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"Pearls" of Veterinary Medicine

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AT A GLANCE

Sedating the urethral obstructed patient

If you've ever had a kidney stone, you know they're horribly painful. Urethral and ureteral obstructions in cats are painful; opioids are indicated, not only for pain, but also to reduce ureteral or urethral spasm. When sedating a blocked cat, this author says masking down with gas anesthesia is ***the worst anesthetic choice you could make***; IV propofol is the second worst choice in an unstable patient. Once the patient is stabilized, the author sedates with the low-dose ketamine (1 to 2 mg/kg) and midazolam (0.2 mg/kg) to reduce the risk of hypotension and maintain a light plane of anesthesia that complements analgesia that is already on board, enough to unobstruct the urethra. What about antibiotics? Less than 3% of blocked cats have a UTI. Cats with an acute urethral blockage do not need prophylactic antibiotics, but some cats will develop a UTI secondary to urinary catheter placement, so submitting urine for culture after you remove the catheter is recommended.

Alesso Vigani, DVM, PhD, DACVECC
DVM News Mag, 11:17

Client errors in cardiology

Feeding salty snacks. Many (perhaps most) commercially-produced treats for cats and dogs contain high concentrations of sodium, which helps make those treats more palatable. In a healthy dog or cat, or one with mild but compensated heart disease, eating one of these treats is unlikely to be harmful. However, in a patient who has been in congestive heart failure and whose medication regimen includes a diuretic, even very small amounts of excess sodium can cause a clinically catastrophic amount of fluid retention and, assuming left-sided heart disease, cardiogenic pulmonary edema. Culprits in this respect have included a potato chip in a Dachshund with myxomatous mitral valve disease, a bowl of mashed potatoes in a Husky with dilated cardiomyopathy, a bowl of the other dog's food (to stimulate appetite) in a Borzoi with myxomatous mitral valve disease, and a single salted peanut in a Chihuahua with myxomatous mitral valve disease. These preventable, severe exacerbations (and subsequent hospitalizations) were due to *owner lack of awareness of sodium sensitivity* in patients with congestive heart failure and longstanding dietary sodium restriction as part of their balanced treatment plan.

Etienne Côté, DVM, DACVIM
N Amer Vet Conf, 02:17

How to fight opioid abuse

The opioid problem is affecting us as veterinarians. People posing as clients with pets supposedly in need of pain medications are attempting to use veterinary clinics as a source to obtain these drugs to use for illegal purposes. It has been suggested there are a few procedures we as veterinarians can do to reduce the risk that we will be contributing to the problem. The first is know your client. If they are new to your practice, ask to see and then make a copy of their photo I.D. before dispensing a scheduled drug. Have a clinic policy developed beforehand if they say they left their driver's license at home or some other excuse. Be ***wary if they ask for a specific drug***. If after examining the patient, in your professional opinion, you suggest a drug to be prescribed or dispensed and the owner then specifically requests a different one, hopefully warning bells sound for you. Be suspicious if you have recently dispensed a drug and they come back in too soon for a refill because they lost them or they left the pills at the lake or they are going on vacation or some other reason. That could be a legitimate reason, but a conversation with them might be warranted. Consider microchipping any patient receiving

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more than a few days' supply of a scheduled drug. Remember, as veterinarians we want to be known as part of the solution to the opioid issue, not part of the problem.

David L. Fell, DVM
MN VMA News, Sep/Oct 2018

Urine protein and CKD

True proteinuria in cats is a known marker of poor prognosis in renal disease. If proteinuria is established on the chemistry stick in the absence of active sediment, the sample will need to be submitted for a urine protein creatinine ratio (UPCR). The result should be used to direct therapy with medications to reduce the loss of protein into the urine. ***Ratios over 0.4 are significant*** and therapy is needed. If there is active sediment in the presence of proteinuria on the chemistry stick, and the UPCR is very high (>0.5), then the value may be significant and therapy may be indicated.

Kelly St. Denis, DVM, DABVP
CVC San Diego 08:17

Pennyroyal oil not effective for fleas

If your clients have been on Dr. Google, they may have read that pennyroyal oil is effective against fleas and ticks. This has not been proven, but toxicity definitely has. Pennyroyal oil, derived from the leaves and flowers of the pennyroyal plant (also called squaw mint or mosquito plant), contains a volatile compound called pulegone, which is responsible for the plant's toxic effects. If pennyroyal is applied directly to an animal it can cause depression, vomiting, hepatic necrosis, diarrhea, epistaxis, seizures and death. ***Pennyroyal oil should never be used on animals***. When it comes to fleas and ticks, natural products and home remedies simply aren't effective. In fact, some natural ingredients can do more harm than good. Have your client steer clear of feeding the pet garlic and herbs, as these can be toxic.

Tina Wismer, DVM, DABT, DABVT
DVM News Mag Supp, 03:18

Chronic bronchial disease

The methylxanthine bronchodilators, theophylline and aminophylline (theophylline ethylenediamine), are often described as the preferred treatment for long-term management in dogs (extended-release theophylline, initially 5.0 mg/kg, orally, q12h; with gradual increase up to 10 mg/kg). NOTE: USE OF THEOPHYLLINE WITH a FLUOROQUINOLONE antimicrobial (e.g., Baytril) CAN CULMINATE IN TOXIC ACCUMULATION OF THEOPHYLLINE... it is therefore recommended to reduce the theophylline dose by 30% if used concurrently with a fluoroquinolone. Alternatively, beta-adrenergic bronchodilators (terbutaline and albuterol) can be used (small dogs: 0.625 to 1.25 mg [total dose] orally, q12h) (larger dogs: up to 2.5 to 5.0 mg/kg, orally, q12h). In the author's experience, the long-term benefit derived from bronchodilator therapy varies considerably among individual patients.

Richard B. Ford, DVM, MS
125th SD VMA Conf, 08:16

Antiplatelet therapy, feline ATE

Antiplatelet aggregating drug therapy should be considered for: 1. current or past thromboembolism, 2. moderate to severe left atrial enlargement is present, 3. spontaneous echo contrast or thrombosis is evident in the LA or LV, 4. systolic atrial dysfunction is detected. Presently used medications include: a) Clopidogrel (Plavix—1/4 of 75 mg tablet daily)--provides superior results and is the ***preferred antiplatelet aggregating drug***. b) Aspirin- historically used, doses that range from 10 to 20 mg every three days. Results using dual therapy have not been documented.

Philip R. Fox DVM, MS, DACVIM/ECVIM-CA, DACVECC
Fred Scott Feline Symp, Jul 2018

Diagnosing Cushing's disease

A presumptive diagnosis of Cushing's disease should be made from clinical signs, physical examination, routine laboratory tests, and diagnostic imaging findings. DO NOT TEST A DOG BECAUSE IT HAS A HIGH SERUM ALKALINE PHOSPHATASE!!! THAT IS NOT A REASON TO TEST FOR CUSHING'S!!!!!! Testing for hyperadrenocorticism in a dog should be done because they have one or more clinical signs of the disease. Typically, the disease is insidious and slowly-progressive, so most dogs have had clinical signs, such as abdominal enlargement, panting, muscle weakness, thin skin, lethargy, polyphagia, polyuria and polydipsia (PU/PD) for months to even years before the owners recognize a problem and seek veterinary help. BLOOD RESULTS DO NOT A CUSHING'S DOG MAKE!!!!!

Diane Monsein Levitan, VMD, DACVIM
Atlantic Coast Vet Conf, 10:16

Drug incompatibility

Butorphanol (for sedation) and furosemide (a potent loop diuretic) are common initial treatment choices for patients presented with acute congestive heart failure. Both injectable medications can be given intravenously or intramuscularly, but they ***cannot be combined***. Furosemide is a mildly alkaline, buffered product and should not be mixed with solutions that have a pH less than 5.5; the pH of butorphanol varies between manufacturers but may be between 3.0 and 5.5. When these drugs are allowed to interact through combination in a syringe or an IV line, a cloudy precipitate may form. This precipitate can damage tissue or occlude a vessel—particularly in the cerebral and pulmonary vasculature, which can be life-threatening—and one or both drugs may be ineffective. To prevent this interaction, drug compatibility should always be determined prior to combination (in a syringe) or coadministration of drugs in any fluid lines; in addition, the fluid line should be thoroughly flushed with a compatible solution between administration of each drug.

Andrew Linklater, DVM, DACVECC
WSAVA Clin Brief, Aug 2018

Generating pain scales

In general, if a cancer type is associated with pain in humans it is likely to cause pain in dogs or cats and should be treated appropriately. If we don't recognize cancer pain in pets, then there is no way we can adequately address it. One tool that can be helpful for both owners and veterinary staff alike is the use of a pain scale. There are several published scales available, from the simple to complex. A favorite is the 4-point scale described by Colorado State University: vasg.org/pdfs/CSU_Acute_Pain_Scale_Canine.pdf and vasg.org/pdfs/CSU_Acute_Pain_Scale_Kitten.pdf. Not only can most pet owners use these scales easily, over time changes in the score can help determine the efficacy of pain management strategies.

Michael D. Lucroy, DVM, MS, DACVIM
Emerald Coast Vet Conf, Jun 2018

Proper trochleoplasty technique

Poor trochleoplasty technique is, unfortunately, a ***common cause of recurrent postoperative patellar luxation***. Veterinarians commonly perform a sufficiently deep trochleoplasty, but with little attention paid to its width or its length. If the trochleoplasty is not wide enough for the patella to fit within, you have not helped the patellar stability. Preoperatively, the patella often luxates medially when the stifle is extended since the patella then rides proximal to the trochlear sulcus. If the trochleoplasty does not capture the patella when the stifle is extended, luxation is likely even if it is otherwise deep enough and wide enough. After performing the trochleoplasty the patella must be carefully re-introduced into the trochleoplasty and observed through a full passive range of motion. As a rule of thumb, >50% of the patellar thickness should rest within the trochleoplasty (perhaps more in cases of severe patellar erosion) and >50% of its length should be within it even when the stifle is fully extended.

Ross H. Palmer, DVM, MS, DACVS
N Amer Vet Conf, 02:17

Myth and fact of soy in the diet

MYTH: "Like many other pet food ingredients, soy is virtually unusable by an animal's body." **FACT:** Soy is an excellent source of multiple nutrients, including fatty acids; protein and amino acids; carbohydrates; and soluble and insoluble dietary fiber. In addition, soy provides other beneficial compounds such as isoflavonoids and oligosaccharides. When soy protein is used in properly balanced diets containing complementary amino acids, soy provides a highly digestible source of quality protein.

Callie Harris, DVM
Emerald Coast Vet Conf, Jun 2018

Catheter-associated infections

It is well established that antibiotics do NOT prevent catheter-associated infection, and, if it is to occur, the bug is more likely to be resistant. As a result, consider the following practical points when deciding on the use of antibiotics: a) The routine use of empirical antibiotics in young, otherwise healthy male cats living in the United States is not necessary - even after catheterization. b) Perform appropriate diagnostics. Perform a urinalysis at admission and ideally a urine culture (obtained via cystocentesis) after catheter removal to help detect the small percentage of cats that naturally have or iatrogenically develop bacterial cystitis. c) Identify risk factors that increase the potential for an infection, mainly being female, inappropriate catheter technique, or prolonged catheterization time. If a risk factor is present, urine culture becomes even more important. d) If empirical use of antibiotics are to be used due to the client declining standard of care (which includes appropriate diagnostics), ***do not start the antibiotic while the catheter is indwelling***. e) If infection is suspected or confirmed while the catheter is indwelling, the antibiotic may be started.

Marc Seitz, DVM, DABVP
Music City Vet Conf, 02:17

Fecal microbiota transplantation

There has been a recent interest in veterinary medicine using fecal microbiota transplantation (FMT) for diarrhea. There are anecdotal reports of improvement in some patients having chronic diarrhea requiring antibiotic therapy. The premise is that the transplant replaces good colonic bacteria that have been suppressed or killed. It involves collecting stool from a young normal tested donor, mixing with saline, strained, and placed in the patient's colon via enema. Time will tell but ***FMT may become a low cost, low-risk means*** of treating some chronic diarrhea cases.

David C. Twedt, DVM, DACVIM
SD VMA Conf, 08:16

Using bromide for seizure control

Potassium bromide is becoming the drug of first choice for the management of epilepsy in dogs since it is the only anticonvulsant known that has no hepatic toxicity and all the adverse effects of KBr are completely reversible once the drug is discontinued. KBr controls approximately 80% of the epileptic dogs it is used to treat and is often effective in dogs that fail phenobarbital therapy. When high dose KBr and low dose PB are used together, approximately ***95% of epileptic dogs can be controlled***. The maintenance dosage is 20-100 mg/kg/day (which can be divided BID to avoid GI upsets) to achieve serum concentration of 1-5 mg/ml measured just before the next dose is administered. It requires 2-3 weeks of therapy before bromide serum concentration will enter therapeutic range and close to 4 months before steady state values are approximated. If seizure control is needed more rapidly than this, a total oral loading dose of 400-600 mg/kg of potassium bromide can be given prior to instituting the maintenance dosage schedule divided QID over 4-5 day**s.** By dividing the loading dose, excessive sedation may be avoided in case

the dog is especially sensitive to the sedative effects of bromide. The loading dosage should be mixed well with food to avoid the induction of vomiting. Be sure to *stress to owners* that it is important to keep the salt content of the diet consistent to prevent marked serum concentration fluctuations of bromide.

Simon Platt, BVM&S, MRCVS, ACVIM, DECVN
Emerald Coast Vet Conf, Jun 2018

Xylazine as an emetic

Xylazine at 0.5 mg/kg may be effective in ***inducing emesis*** in approximately 50% of feline foreign body or intoxication cases, with approximately three-fourths of those patients successfully expelling the ingested toxin or foreign body.

M. Thies et al.
WSAVA Clin Brf, Aug 2018

Don't mix two local anesthetics

Mixing two local anesthetics has become common practice. The main theoretical advantage is to decrease the onset and increase the duration of action by mixing a local anesthetic with short onset and another with long duration. Unfortunately, this is not the case. When two drugs are mixed together, the pKa of the mixture is unknown and the onset and duration are unpredictable. In addition, a 50:50 mixture will have half strength concentration of each drug. This may influence the property of both local anesthetics, by decreasing the onset and shortening the duration of action. Due to the lack evidence showing the advantage of mixing different local anesthetics, it is recommended to choose ***only one drug per block*** based on pharmacokinetics and pharmacodynamics of the local anesthetic and the type of block and procedure performed.

Michele Barletta, DVM, MS, PhD, DACVAA
113th ND VMA Conf, Aug 2018

Antipruritics during a diet trial

It is very important that potentially pruritic pyoderma and/or Malassezia infections be cleared up and controlled, early in the trial diet. It is not uncommon to continue antibiotic therapy or Malassezia topical treatment throughout the diet trial to prevent exacerbation of infection during the trial. It is very acceptable to use an antihistamine, glucocorticoid, oclacitinib or Cytopoint during the earlier phases of the diet trial to reduce pruritus (i.e. during the first 4-5 weeks). It is very ***important that these medications be stopped towards the end of the diet trial*** to see what the diet alone is capable of doing for the problem.

Rod A.W. Rosychuk DVM, DACVIM
78th Co Vet Conf, 04:17

Heartworm tests in cats

Interpretation of antibody and antigen test results is complicated and a thorough understanding of the limitations of both tests is necessary in order to use these assays with confidence. In dogs, the antigen test is the "gold standard" but because infections consisting of only male worms or symptomatic immature infections are more common in cats, none of the presently available antigen tests can be relied upon to rule out heartworm disease in cats. The current generation of heartworm antigen tests identify most "occult" infections (adult worms present but no circulating microfilariae) consisting of at least one mature female worm and are nearly 100% specific. Necropsy surveys of shelter cats have shown that 50%-70% of infected cats have at least one female worm. Detectable antigenemia develops at about 5.5 to 8 months post infection. False-negative test results occur most commonly when infections are light, female worms are still immature, only male worms are present, and/or the test kit instructions have not been followed. There are also documented cases of antigen-antibody complexes interfering with antigen testing resulting in false-negative tests. ***Heating the sample test-tube*** in a warm water bath to 104°C for 10 minutes will break these complexes down, releasing any antigen, resulting in more accurate test results. Heartworm test results should only be recorded as positive or no antigen detected (NAD) and should not be written as "negative."

Am HW Society
Emerald Coast Vet Conf, Jun 2018

Ototoxicity of flushing solutions

The prevalence of ototoxicity secondary to the use of flushing solutions/medications when a ruptured tympanic membrane exists is unknown. Most data concerning ototoxicity has been obtained from species other than the dog or cat, reported after dosing that exceeded the recommended dosage protocol or obtained from anecdotal or unsubstantiated reports. Two separate studies have evaluated the effects of chlorhexidine previously found in Nolvasan Otic and gentamicin sulfate (3 mg/ml) in normal dogs with rupture of the tympanic membrane. No cochlear or vestibular dysfunction was noted after 3 weeks of otic application of the otic flush or medication. Caution may still be warranted with the use of these medication in cases with tympanic membrane rupture. Betadine solution diluted to 5-15 ml of betadine in 250-500 ml of sterile saline has been used by this author's dermatology service without any problems seen.

Sandra Merchant, DVM, DACVD
88th FL VMA Conf, 04:17

Talking to your client

What Matters is Not So Much What You Say to a Concerned Client, But How They Perceive What You Said. The absence of eye contact, the pressures of on-going catastrophes, and the mounting build-up of fatigue all contribute to the misunderstandings that might end up before an ethics review board. Never forget that your pet owners demand compassion and respect — always.

Michael Schaer, DVM, DACVIM, DACVECC
4th Gulf Atlantic Vet Conf, 10:16

Preparing allergy test diets

Home prepared diets appear to be closest to 100% effective in determining the presence of food sensitivity. *There are several reports in the literature of both dogs and cats who have manifest signs of food sensitivity when fed a commercial diet consisting of the same ingredients offered in a home prepared form that the individual did not react to*. Home prepared diets that the author favors include a single, novel carbohydrate (potato, sweet potato, yams [in the US, what are labelled as yams are really sweet potatoes – soft variety] , oats, squash, green peas or rutabagas; in all cases must be fresh – not instant or minute packaged cooking versions) combined with a single, novel protein (rabbit, ostrich, kangaroo, pinto bean). There is some data to suggest cross reactivity between venison and beef and various avian proteins (duck may cross react with chicken). In light of this, the author has elected to avoid these novel proteins. The author generally feeds one cup/10 lbs. body weight of the mix per day; 1/2 of this mix is usually the protein component. It is ***not necessary to nutritionally balance these diets*** for the duration of a diet trial (8-12 weeks) in mature, healthy individuals. However, for long term use, the diet would have to be balanced. It is recognized that these diets are nutritionally inadequate for growth and maintenance. Homemade foods lack a source of calcium, essential fatty acids, certain vitamins and various micronutrients. These homemade diets are not recommended for trial purposes in growing animals unless they have been balanced with a non-flavored, additive free vitamin, calcium/phosphorous and a source of essential fatty acids such as vegetable oil. Vegetable oils are not likely to contribute to allergic symptoms. The author uses commercial restrictive diets for most growing animals. Recipes for balanced home prepared diets can be accessed through various sites: balanceit.com or you can go to the American College of Veterinary Nutrition website or through VIN (Clinical Nutrition Message Board). CSU has a nutrition service that will provide this support. Freshly prepared novel protein diets are available through raynenutrition.com.

Rod A.W. Rosychuk DVM, DACVIM
78th CO Vet Conf, 04:17

Treatment of Cushing's

Though use of drugs such as mitotane and ketoconazole has been described, trilostane is now the most commonly used drug for the medical management of hyperadrenocorticism (both pituitary-dependent and functional adrenal tumor). It acts by competitively inhibiting the enzyme responsible for production of cortisol. Consequently, its effect is usually reversible and when hypocortisolism occurs, dose reduction or discontinuation of the drug usually results in improvement. However, cases of adrenocortical necrosis can occur with or without mineralocorticoid deficiency. The original recommended dose was between 3 and 6 mg/kg once daily, but more recent work has shown that cortisol suppression with this drug typically lasts less than 12 hours and dogs can respond to lower doses. Consequently, recommended starting dose is 0.5-1.0 mg/kg, twice daily. Monitoring is typically performed using an ACTH stimulation test and should be performed 2-4 hours post-pill. This author recommends an initial recheck be performed 7-10 days after starting this medication. By that time point, the owners will typically notice improvement of many symptoms (weakness, polyphagia, PU-PD - dermatologic signs can take months to reverse). An ACTH-stimulation test should have post-ACTH cortisol values between 2-6 µg/dl. Thereafter, if the patient is well controlled on that dosage, recheck at progressively longer intervals (1 month, 3 months, and 6 months thereafter). If cortisol values remain high, the dose can be increased by 25%. If, on the other hand, the cortisol value is low, the author recommends decreasing the dose by 50% and rechecking an ACTH- stimulation test in 1 week. If values remain low, discontinue the trilostane altogether and recheck in one month.

Jean-Sébastien Palerme, DVM, MSc, DACVIM
127th SD VMA Conf, Aug 2018

Short Picks

Combinations of inhaled corticosteroids and long-acting bronchodilators have been shown to be more effective in blocking airway inflammation and reversing bronchoconstriction in an experimental model of feline asthma. This author regularly uses an inhaled combination of ***fluticasone propionate and salmeterol*** for cats that are steroid-responsive, but at risk of side effects at higher doses of inhaled or oral steroids.

Stephan A. Carey, DVM, PhD, DACVIM
Mich Vet Conf, 01:18

In a dog at risk for the development of congestive heart failure (for example, a small breed dog with a left apical systolic murmur and left atrial enlargement), ***teaching the owners to count the resting respiratory rate*** is an invaluable tool. Although coughing may be severe, it is highly unlikely to be secondary to congestive heart failure if the resting or sleeping breathing rate is less than 36 bpm.

Meg M. Sleeper, VMD, DACVIM
4th Gulf Atl Vet conf, 10:16

Gowns must be used when handling chemotherapy. They must be disposable, and they must be shown to resist permeability by hazardous drugs. Gowns with a polyethylene-coating or other laminate materials offer better protection. Lab coats, scrubs, and isolation gowns are **not appropriate**. Gowns must be changed per the manufacturer's information for permeation of the gown (often every 4 hours). If this information is not available, they must be changed every 2-3 hours.

Meg Musser, DVM, DACVIM
127th SD VMA Conf, Aug 2018

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