure pets meet the requirements to relocate with their families internationally—whether temporarily or permanently. It is noted that each country has different entry requirements, and the new website makes it easy to understand and meet those requirements so travelers can avoid last-minute problems. The site provides information about taking pets from the US to other countries and bringing pets into the US, applying to the following pets: dogs, cats, birds, ferrets, rabbits, rodents, hedgehogs and tenrecs, reptiles, and amphibians. The address is www.aphis.usda.gov/aphis/pet-travel.

Am J Vet Res, Oct 2016

Summary of treatment for CKD

Nearly all of this author's CKD patients are on dietary phosphate restriction and intestinal phosphate binders to achieve targeted serum phosphorus of less than 4.5 mg/dl. Most of the CKD patients will also be on ACE-inhibition (whether or not they have proteinuria or systemic hypertension). A combination of ACE-I and calcium channel blocker (amlodipine) is used to achieve a systolic blood pressure of less than 150 mmHg in many CKD patients. The author advocates calcitriol treatment for all azotemic CKD patients if their serum phosphorus can be maintained at less than 6.0 mg/dl. Cutting edge information suggests

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that some CKD dogs can benefit from parental vitamin D (chole or ergocalciferol) supplementation.

Dennis J. Chew, DVM, DACVIM (Internal Medicine)
VA VMA Conf, 02:15

Malassezia otitis

Which antifungal? If the organism involved is yeast, virtually any antifungal will work. "Resistance" of *Malassezia* to antifungals has been reported extremely rarely. One misconception is that if yeast otitis is recurrent it is a failure of antifungal treatment. Rather, this clinical situation reflects a continuing underlying inflammatory ear condition, usually allergy, and calls for ***corticosteroids rather than a different antifungal!***

Douglas J. DeBoer, DVM, DACVD
SE Vet Conf, 2016

Acupuncture for hip dysplasia pain

On the basis of the questionnaire data provided by owners, the comparison of the effects of acupuncture, carprofen, or placebo on pain intensity and lameness in dogs with HD (hip dysplasia) in the present study revealed that only acupuncture alleviated signs of pain at week 4 (i.e., after 1 month of treatment), compared with findings before the start of treatment. This improvement also persisted for 2 weeks after cessation of treatment. Regarding the score for the owner-evaluated visual analog scale for locomotion, lameness was improved at week 4 in both the acupuncture- and carprofen-treated dogs; however, of these two treatments, acupuncture had a more long-lasting effect and improvement in lameness was maintained for at least 2 more weeks, as assessed at the follow-up visit at week 6. On the basis of the subjective evaluations performed in the present study, acupuncture and carprofen both decreased lameness in dogs with HD, but only acupuncture alleviated HD-related pain. Therefore, acupuncture performed with the protocol and acupoints used in this study appears to be a viable option for ***improving the quality of life of dogs with HD***.

Livia R. Teixeira, DVM, PhD et al.
JAVMA, Nov 1, 2016

Chronic FHV-1 infections

Administration of human alpha 2b interferon at 50 U, PO, daily may help some cats with suspected chronic calicivirus or FHV-1 infection. This can now be formulated for practitioners by prescription at some pharmacies (www.roadrunnerpharmacy.com) in the USA. Topical administration of alpha interferon in saline to the eyes of cats with conjunctivitis or the nose may aid in the management of some cats. Lysine (250-500 mg, PO, BID) and alpha interferon are unlikely to lead to a cure, but hopefully will lessen clinical signs of disease. ***Intranasal administration*** of modified live, intranasal FHV-1 and FCV vaccines may lessen disease in some chronically infected cats. If there is a positive response to intranasal vaccination in a cat with chronic disease, this author will use this form of immunotherapy up to 3 times per year. The intranasal vaccine has been shown to potentiate cell-mediated immunity to FHV-1, better than parenteral vaccination.

Michael R. Lappin, DVM, PhD, DACVIM
Music City Vet Conf, 03:15

Using NSAIDs

Veterinarians frequently prescribe ***courses that are too short*** to adequately reduce inflammation or for the expected duration of pain. Presumably, this is due to either fear of adverse effects with longer courses or discomfort with assessing pain. NSAIDs, like any analgesic, must be given as long as the patient shows signs of pain regardless of our expectation of the time course for resolution of the problem. If we cannot assess pain or owners cannot, then we can at least use the anthropomorphic approach to estimating how long a given problem will cause pain for (i.e., how long would a person with this problem feel pain). In cases where we are attempting to prevent persistent, chronic pain syndromes, this is particularly important.

Lisa Moses, VMD, DACVIM (SAIM)
82nd AAHA Conf

Fructosamine in dogs

In dogs there is little published on the utility of fructosamine to determine whether glycemic control is adequate in dogs. It appears that in dogs fructosamine does not accurately reflect clinical status. As such, this assay is poor at determining whether changes in insulin therapy are needed. A very low value in a patient with signs of hypoglycemia or a low blood glucose concentration on a glucose curve would be a good indicator that the insulin dosage should be reduced. Fructosamine can be assayed in conjunction with other tests including urinalysis and a blood glucose curve as another piece of the puzzle. On its own, it ***has little value in guiding insulin therapy***. As with hyperadrenocorticism, it is vital to get an excellent history and perform a thorough physical examination since these are much more useful in guiding therapy than the results of laboratory testing. It is good to know that veterinarians and good clinical judgment cannot be replaced by a machine just yet.

Anthony P. Carr, Dr. med. vet., DACVIM
DVM News Mag, 46:6

Supportive treatment of recurrent *E coli* UTI

1) Methenamine – 500 mg, PO, q12h (dog); 250 mg, PO, q12h (cat). 2) Cranberry (proanthocyanidin equivalent) – 1 mg/kg/day, PO. 3) D-mannose – 250-1000 mg, PO, q12h. 4) *Coleus forskohlii* (whole dried herb) – 50-500 mg/kg/day, PO.

Ashtri Bonaparte, DVM
So Cal VMA Pul, Sep 2016

Ingestion of concentrated alkalis

In response to a toxicology article: The author states that "because of their bitter taste, [acidic and alkaline cleaners] often cause pain immediately on contact." Although the author's statements are true of acids, some highly concentrated alkalis do not have a strong taste (or odor), nor ***do they typically cause pain on imme-***

diate contact; instead, corrosive alkalis can result in a delayed pain sensation of several hours. To further cloud the clinical picture, patients with esophageal erosion or ulceration from alkalis (as well as acids) may have an oral cavity that appears normal. Thus, in the case of ingestion of an alkaline corrosive, the lack of pain coupled with an apparently normal oral cavity can lead clinicians to mistakenly believe that severe tissue damage did not occur, which can result in delayed treatment.

Ahna Brutlag, DVM, MS, DABT, DABVT
NAVC Clin Brf, 14:6, 2016

Which antiepileptic drug to choose first

This depends on seizure type, efficacy of the drugs and tolerability of the medication. • Phenobarbital and imepitoin (Pexion, not available in the US but undergoing FDA approval process), ***are highly recommended as a first line monotherapy*** AED and likely to be effective, based on level I evidence (the highest level of evidence). • Potassium bromide is only moderately recommended, also based on level I evidence. • Primidone is not recommended and may be ineffective and or dangerous to the patient, based on level II evidence. • Zonisamide and levetiracetam have a low recommendation as a first line monotherapy, basically because of the lack of evidence of efficiency (only level III and IV evidence respectively). • All 6 studied AEDs are indicated for all seizure type (generalized and focal seizure). There is however, no published report on use of levetiracetam as a first-line treatment in dogs and this drug was approved for the treatment of FOCAL onset seizures in adult people. In the author's personal experience, levetiracetam alone is often insufficient as a sole AED for the treatment of generalized seizures. • Potassium bromide and imepitoin are indicated for idiopathic epilepsy only, whereas the 4 others are indicated for all seizure etiologies. • The ACVIM panel only recommends potassium bromide in cases with low initial frequency of seizures. • When there is confirmed liver disease, potassium bromide and levetiracetam are the 2 AHDs indicated.

Stephanie Dugas, DVM, DACVIM (Neurology)
So Cal VMA Pulse, Oct 2016

Isoniazid toxicosis

Isoniazid, commonly known as INH is a prescription human anti-tuberculosis medication and is also used in veterinary medicine to treat infection with certain *Mycobacterium* or *Actinomyces* spp strains. Isoniazid is available in injectable, liquid, and tablet forms. Isoniazid plasma levels peak about 1-2 hours post-ingestion. The drug diffuses into all body fluids and cells and has low lipid solubility. Although it is used safely in many species, isoniazid has a narrow margin of safety in dogs. The LD_{50} of isoniazid is estimated to be as low as 50 mg/kg in dogs. Because dogs lack the ability to acetylate the drug, 1 tablet (300 mg) ingested accidentally by a 10-lb dog can result in severe toxicosis. In dogs, seizures can be seen at 50 mg/kg. Severe refractory seizures are among the most common presenting complaints in isoniazid toxicosis. Decontamination is rarely possible in these cases because of the rapid onset of signs (30 minutes to 2 hours). With isoniazid toxicosis, ***pyridoxine (vitamin B_6) should be administered promptly***. Pyridoxine is considered the antidote for this toxicosis because it is a direct antagonist of isoniazid and will quickly reverse the clinical signs. Dosing should be based on the equivalent amount (mg for mg) of isoniazid that was ingested. If the amount of isoniazid ingested is unknown, the suggested dose is 71 mg/kg.

Justine A. Lee, DVM and Tina Wismer, DVM
NAVC Clin Brf, 13:11

Use of fatty acids in CKD

Research in dogs shows potential renoprotective effects of supplementation with long-chain omega-3 fatty acids from fish oil. However, conflicting evidence exists, and a clear dose response has not been determined for dogs. Many commercial renal diets contain varied amounts of added fish oil. This author uses a total dose (DHA plus EPA) of about 300 mg per 10 lb body weight. This amount can be given with a commercial diet that does not already contain a supplement (taking into account the extra calories it provides), or you can calculate the total intake amount from the diet alone and add fish oil to obtain the desired dose. Liquid fish oil may also enhance palatability. When should a renal diet be started? In the absence of proteinuria, initial dietary modifications for early asymptomatic CKD (IRIS CKD stage 1 or when CKD is suspected but not otherwise confirmed) should be geared toward reducing phosphorus. A handful of OTC and veterinary therapeutic diets not necessarily intended for renal disease that contain phosphorus below 1.5 g/1000 kcal and a moderate amount of protein can be considered. Once CKD progresses to IRIS CKD stage 3, or if proteinuria is evident, most veterinary patients should be fed only a commercial renal diet.

Cailin R. Heinze, VMD, MS, DACVN
DVM News Mag, Jul 2016

Mirtazapine for appetite stimulant in CKD

Cyproheptadine has been used for some time as an appetite stimulant and has anecdotal efficacy in many patients, however its efficacy has never been scientifically evaluated. Twice daily administration is necessary in many cases and this can prove a challenge for owners, particularly long term. Sedation is a common side effect. Mirtazapine has become more commonly used and recent studies have provided information for more effective use in cats. Pharmacodynamic studies have illustrated that it can be a potent appetite stimulant, but higher doses are more commonly associated with side effects (hyperexcitability, vocalization, tremors). Smaller, more frequent doses are recommended. The half-life is short enough that it could be administered daily in normal cats. Renal disease delays clearance and in these patients, every other day administration is recommended. Owners should be aware

mirtazapine and cyproheptadine cannot be administered concurrently; cyproheptadine is in fact used as an antidote for serotonin effects of mirtazapine overdose. A recent clinical trial was performed to evaluate the effects of mirtazapine on body weight, appetite, and vomiting in cats with CKD. Mirtazapine is an effective appetite stimulant in cats with CKD and resulted in significantly increased appetite and weight. Mirtazapine also appears to have antiemetic properties and resulted in significantly decreased vomiting in cats with CKD. This drug could be a useful adjunct to the nutritional management of cats with CKD.

Jessica Quimby, DVM, PhD, DACVIM
ACVIM For, Vol 2, Jun 2016

Antebrachial fractures in toy breeds

Distal antebrachial (radius/ ulna) fractures in toy-breed dogs are often sustained after seemingly minimal trauma, such as jumping or falling. Complications after conservative treatment of these fractures include delayed union and nonunion. This is critically important because they may lead to limb amputation. Several studies have shown decreased vascular supply and reduced bone formation in the distal radius compared with larger dogs. One study confirms that successful healing of this type of fracture is obtained via rigid stabilization with bone plating—***not pinning and not splinting***—in combination with cancellous bone autograft. Conclusion: Don't try to be nice or cheap by recommending splinting of radius-ulna fractures in small and toy-breed dogs. Your liability could be involved if the dog ends up with a nonunion. Instead, strongly recommend plating.

Phil Zeltzman, DVM, DACVS, CVJ
Vet Pract News, Jul 2016

Using a Sharpie to write on the IV bag

Writing directly on IV fluid bags is a common and controversial practice. Arguments and questions exist regarding the safety of using a permanent pen to label information on IV fluid bags, because the ink may penetrate the bag and leech into the fluids. This appears to be based on a study where it was concluded that small amounts of ink written with a felt-tip marker onto a polyvinyl chloride and DEHP bag can penetrate the bag. Another study challenged the premise by performing an experiment using 5 different types of non-DEHP containing bags marked with a Sharpie pen. No ultraviolet spectrophotometric evidence of leeching into the interior of the bag could be detected. Does this mean it is safe to write on IV fluid bags using a Sharpie? Probably.

Elke Rudloff, DVM, DACVECC
Int VECCS Conf, 09:15

Pre-medication options for the rabbit

1. Midazolam (0.1-0.3 mg/kg) and butorphanol (0.1-0.3 mg/kg) +/- glycopyrrolate (0.01 mg/kg); can be given IM. Induction is then achieved with isoflurane or sevoflurane. 2. Ketamine (5 mg/kg), midazolam (0.1-0.3 mg/kg), butorphanol (0.1-0.5 mg/kg) +/-glycopyrrolate (0.01 mg/kg), given IM. 3. Etomidate 1-2 mg/kg, IV. Of interest, the larynx is often reactive with this drug making topical laryngeal lidocaine useful. Etomidate has been recommended in patients with poor cardiovascular function. 4. Propofol (4-6 mg/kg) IV provides rapid onset of action and short duration of effect. However, apnea following administration is common.

A. Margaret Woc Colburn, DVM
Music City Vet Conf, 03:15

Sedation options for the stressful cat

Use low-stress handling techniques in a quiet environment to perform a physical examination and restrain for injections or blood draw. For sedation, choose one of the following options, combine medications in one syringe and administer IM. • Hydromorphone (0.05-0.1 mg/kg, IM) or morphine (0.25 mg/kg, IM) + dexmedetomidine (7-10 µg/kg, IM). • Butorphanol (0.2-0.4 mg/kg, IM) + midazolam (0.2-0.5 mg/kg, IM) + acepromazine (0.05 mg/kg, IM). • Butorphanol (0.2 mg/kg, IM) + dexmedetomidine (3-7 µg/kg, IM) + acepromazine (0.02-0.03 mg/kg, IM). • Can add ketamine (1-2 mg/kg, IM, maximum 10 mg per cat) to one of these options to achieve heavier sedation, or as an additional IM injection if chemical restraint is inadequate after 15 minutes. • Butorphanol (0.2-0.4 mg/kg, IM) +/- midazolam (0.2 mg/kg, IM) is appropriate for sedation of geriatric or ill patients. • Avoid midazolam in sedation protocol if patient is healthy because of paradoxical excitation. Watch the patient after drug administration and observe for excessive sedation, difficulty breathing, etc. Allow 10-20 minutes before restraining in lateral recumbency for medial saphenous IV catheter (much less stressful for the cat than cephalic catheter placement). If a cephalic catheter is desired but too stressful for the awake cat, use a medial saphenous catheter for IV induction and then place a cephalic catheter after induction.

Heidi L. Shafford, DVM, PhD, DACVAA
N Amer Vet Conf, Vol 29, 01:15

Antibiotics in cases of laceration

A minimum database appropriate for the physical examination status and patient age should be performed. The decision to administer antibiotics should be made at this point and should be based on injury duration and wound condition. Lacerations are initially considered contaminated at best; thus, ***administration of antibiotics can be justified in most cases***. If antibiotics are indicated, a first-generation cephalosporin (e.g., cefazolin, 10 mg/lb, IV), which has a spectrum of activity appropriate for most lacerations, should be administered perioperatively. Oral antibiotics (e.g., amoxicillin-clavulanic acid at 6.25 mg/lb, q12h) should be continued postoperatively if significant contamination or infection is still present after wound debridement and lavage.

Eric R. Pope, DVM, MS, DACVS
NAVC Clin Brf, Oct 2016