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"Pearls" of Veterinary Medicine

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AT A GLANCE

Owner-directed aggression

Adjustments to Stevie's (the patient) behavior modification program provided additional improvement; however, when his chronic GI disease flared, aggression increased and appetite decreased, which made training more difficult. The first step in Stevie's treatment was to better control his GI disease. Research on the gut microbiome has shown a ***close link between GI health and behavior***. In these cases, an appropriate GI diagnostic evaluation is required and should include a fecal examination, trypsin-like immunoreactivity, serum folate and cobalamin levels, canine Pancreatic Lipase Immunoreactivity (idexx.com), dietary trials, and, potentially, endoscopy and intestinal biopsies. Stevie was started on a multi-organism veterinary probiotic and a selective serotonin reuptake inhibitor (i.e., paroxetine 2 mg/kg, q24h). After his diet was adjusted to a single protein (i.e., rabbit) and the appropriate selective serotonin reuptake inhibitor dose determined, his diarrhea resolved. Stevie's appetite improved, and he became more responsive to training. His anxiety was markedly reduced, and he showed less aggression and was more sociable with humans in general. Patients with behavior issues should be evaluated to identify concurrent medical conditions, particularly pain and GI disease. The health of the gut microbiota plays a significant role in an animal's behavior and overall well-being.

Lore I. Haug, DVM, MS, DACVB, CABC
NAVC Clin Brf, Jun 2017

A different look towards obesity

Inflammation is the new obesity. Let's explain it this way: Pet owners see a "big" pet. Most veterinarians see a "fat" pet. The author sees an "adipokine storm." Adipokines? That's code for inflammation. Adipokines (also called adipocytokines or cytokines) are signal proteins produced by fat tissue. Leptin, adiponectin and interleukin-6 (IL-6) are examples of adipokines. We know adipokines cause or contribute to hundreds of harmful inflammatory processes throughout the body. Think of every fat cell as a little factory pumping out hundreds of potentially toxic compounds. Multiply that image by millions or billions in a pet suffering from obesity. The real danger of excess fat isn't the fat—it's the inflammation the fat causes. That's what we should communicate to clients: ***Inflammation is the new pet obesity***. Reducing chronic systemic inflammation should be a primary objective of treatment. Longevity studies in dogs have found dogs fed 25% fewer calories than normal and kept at a lean body mass lived an average two years longer and had fewer medical problems. The study dogs also required fewer medications and remained more active well into old age. Perhaps the fountain of youth for pets lies in the food bowl.

Ernie Ward, DVM
Vet Pract News, Jul 2017

Supplements for OA

Review of current literature in both humans and dogs for the use of glucosamine in the management of osteoarthritic pain reveals equivocal evidence for its effectiveness. In addition, the majority of products on the market have been found not to contain the ingredients or quantities as listed on the label. The only products that have reliably demonstrated ingredients as presented on the label are those produced by Nutramax (Cosequin, Dasuquin). The author has had the ***best results*** with combination joint supplements including Dasuquin Advanced (Dasuquin plus curcumin, *Boswellia serrata,* alpha-lipoic acid and green tea extract) and Movoflex (egg shell membrane, astaxanthin, *Boswellia serrata,* proprietary hyaluronic acid, Vitamin D3). Given the mixed bag of clinical data,

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it's likely the therapeutic benefit of these joint supplements is due to ingredients other than glucosamine and perhaps due to synergism with the other ingredients.

Leilani Alvarez, DVM, DACVSMR, CVA, CCRT
N Amer Vet Conf, 2017

Tips for home management of heart failure

Always titrate furosemide to the lowest dose that controls clinical signs. Once the patient is out of congestive heart failure and is clinically normal, it is important to gradually taper furosemide to the lowest dose that maintains the resting respiratory rate in the normal range. The process should be gradual and it is important that the owner thoroughly understands the process. For example, if a 10 kg dog is sent home (after hospitalization to stabilize congestive heart failure) on 20 mg furosemide 3 times a day, after 3 days of the owner obtaining regular resting or sleeping respiratory rates the dose can be decreased to 20 mg twice daily. If there is no change in the breathing rate after 5 days, the dose can be further reduced to 12.5 mg twice a day and potentially again to 10 mg twice daily in another 5 days if there is still no change in the breathing rate. The owner should carefully monitor the breathing rate throughout this process so if there is an increase in the RR, they can increase to the last furosemide dose used. Consider compounding pharmacies. Although there are certainly issues that arise from time to time with compounding pharmacies, for some they offer a service that will significantly improve the quality of life for the pet and owner. Absorption of cardiac medications is questionable with transdermals and cannot be easily monitored as can transdermal methimazole. However, for the elderly client that has trouble remembering multiple pills to administer or the pet that is difficult to pill, combining multiple drugs into one compounded liquid or tablet can have a significant impact.

Meg M. Sleeper, VMD, DACVIM
3rd Gulf Atl Vet Conf, 11:15

At-home meds in congestive heart failure

Some medications will remain at the same dosing schedule until the next visit (i.e. pimobendan). Other medications may decrease as the patient improves (e.g. furosemide) and others may be added as the CHF resolves and appetite/hydration improve (e.g. ACEI and spironolactone). ACE-inhibitors like benazepril and enalapril are typically not considered emergency therapies, and should be added when the patient's hydration status is stable in order to avoid pre-renal azotemia. In most patients, the return of the appetite is a good clinical indicator that ACEIs can be started safely. In patients with a history of renal insufficiency or in which the hydration status or appetite is precarious, lab work to monitor renal values and potassium approximately 3-4 days post-initiation of ACEI therapy is recommended to identify early problems.

Rebecca L. Stepien DVM, MS, DACVIM
N Amer Vet Conf, 01:16

Atypical hypoadrenocorticism

Animals with atypical hypoadrenocorticism have absolute cortisol deficiency (but not aldosterone deficiency) and present very differently than animals with classical hypoadrenocorticism (in which both aldosterone and cortisol are deficient). For one, these animals have been sick awhile. It can take a long time to develop clinical signs associated with cortisol deficiency, and many body systems can be affected—one of the reasons why hypoadrenocorticism has earned the nickname "*the great pretender*." Clinical signs can include nonspecific GI signs such as weight loss, decreased appetite, vomiting and diarrhea. Less common signs include megaesophagus and ascites due to low serum protein concentrations. These animals are chronically ADR (i.e. ***ain't doing right***) and can be mistakenly diagnosed with inflammatory bowel disease or a protein-losing enteropathy. Results from a minimum database can include anemia, lack of a stress leukogram, hypocholesterolemia, hypoalbuminemia, or hypoglycemia. Historically, atypical hypoadrenocorticism was considered rare, but this author thinks that is because we often have missed it. The more you test for it, the more you will find it.

Chen Gilor, DVM, PhD, DACVIM
DVM News Mag, Jun 2017

Using NSAIDs in geriatric pain patients

Literature within the last 5 years has brought to light the fact that NSAIDS not only CAN be used in geriatric patients with chronic liver and kidney disease, but SHOULD be used in these patients (judiciously, weaning dosage) to promote quality of life. So the question is no longer what else (other than NSAIDs) to use, but which NSAID to use, what dose, and how frequently to administer these agents. Inflammation in older pets abounds, and using no anti-inflammatory medication or modality in these cases should be discouraged; after all, it's not the NSAID that's at fault, it's our judgment on patients, dose, and frequency.

Andrea L. Looney, DVM, DACVAA, DACVSMR
N Amer Vet Conf, 2017

Calcitriol for CKD

The renin-angiotensin-aldosterone system (RAAS) is a major mediator of progressive renal injury in chronic progressive kidney disease (CPRD). The RAAS system is present entirely within the kidney and is present in most renal cells including tubular epithelia. Calcitriol is a negative endocrine regulator of RAAS. Calcitriol suppresses renin biosynthesis and has a protective role against hyperglycemia-induced renal injury in diabetic human patients. Through its effect to inhibit RAAS, calcitriol decreases production of Angiotensin II and thus lessens these fibrogenic consequences as well as other harmful renal effects. A glomerular mesangial or interstitial inflammatory reaction with marked involvement of macrophages and lymphocytes attends all forms of renal disease. Together with control of RAAS, the abil-

ity of calcitriol to control inflammation are hallmarks of renoprotective actions. In the author's practices, early diagnosis of CPRD at the IRIS 1 or 2a level is the key to successful management. A cat with or without proteinuria, with or without hypertension with a USG less than 1.030 and normal Calcium and Phosphorus will be started on Calcitriol at a dose of 2.5-3.5 ng/Kg per day. This is compounded into a chicken or fish flavored oil base by a compounding pharmacy licensed to produce compounded pharmaceuticals for the human market. Calcium, Phosphorus and their product will be measured in 2 weeks.

Elizabeth J. Colleran, DVM, MS, DABVP
Atl Coast Vet Conf, 10:16

Providing diets for CKD patients

More than a dozen reduced-phosphorus and -protein renal diets (canned and dry) may be options for dogs with various stages of CKD. A slow diet transition is recommended when possible, and ***low-protein palatability enhancers*** such as fish oil, homemade low-sodium meat broths, honey, pancake syrup, applesauce and some human enteral nutrition products (for example Ensure Vanilla Nutrition Shake, which is low in both phosphorus and protein) can be added. Avoid meats and other foods high in protein, phosphorus and sodium as they may negate the benefits of the renal diet and make patients feel worse in the short term. Dogs and cats with later stage CKD commonly exhibit cyclical appetites and may not be interested in eating the same food every day. Rotating among several appropriate diets may help overcome this issue. Appetite stimulants such as mirtazapine rarely result in consistent consumption of enough food to meet energy requirements in patients with renal disease over the long-term.

Cailin R. Heinze, DVM, MS, DACVN
DVM News Mag, 47:7

Treatment of anaphylactic shock

Epinephrine remains the cornerstone of treating anaphylaxis in veterinary medicine. Epinephrine stimulation of both alpha and beta receptors leads to increases in blood pressure, coronary perfusion, decreased airway edema, and blockade of mast cell degranulation. Unless cardiac arrest is imminent, epinephrine is delivered by the IM route at 0.01 mg/kg. Continuous IV infusion at 0.05 µg/kg/min is indicated to follow the bolus dose if ongoing treatment of shock is necessary. The author has also used epinephrine autoinjectors (Epi-Pen) in dogs that have survived an anaphylactic episode. Owners are given an outside prescription for either the pediatric (0.15 mg) or adult (0.3 mg) auto-injector to have for home use or while in transit to an emergency room. Unfortunately, the autoinjectors cost several hundred dollars and may be cost prohibitive in some cases. In addition, the short needles provided with the auto-injector may not reach muscle mass in obese dogs. Alternatively, the author has also dispensed much less expensive pre-filled epinephrine syringes for home use (however, these must be light protected and have a short shelf-life of 3-4 months).

Medora Pashmakova, DVM, DACVECC
N Amer Vet Conf, 01:16

The constipated cat

An alternative to enemas is administration of an oral polyethylene glycol (PEG 3350) solution (e.g., CoLyte, GoLytely). A nasoesophageal tube is placed and the solution is given as a slow trickle (6-10 mL/kg/hour) over 4-18 hours. Defecation usually results in 6-12 hours. In a retrospective study of 9 cats, median time to defecation was 8 hours and the median total dose of PEG 3350 was 80 mL/kg. No adverse effects were noted.

Susan Little, DVM, DABVP
AVMA Conf, 07:15

Spinal cord injury

(Editor's note: this article was taken from a 2015 proceedings; more information by googling treatment of spinal cord injury in dogs with PEG) This University Clinic (UF) no longer uses the high-dose methylprednisolone protocol (30 mg/kg, repeated to give a total of 60 mg/kg). While it is still under investigation in a large multicenter study the author has routinely used PEG (polyethylene glycol), a 30% solution given intravenously at 1 mL/pound, twice over 24 hours. PEG has not been shown to be of an absolute benefit and it is only the author's clinical impression that it does help. Any untold side effects have not been seen from its use. If the patient is seen longer than 72 hours after injury the benefit of PEG is doubtful. Polyethylene glycol (PEG) is available from: Westlab Pharmacy (Info@WestlabPharmacy.com)

Tom Schubert, DVM, DACVIM
N Amer Vet Conf, 01:15

Cat handling techniques

Reaching into a kennel to pick up a patient blocks the light; to the cat you appear as a looming, frightening stranger (smells, sounds, visual input). Instead, ***approach the opening of a kennel from the side*** so that some light still enters. Do not block every chance for escape; if the possibility to have some control over her environment and situation exists, she will be much more cooperative. Because cats rely on flight and fight for survival and are not reliant on others, when it comes to restraint, the mantra holds true: *Less is more*. Cats inherently resist intimate handling and restraint. By restraining them, we take away their sense of control and cause them to react. It is very easy to condition negative emotional responses. Scruffing is strongly discouraged as it is an act of dominance that cats may resent. Similarly, stretching is an inappropriate, disrespectful and unnecessary way to apply restraint. Every future experience builds on the previous negative (or positive) experience. Cat bags, masks, and gloves all carry the scents of similarly terrified patients plus other sundry smells (anal gland secretion, pus, blood, halitosis, etc.) A towel is all that is needed to wrap a cat in, in order

to protect the handler. Remember, a cat would rather flee than attack.

Margie Scherk, DVM, DABVP
Int VECCS Conf, 09:15

Alpha$_2$-adrenergic agonists

It is important to know that the dose of an alpha$_2$-adreneric agonist (medetomidine and dexmedetomidine) required to provide sedation is lower than that needed for analgesia; for example, in cats dose dependent sedation was seen with doses of dexmedetomidine between 2 and 40 µg/ kg (intramuscular) but analgesia was only associated with the highest dose. Sedation may mislead the observer to think that the animal is comfortable; however interactive assessment (palpation of the wound) will usually reveal the difference between pain and sedation. For this reason, this group of drugs are ***not "first line" analgesics***.

Sheilah A. Robertson, BVMS (Hons), PhD, DACVAA
N Amer Vet Con, 2017

Treating pruritus in the cat (without Depo)

Amitriptyline, a tricyclic antidepressant also has antihistamine (AH) properties. This is the author's antihistamine of choice for cats, often more effective than traditional AH, despite possible side effects. Though a 2004 study showing poor trans-dermal absorption, the author's personal experience is many cats do respond to a transdermal formulation. Dose (oral or trans-dermal): 0.5-2 mg/kg, every 12-24 hours. The author uses 5 -10 mg/cat, 1-2 times a day. Many cats become sedate on twice daily dosing. Other side effects include constipation, urinary retention, salivation, disorientation, anorexia, and less commonly, bone marrow suppression. It should not be used in cats with heart disease (can cause arrhythmias).

Trish Ashley DeVore, DVM, DACVD
N Amer Vet Conf, 2017

Adequan, proven benefit?

No studies have objectively documented improved weight bearing in any dogs with naturally occurring OA and not have demonstrated superiority of improvement over other standard treatments even with just subjective outcome measures. In this author's opinion, there is a paucity of data evaluating this treatment in dogs with OA. With that stated, some practitioners strongly believe in its clinical efficacy.

Samuel P. Franklin, MS, DVM, PhD, DACVS-SA
N Amer Vet Conf, 2017

Treatment of hip dysplasia

Treatment is dependent upon age of the patient, severity of clinical signs, physical and radiographic findings, patient performance goals, and financial constraints. Most dogs begin with ***conservative management*** centered around a multimodal approach of weight control, regulated exercise, osteoarthritis-modifying agents or nutraceuticals, and analgesics. For example, a classic medical protocol recommended at the author's hospital (CSU) would be dietary adjustment to aim for a BCS of 5-6/9. Medications such as carprofen 2.2 mg/kg, PO, q12h-24h, tramadol 3 mg/kg, PO, q8-12h, amantadine 3 mg/kg, PO, q24h. Joint supplements such as Dasuquin, Omega 3 FA (310 mg EPA and DHA/kg), Adequan 4.4 mg/kg, SQ, weekly loading dose then monthly. Professional canine physical therapy sessions every 1-4 weeks, and daily controlled leash walking/swimming + PT instructed home exercises.

Clara S.S. Goh, BVSc, MS, DACVS-SA, ACVS
N Amer Vet Conf, 2017

New criteria for diagnosing atopic dermatitis

The clinical signs in the dogs with AD (n=843) were compared to a group of dogs with pruritus from other causes (fleas, scabies, other parasites, primary skin infections, and miscellaneous causes). As a result of this study, a new set of diagnostic criteria were proposed: 1) Age of onset <3 years. 2) Mostly indoors. 3) Corticosteroid-responsive pruritus. 4) Chronic or recurrent yeast infections. 5) Affected front feet. 6) Affected pinnae. 7) Non-affected ear margins. 8) Non-affected dorso-lumbar area. Dogs meeting 5 criteria from this list were most likely to have canine AD. In this study, 20% of the dogs with symptoms consistent with AD had food-induced symptoms, and the clinical signs in those dogs were indistinguishable from non-food-induced AD. Therefore, an elimination diet trial is recommended in those cases without seasonality. Consistent with current beliefs, dogs with food-induced AD were more likely to have symptoms beginning at less than 1-year old or greater than 6 years old.

Randall C. Thomas, DVM,DACVD
N Amer Vet Conf, 2017

Physical therapy - OA

The value of "hands-on work" cannot be underestimated in the diagnosis, treatment, and reassessment of pain syndromes. There is a tremendous body of supportive literature in human medicine. Passive range of motion (PROM) is an excellent symptomatic therapy; clients can be taught to perform this at home. PROM decreases pain, lubricates joints, assists in maintaining functional joint range and muscle flexibility. A ***daily exercise plan*** is a cornerstone in maintaining the arthritic patient. The plan should be tailored to individual needs and should be progressive as the patient improves. Exercise can include leashed walks and specific therapeutic exercises based on the affected joints and muscle deficiencies. Weight loss is critical and perhaps the number one non-pharmaceutical therapy in OA management. Maintenance of a lean body condition of 4.5-5/9 is ideal, paying particular attention to preservation of lean muscle mass. Note that each score above 5 represents 10-15 percent excess in body weight.

Carolina Medina, DVM, CVA and Patrice M. Mitch, DVM, MS
83rd AAHA Conf 04:16