C/E for the one who doesn't have time for C/E

"Pearls" of Veterinary Medicine

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Use of detomidine as a sedative

Detomidine, a comparatively less potent a_2-adrenergic receptor agonist, is approved as a sedative and analgesic drug for IV and IM administration in horses. In addition, an oral-transmucosal (OTM) gel formulation of detomidine is approved for sedation and restraint of horses and has recently been investigated in dogs. These authors hypothesized that the gel formulation would have good systemic bioavailability in dogs. They also hypothesized that the gel formulation of detomidine administered at 0.5 mg/m² OTM would provide sedation equivalent to that achieved with dexmedetomidine at a dose of 0.125 mg/m² administered IV. Overall, the results of this study support the clinical use of detomidine gel in healthy dogs for sedation purposes because it was simple to administer the small volume needed (a mean of approximately 0.1 mL for the 1 mg/m² dose in dogs of the study population) into the buccal cavity of dogs.

Kristen M. Messenger, DVM et al.
Am J Vet Res, Apr 2016

Valuable Information Inside

Atopy

Prior to beginning systemic immunosuppressive therapy, all patients should have full bloodwork performed (complete blood count and serum biochemistry) as well as a urinalysis. ***Azathioprine has been used*** in certain cases to treat refractory canine atopic dermatitis at a dose of 2-2.5 mg/kg, once daily. Further bloodwork is also recommended every 2-4 weeks after starting therapy due to the potential adverse effects such as myelosuppression and hepatic toxicity (increase in ALT, ALP).

Charlie C. Pye DVM, DVSc, DACVD
West Vet Conf, 02:14

Fibrosis in an ACL tear

Fibrosis is what we rely on when we recommend conservative treatment for an ACL tear. Experience proves that fibrosis alone is not enough to provide good function, at least in medium-and large-breed dogs. Scar tissue is manifested by the medial buttress, which is thickening of the medial joint capsule (and not the medial collateral ligament, as often is believed). ***The medial buttress is a pathognomonic sign of an ACL tear***.

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

Mislabeling of Solu-Delta-Cortef

Prednisolone sodium succinate (Solu-Delta-Cortef) is labeled for use in dogs and cats for "shock" at a dose of 2.5-5 mg/lb. This is not an appropriate dose for any condition! It is between an immunosuppressive and "shock" dose. Additionally, immunosuppressive glucocorticoids should not be used in septic patients, despite the label recommending use for conditions such as sepsis, pneumonia, peritonitis mastitis, etc. Most causes of shock are not responsive to glucocorticoids and the adverse effects of glucocorticoids are too severe to warrant use (e.g. trauma, pain, heat stroke, endotoxemia, septicemia). For example, shock doses of glucocorticoids increase the rate of death and disability in human head trauma patients. The label states that the benefit may be limited unless used with plasma volume expanders (e.g. IV fluids), but the reality is the animals will respond to analgesics (if needed) and fluids and addition of glucocorticoids only worsens the animals' condition due to their adverse effects. Glucocorticoids worsen the progression of osteoarthritis (OA) due to their catabolic effects on joint cartilage. The use of glucocorticoids are not recommended for use in snakebites as there are no data supporting there use and may increase the risk of secondary infections (despite the label recommendations).

Butch KuKanich, DVM, PhD, DACVCP
CVC Kansas City, 08:15

Feline sedation cocktail

In cats, there is a popular combination for sedation known as "***kitty magic***." The combination is made up of dexmedetomidine, ketamine, and an opioid (butorphanol or buprenorphine). For an adult cat, 0.1 mL of each drug

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is given IM. This dosing regimen comes very close to the following exact dosing: dexmedetomidine (16 µg/kg), ketamine (3 mg/kg), and butorphanol (0.3 mg/kg) or buprenorphine (0.01 mg/kg).

Luisito S. Pablo, DVM, MS, DACVAA
NY St VMA Conf, 05:14

Thoughts on IM pins

In the past, it has been recommended to insert 2 or more IM pins, in order to improve axial compressive and torsional stability, to a femoral or humeral fracture—a technique called "stack pinning." **Studies have demonstrated 2 pins are no more resistant to torsion than a single pin.** Three IM pins provided a modest improvement in reducing torsional forces. Clinical studies have also demonstrated a 50% complication rate with stack pinning technique. These include: 1) premature pin migration due to ability to seat multiple pins well into the metaphyseal bone; 2) increased soft tissue injury/damage where multiple pins exit the bone; 3) difficulty cutting multiple pins short enough to prevent soft tissue trauma. **Another common misconception is that end-threaded IM pins provide greater resistance to torsion and minimize pin migration.** Mechanical testing has shown the pull out strength of smooth and end-threaded IM pin to be nearly identical. The reason is, the trocar point of the pin is the same diameter as the outside thread diameter of the pin; the trocar point creates a glide hole preventing the threads from cutting into the bone. Occasionally when removing an end-threaded IM pin, after the bone has healed, the end-threaded pin has to be "unscrewed" from the bone. This is because cancellous bone has grown into the pin threads during the later stages of bone healing, not because the threads cut into and engaged the bone at the time of pin insertion. Furthermore. end-threaded pins are subject to breaking at the interface between the threaded and smooth shank of the pin.

Robert M. Radasch, DVM, MS, DACVS
N Amer Vet Conf, 01:15

Mixed breed dogs affected by *MDR1* gene?

Mixed breeds can be affected because dogs only need to receive 1 copy of the mutant *MDR1* allele from a parent with at-risk breed lineage. Thus, a dog with any herding breed in its ancestry may have the *MDR1* mutation and be at risk for drug toxicity. The author is aware of many mixed-breed dogs that can harbor the *MDR1* mutation despite having no obvious physical characteristics that would suggest herding breed ancestry. Based on anecdotal clinical findings and observations, many mixed-breed dogs have experienced serious adverse effects because they were treated with P-glycoprotein drugs before being tested for the *MDR1* mutation.

Katrina Mealey, DVM, PhD, DACVIM, DACVCP
NAVC Clin Brf, May 2016

Fluids/electrolytes in feline pancreatitis

Correct dehydration and meet ongoing fluid requirement. Do not choose lactated Ringer's solution if there is evidence of liver pathology or malfunction. Hypocalcemia is common in cats with pancreatitis. Watch for it and correct it with appropriate potassium supplementation. The prognosis for cats with pancreatitis is directly related to the severity and duration of hypocalcemia. Hypocalcemia needs to be corrected with calcium gluconate in the IV fluids during the first 12-24 hours.

Elizabeth Colleran, DVM, MS, DAVBP
Vetted, Apr 2016

Malassezia otitis

Topical antibiotic and/or anti-Malassezia therapy if the Integrity of the tympanum is unknown or the tympanum is known to be perforated: 1) For bacteria: injectable enrofloxacin (22.7 mg/ml), dexamethasone sodium phosphate (4 mg/ml) 1:2 (one part enro to 2 parts dex). 2) For Malassezia: dexamethasone sodium phosphate, 1% miconazole (1:1). 3) For bacteria and Malassezia: enrofloxacin, dexamethasone sodium phosphate, 1% miconazole (1:1:2). Volumes of the above - medium sized breed, 0.5 – 0.7 ml per ear per treatment; small dogs, 0.3 – 0.4 ml; large breed dogs, 0.8 – 1.0 ml.

Rod A.W. Rosychuk, DVM and Howard Seim, III, DVM
West Vet Conf, 02:14

USG in cats, when to worry

Assessment of urine specific gravity (USG) is a simple diagnostic test, invaluable in interpreting the presence of azotemia and assessing the cat's urine concentrating ability. This study confirms that most (88%) healthy cats (irrespective of age) produce a USG >1.035. Importantly, investigation of adults with a ***USG <1.035 revealed an underlying disease in 38%***, and in an even higher proportion of cats >9 years of age. These results emphasize the importance of not ignoring a USG <1.035 in spot urine samples. Importantly, different refractometers yielded significantly different results, and other studies have also shown that feline-specific refractometers are unnecessary and less reliable. This study showed the importance of spot-checking feline USG, and it is likely that serial measurements of USG in individual cats over time (especially those >9 years old) will yield even more valuable results in the future.

Andy Sparkes, BVetMed, PhD, DECVIM-MRCVS
NAVC Clin Brf, 13:8

Thyroid myths

1) Thyroid therapy can be effective in dogs if given just once daily. TRUTH: Thyroxine treatment is best given twice daily. Achieves better steady state over 24 hours; the half-life of T4 is only 12 to 16 hours. Dosing once daily results in undesirable peaks and valleys. 2) Thyroxine can be given with food or in the food bowl. TRUTH: Thyroxine binds to calcium and soy, and so it should be given apart from meals (one hour before or three hours after), regardless of what the product label says.

W. Jean Dodds, DVM
Vet Pract News, Jun 2016

Benefits of shampoo therapy

There is some evidence that either the mechanical action of shampoo therapy or the vehicles, regardless of the agent in a shampoo, can have a ***beneficial effect*** in the management of allergic pruritus. A recent double-blinded, placebo-controlled study to evaluate an antipruritic shampoo that contained lactoferrin, chlorhexidine, piroctone olamine, chitosan, essential fatty acids, and glycerin found that both the test shampoo and the placebo (shampoo vehicle) were equally effective at significantly reducing pruritus in dogs with mild to moderate allergic pruritus. This benefit from frequent (weekly) shampoo therapy regardless of the agent in the shampoo has been noted in another study and may be the result of the removal of scale/crust or allergens from the skin surface or possibly a moisturizing effect.

Catherine A. Outerbridge, DVM, MVSc, DACVIM (SAIM)
West Vet Conf, 02:14

Treating the pain of trauma

Pain kills. No patient is too critical to receive analgesics. Doses may need to be decreased to 25%-50% of normal in critical patients but all should receive appropriate analgesia. Patients with chest trauma should always have their pain aggressively controlled, since thoracic pain can interfere significantly with ventilation potentially leading to hypercarbia and hypoxia. Opioids are the primary class of drug used; they can be given IV, IM, SQ, or epidurally. In general pure *mu* agonists are preferred; however, in very critical patients butorphanol may be preferred initially due to its minimal cardiorespiratory side effects. The IV route is preferred over the IM (painful over time) and SQ routes (absorption is unpredictable). If the IM route is used the ***injection should be given in the epaxial muscles*** since blood flow to this muscle bed is more consistent even in the face of alterations in tissue perfusion. Local anesthetics (lidocaine, bupivacaine) can be injected as local or regional blocks. Intercostal blocks will help improve ventilation in dogs with fractured ribs. Pain related to the acidic nature of the local anesthetic can be modified by warming the drug to body temperature or by adding 10% of the volume as sodium bicarbonate.

Jennifer J. Devey, DVM, DACVECC
33rd Sum SD VMA 06:14

Using ACE inhibitors in heart disease

Are ACE-inhibitors useful in dogs with mitral regurgitation, large left atrium, and coughing? This common practice is based on the assumption that the cause of the cough is due to increased LA pressure compressing the bronchi and that enalapril is effective in reducing LA pressure/size. Unfortunately, ***both of these assumptions are false***. In a study by Suzuki using Beagles with experimentally induced mitral regurgitation, benazepril at 0.5 mg/kg, PO, q12h was ineffective in lowering left atrial pressure (but amlodipine at 0.2 mg/kg, PO, q12h did lower LA pressure). In another study by Singh, 16 dogs with chronic cough were worked up with radiographs, echocardiogram, fluoroscopy, and bronchoscopy and were divided into 2 groups. Ten dogs had moderate-severe LA dilation and 6 dogs had no- mild LA dilation. There was no difference in airway collapse between the two groups and airway inflammation was present in all dogs. Therefore, dogs with LA dilation and coughing are more appropriately treated with anti-inflammatory doses of steroids, cough suppressants, and bronchodilators rather than with an ACE-inhibitor.

Adam Honeckman, DACVIM
86th FL VMA Conf

The loose control approach to feline diabetes

Why this clinician modified the Traditional Approach. 1) Too many euthanasias due to the personal commitment required of the owner, the expense, and the hassle to the cat. 2) Disappointment with results of glucose curves. 3) Concerns about home glucose testing. Too much emphasis placed on blood glucose readings instead of a combination of clinical signs and blood glucose readings. Owners frequently expect to report the results of their home testing, get a recommendation over the phone, and pay nothing for the consultation. Owners taking over the case and not returning the cat to the author for its care. This approach is built on the premise that i) Cats tolerate hyperglycemia with minimal/tolerable clinical signs. ii) Cats do not have significant complications from diabetes such as cataracts, peripheral vascular disease, and renal disease. iii) Cats tolerate hypoglycemia with no or minimal clinical signs. iv) Most cats with glucose values in the 50s have no clinical sign. But, don't over-appreciate this fact. Clinical hypoglycemia can be serious to fatal. In this approach there is great emphasis on clinical signs. Glycemic control is attained when clinical signs of diabetes have resolved, the cat is healthy and interactive in the home, its body weight is stable, the owner is satisfied with the progress of therapy, and, if possible, the blood glucose concentrations range between 100-300 mg/dl throughout the day. Initial Regulation (non-ketoacidosis). Initial Insulin Dose: If <400 mg/dl: Low carb diet only, Canned DM (Nestle Purina) is superior; If >400 mg/dl: 0.5 u/kg, BID, SC. Most cats: 2 U, BID. Send the cat home for treatment for 5-10 days (usually 1 week). First Recheck at 12 hours post-insulin. Goals: a) Resolution of clinical signs b) Glucose = 300-350 mg/dl.

Gary D. Norsworthy, DVM, DABVP (Feline)
West Vet Conf, 02:14

Furosemide as a vasodilator

Sure, it sounds good—not only does furosemide decrease pulmonary edema, it also increases the size of venous capacitance vessels and offloads the failing heart. What's not to love there? Well, conflicting data and an incomplete knowledge base, for one. While vasodilatory effects are fairly well documented in rats, they seem to

be variable at best in dogs, unknown in cats, and may be different in different tissue beds. Some of the immediate beneficial effect seen with furosemide in congestive heart failure patients may be due to vasodilation and diminished pulmonary vascular pressure, rather than any diuretic effect. The downside to furosemide has always been the tradeoff between alleviating states of volume overload and the decreased circulating volume that can happen with injudicious use, and if there is any vasodilating effect, this risk is magnified. Increased capacitance is a potentially good thing for a failing heart, but decreased coronary perfusion and a reduction in circulating volume can worsen ischemia and perfusion. The take-home here seems be that, while this may show some promise (especially in conditions like ARDS, the acute respiratory distress syndrome), more data is needed before furosemide's vasodilating properties can take top billing along with its diuretic effects.

Tony Johnson, DVM, DACVECC
N Amer Vet Conf, 01:15

Dealing with the alopecia pet

When staring at a pet with multifocal, inflammatory alopecia (or, really, any kind of alopecia), you have 3 immediate differentials, and therefore 3 things you can discuss and do in a typical appointment time: Demodex, dermatophyte, and pyoderma. So, do a scrape. If negative, (ideally) start a fungal culture and while waiting for results of this, start a course of antibiotics.

Trish Ashley, DVM, DACVD
West Vet Conf, 02:14

Heartworm preventive lapses

Macrocyclic lactones provide a safety net known as "***reach-back***" or "retroactive efficacy" when given continuously for at least 12 months. The length of the reach-back varies by product, with all products proven to be about 95% efficacious against nonresistant strains in the laboratory when given for at least 12 consecutive months after lapse. This protective benefit can be useful but should not be relied upon as part of routine heart-worm prevention. Another important compound is doxycycline, which can be administered as monotherapy at 10 mg/kg, BID, for 30 days to kill L3 and L4 larvae—it even kills immature adults that have escaped or will escape macrocyclic lactone prevention. If the lapse is one month or less, reinstate the preventive and conduct a heartworm test at the next scheduled visit, if the visit occurs more than seven months from the current date. In highly endemic areas, consider adding doxycycline therapy for one month. If a dog is receiving imidacloprid-moxidectin, a one-month lapse will likely not be problematic, provided the preventive had been given for at least 4 months continuously before the lapse. If the lapse is 2 months or longer, reinstitute the preventive immediately and consider adding doxycycline for one month. If the lapse is more than 7 months, perform an antigen test and consider adding doxycycline to the macrocyclic lactone therapy for one month. For such protracted lapses, imidacloprid-moxidectin has been shown to have superior reach-back efficacy with doxycycline when given continuously for 13 months post-lapse. In all instances, preventive therapy should be administered on a year-round basis, both for the animal's protection and to help ensure improved compliance in the future.

Clarke Atkins, DVM, DACVIM
DVM News Mag, May 2016

Removing a linear foreign body

Particularly challenging cases are those with very thin, thread-like linear foreign material. In these cases, a ***technique using a red rubber catheter*** can be particularly helpful to remove the entire length of foreign material through one enterotomy. In this technique, a red rubber catheter is tied to the foreign body in the stomach and then passed through the pylorus and milked aborad through the intestine. As the catheter is advanced, the foreign material releases from the wall of the intestine and folds onto itself until it is safe to remove through a single incision. A similar technique has been described in which the red rubber catheter, along with the foreign material, is milked all the way out of the anus to avoid enterotomy completely.

Sabrina L. Barry, DVM, DACVS
NAVC Clin Brf, Apr 2016

Lack of compliance in treating pyoderma

Compliance is a common problem in veterinary practice and is often overlooked or underestimated by practitioners. The 2003 AAHA Compliance Study indicated that the majority of veterinarians overestimate the rate at which their clients comply with diagnostic and therapeutic recommendations. For medications that are prescribed twice daily, this study indicated that only 30% of clients give them as prescribed – well under what most practitioners estimate. In addition, it has been shown that multiple doses per day increase the likelihood of pet owners missing or delaying a dose. Other studies have found similar lapses in compliance. For instance, only 22% of pet owners were compliant in administering antibiotic drugs at the optimal timing for either once daily or every 12 hour dosing. Many reasons have been identified for poor compliance. One important consideration for failure of pyoderma to respond to appropriate antibiotic therapy is lack of compliance. Generally, visible lesions of pyoderma resolve before the infection is fully cured. Because of this, and because clients often have difficulty or become weary of the rather long treatment protocols, they will often discontinue therapy on their own. This has a deleterious effect on the treatment outcome and may be a contributing factor to antibiotic resistance.

Laird Goodman, DVM, CVA
West Vet Conf, 02:14