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

"Pearls" of Veterinary Medicine

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AT A GLANCE

Lessen stress on hospitalized cats

As cats age, they tolerate less time in the clinic. Siamese cats are especially prone to becoming depressed. Three days may be as long as a cat can stand the anxieties and indignities of hospitalization, even with daily visits from the owner. Consider capping intravenous catheters and send patients home, having them return for outpatient care. Even for in-hospital care, capping catheters off overnight (administering the overnight dose via the subcutaneous route) allows greater ease of movement, avoids alarms, which keeps patients awake. In either case, administer the overnight fluid volume subcutaneously.

Margie Scherk, DVM, DABVP
21st Int VECC Symp

Parvo, early enteral nutrition

Early enteral nutrition instituted 12 hours after admission through a nasogastric tube in dogs with parvovirus infection can result in ***earlier clinical improvement*** and can potentially improve gut barrier function as compared with enteral nutrition instituted after vomiting has ceased for 12 hours (~50 hours after admission). Early enteral nutrition in critical patients is typically defined as nutrition provided less than 24-48 hours post-admission to patients unable to maintain voluntary intake.

Martha G. Cline, DVM, DACVN and Kara M. Burns, MS, MEd
NAVC Clin Brf, Jul 2017

Improving quality of life in the geriatric

To improve the emotional component in dogs, CNS stimulant drugs such as selegiline ("L-deprenyl" increases CNS dopamine, amphetamine and methamphetamine) and levothyroxine (T4 analogue) can help improve the dog's demeanor. Selegiline appears to improve a significant number of dogs with "geriatric" cognitive dysfunction (about 70% of dogs), similar to its effect in humans with Parkinson's disease. Levothyroxine can stimulate CNS activity, increase appetite and stamina ***improving pet-caregiver interaction***. The effect from these drugs may not occur for a few weeks and we have to educate the caregiver that we are not treating the problem but improving mentation as a palliative treatment "quality of life." On the contrary, the emotional component in some animals may improve with anxiolytic drugs. Trazodone and alprazolam are drugs with anxiolytic and anti-depressant properties. Whether this is the right or wrong approach, this author will leave it to each their personal opinion

Pedro Boscan DVM, MSc, PhD, DACVAA
AVMA Conf, Jul 2017

Concerns for middle ear toxicity

There is frequently a discussion of the ototoxicity of agents put into ears. Remember that it is inner ear damage, specifically vestibular and/or cochlear damage that occurs with ototoxic agents, not middle ear damage. In order for a drug to cause damage to the inner ear it must either get to the inner ear hematogenously or by traveling thru the middle ear and entering the inner ear thru the vestibular (oval) or cochlear (round) window(s). The opinion of this author is that the concern for ototoxicity due to topical medications is overstated. This position is supported by a consensus panel on reviewing the use of ototopical antibiotics. In their report, they stated "There have been very few irrefutable cases of ototoxicity reported (after proper use of a topical otic preparation)." They go on to state "For more than 40 years, the most common treatment has been aminoglycoside combination drops. A longstanding debate over the safety of these drops centers on ototoxicity. Even though the theoretical risk exists, there have been few reported cases in the literature, considering the millions of doses given." The author has only seen one ototoxic reaction that was suspected to be due to a topical agent and in that case the TM was intact! Therefore, ***agents are chosen more for their effectiveness*** than the con-

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cern about ototoxicity, especially since there are very few agents that have been proven to be safe in cases of a ruptured TM. It is more important to get rid of the infection than to avoid (effective) drugs because of ototoxicity concerns.

Paul B. Bloom, DVM, DACVD, DABVP
Mich Vet Conf, 01:16

Using cobalamin in chronic diarrhea

Always evaluate serum B12 (cobalamin) concentrations in cats and dogs with chronic enteropathies. It is likely that mucosal repair is impeded in the initial management of chronic bowel disease when B12 is deficient and its absorption impaired. Consideration should be given to B12 assays in the initial evaluation of dogs and cats with chronic intestinal disease and to parenteral administration during the initial management of these patients if low serum cobalamin is identified. Dogs and cats are typically supplemented with B12 at a dose of 250-1,500 µg per animal (depending on size of animal), subcutaneously, for 6 weeks on a weekly basis, with supplementation continued every 3 weeks for the indefinite future if retesting of B12 is still low. B12 deficiency has been associated with ongoing diarrhea despite appropriate dietary and steroid or antimicrobial therapy in animals with chronic enteropathy.

Stanley L. Marks, BVSc, PhD, DACVIM, DACVN
78th Co Conf for Vet, 2017

Intervertebral disk disease; surgery better

Three studies examined the effect of glucocorticoids on outcome. Two studies not included in this evaluation found no benefit to steroid use, and one found that steroids negatively impacted treatment. Overall, the authors found that ***surgically treated dogs returned to walking sooner*** and in greater percentages as compared with medically managed dogs, and dogs with no deep pain benefited most from surgery versus conservative treatment. More non-ambulatory dogs with IVDD walk after surgery versus medical management. Surgery appears to allow dogs with IVDD to walk sooner. Surgery leads to recovery in 61% of patients with no deep pain to pelvic limbs. In comparison, 90% of this category of patients treated medically never walk again. Glucocorticoids did not improve treatment outcome.

Jonathan Miller, DVM, MS, DACVS
NAVC Clin Brf, Aug 2017

Using doxycycline

The dose of doxycycline varies between 5-10 mg/kg, twice daily and minocycline at 10 mg/kg, twice daily. It is interesting to note that a recent study has shown there is synergy between doxycycline and carprofen. The results show that carprofen has the potential to restore susceptibility to doxycycline in doxycycline resistant staphylococcal strains carrying the *tetK* resistant gene. The only unfortunate aspect is the *tetK* gene is more common in Europe than the United States. Doxycycline can be used in patients with renal insufficiency but since increases in hepatic enzymes have been documented in some dogs after treatment, use with caution when significant liver dysfunction exisits. If using oral tablets, "pilling" should be followed by at least 6 mL of water or food and the animal should not be pilled dry. The oral doxycycline monohydrate may not have the same esophageal issues as the hyclate salt as it is much less acidic and slower to dissolve in neutral solutions. However, it is recommended that each dose be followed by a water or food regardless of the salt used and regardless of the species.

Allison Kirby, DVM, DACVD
4th Derm For, 10:16

Hyperthyroidism in cats, goal of therapy

The goal of medical therapy is to maintain total T4 concentrations within the middle of the reference interval. If the T4 is high normal, many of those cats remain clinically hyperthyroid; if the T4 drops into the low to low-normal range (<1.5 µg/dl; <20 nmol/L), many of those cats will develop mild, subclinical hypothyroidism. We want to avoid hypothyroidism, especially in cats that may have concurrent kidney disease. For long-term management (once euthyroidism has been achieved), the daily antithyroid drug dosage is adjusted to the lowest possible dose that effectively maintains euthyroidism. Once the dosage has stabilized, the cat should be monitored every 3-6 months and as needed clinically. Because antithyroid medications have no effect on the underlying lesion, the thyroid nodules continue to grow larger and larger over time. This may necessitate an increased daily dose with chronic medical treatment.

Mark E. Peterson, DVM, DACVIM
N Amer Vet Conf, 2017

Eclampsia

Prognosis after treatment is favorable, however relapses can occur. Offspring should be removed from the dam and raised as orphans to prevent a relapse. Drying up milk secretions using antiprolactinic drugs (e.g. cabergoline: 5 µg/kg, SID, PO, for 5 days) may be beneficial in treating eclampsia. Calcium carbonate (500 mg per 5 kg of bodyweight [1 Tums tablet = 500 mg]) is also recommended to prevent relapses. Bitches may suffer from a recurrence of eclampsia at the next whelping. Oral calcium carbonate supplementation (100 mg/kg body weight, per day) may prevent cases of eclampsia from occurring in subsequent litters.

Michelle A. Kutzler, DVM, PhD, DACT
AVMA Conf, 07:15

Ovulation Timing

Identifying the day of ovulation in the bitch is becoming increasingly important in small animal practice, not only for maximizing fertility but also for proper management of canine parturition, high-risk pregnancy management, and cycle manipulation with hormone therapy. The most practical way to identify canine ovulation is to perform vaginal cytology every 2-3 days starting from the onset of proestrus and then running progesterone assays

once vaginal epithelial cells reach >50% superficial cells. Serum progesterone is typically <1.0 ng/mL in early proestrus, around 2.0 (±0.5) ng/mL on the day of luteinizing hormone (LH) surge, and 4-10 ng/mL at the time of ovulation. Canine ovulation may take up to 2-3 days; oocytes then require an additional maturation period of 48-72 hours before fertilization is possible. Canine oocytes are viable for up to 170+ hours post-ovulation, but because of the time required for canine oocytes to mature, the optimal breeding time is 2-4 days post-onset of ovulation. Conception can occur, albeit with likely a small litter size, if the bitch is bred as early as 7 days before or as late as 5 days after ovulation.

Stefano Romagnoli, DVM, MS, PhD, DECAR
NAVC Clin Brf, 15:1

Using compounded ACTH

Sources of ACTH currently are the gold-standard Cortrosyn: (Amphastar Pharm, 0.25 mg vial), generic cosyntropin (often sold as a liquid 0.25 mg/ml) and compounded ACTH products. Cortrosyn is the best choice, its use eliminates any doubts in the test results that might involve a problem with the ACTH itself. It is however, quite expensive. One vial can be diluted into 5 ml of saline and then remove 1 ml each into 5 syringes (each 1 ml syringe contains approx. 50 micrograms of ACTH which is enough for a 25-pound dog); store the ACTH frozen for up to 6 months. Many of the author's clients use compounded ACTH. These products, while not ideal, are useful and provide accurate results. The author's lab studied the cortisol response to several compounded ACTH products in healthy dogs and found that the response to ACTH varied across products. While all were administered IM, some produced peak cortisol values at 1 hour while with others the peak occurred at 2 hours. Because of this timing difference in peak response, the author recommends collection of 2 post samples (1 and 2 hrs). In summary, compounded ACTH can be used for ACTH response testing.

Robert Kemppainen, DVM, PhD
N Amer Vet Conf, 2017

Nonarsenical adulticidal therapy

In this pilot study of 5 dogs positive for heartworm on antigen testing with or without microfilariae, the combination of topical moxidectin/imidacloprid with doxycycline provided an alternative to melarsomine therapy with potentially increased efficacy, decreased cost, and fewer side effects. All dogs in the pilot study were amicrofilaremic by day 90. Antigen clearance was seen as early as day 90 and in most cases by day 120. All dogs were antigen negative by day 210. A prospective study of 16 dogs has been initiated, and preliminary data suggest similar results.

M.K. Ames et al.
NAVC Clin Brf, 15:1

The dew claw and intermittent lameness

Simple, non-articular fractures of the first and second phalanx can heal well with simple tape support. The 'buddy tape' system is used, where the surrounding toes provide support. Other fractures should undergo surgical repair. Considerations should be made about the fragility of the patient's skin and the pain experienced on changing tape. Toe amputation should be a last resort for both fractures and dislocations, leaving the digital pad in place is of paramount importance in distal amputations in order to allow continued comfort at speed. The first digit consists of a first and third phalanx, there is a single sesamoid bone on the palmar aspect of the metacarpophalangeal joint. The dew claw does contact the ground surface at speed or during high impact landing and is intimately associated with the carpal joint. It should be examined closely for issues that may cause intermittent lameness.

Julia Tomlinson, BVSc, PhD, DACVS, CCRP, CVSMT
N Amer Vet Conf, 01:15

Characterizing ear exudates

In general, a presumptive diagnosis of the infection type can be made based on texture and color. Dark brown waxy or dry exudate; suggest yeast otitis in dogs or ear mite infestation in cats. In dogs, creamy, tan-colored moist exudates tend to suggest gram-positive (e.g., *Staphylococcus* spp) bacterial infections. Purulent liquid or mucoid exudates with a white, yellow, greenish, or black color may indicate a gram-negative (e.g., *Pseudomonas* spp) bacterial infection. Hemorrhagic exudates can indicate ulceration of the ear canal or ulceration of a tumor mass. ***Mucus should never be found in the external ear canal***; there are no goblet cells in the epithelium. Goblet cells abound in the lining of the middle ear, which is a mucous membrane. Excessive amounts of mucus can be found in the middle ear when it is inflamed and may move from the middle ear to the external ear canal through a hole in the eardrum.

Louis Norman Gotthelf, DVM
NAVC Clin Brf, 14:12

Using IV fluids judiciously

Intravenous fluids are sometimes used excessively in the anemic patient when the decrease in red blood cell mass is misinterpreted as total blood volume depletion, when in fact the plasma volume might even be expanded. To compensate for decreased tissue oxygen delivery, the heart rate increases, and if these patients are subjected to large fluid volumes over a short period of time, congestive heart failure and pulmonary edema can occur. Anemic cats in particular are susceptible to intravenous overload from crystalloid infusions. The dehydration deficit and maintenance fluid volumes should be gradually replaced over a 24-hour period with an isotonic crystalloid solution, while fresh whole blood is used to replace the red blood cells. The volume of whole blood infused should be considered when calculating the volume of crystalloid for infusion.

Michael Schaer, DVM
88th FL VMA Conf, 2017

Nitrofurantoin for resistant UTI

Multidrug-resistant UTIs appear to be increasingly common, necessitating the use of alternative antimicrobial approaches. Viable treatment options are typically available, even in cases of highly resistant bacteria. Nitrofurantoin is a useful drug for treating cystitis in some patients because it reaches high levels in urine and resistance is rare. It is not useful for infections that require adequate tissue drug levels (e.g., pyelonephritis) because it is rapidly eliminated from circulation. Although useful, nitrofurantoin is not a first-line drug for UTIs because of the potential for adverse events. It can, however, be considered as a second-line option for treating multidrug-resistant infections.

J. Scott, Weese, DVM, DVSc, DACVIM
NAVC Clin Brf, 14:12

The Wood's lamp

Wood's lamp examination is both time and cost effective, however false negatives and false positives are common. M canis is the only species that will fluoresce. It is unknown the percentage of M canis hairs that will fluoresce. The "less than 50% of infected hairs will produce a positive florescence" is borrowed from the human literature. However, Wood's lamp examination is useful as a screening tool for selection of hairs for microscopic exam and culture. (It can perhaps be used as the diagnostic tool in the known M canis colony of cats). ***Two common mistakes*** are made when using a Wood's lamp. False positive results happen because florescence may occur with epidermal scale, topical medications, carpet and clothing fibers. However, this fluorescence is more white to yellow and not granny smith apple green nor on the hair shafts. In addition, it may be helpful to lift the scale and find glowing hairs underneath. Battery operated Wood's lamps or black lights are not adequate. A medical grade diagnostic Wood's lamp is needed: ULV-21 or Burton Ultraviolet UV Wood's Exam Light are examples. Plug in lamps are ready to go and do not need a warm up period.

Sandra R. Merchant, DVM,DACVD
88th FL VMA Conf, 2017

Polycystic kidney disease in the cat

Polycystic kidney disease (PKD) is the most common single-gene feline disorder seen in practice. It is caused by an autosomal dominant gene for which a commercial genetic test exists (UC-Davis VGL). This defective gene is present in 38% of Persian cats (6% of cats worldwide), as well as in high frequencies in Himalayan and other Persian-derived breeds. PKD is also seen in random-bred longhair cats with presumed Persian ancestry. All affected cats are heterozygous for the defective gene, as homozygosity is prenatally lethal. Most affected cats develop kidney failure at an average age of 7 years (range, 4-10 years). Variable expression of this gene can be noted in cats that develop a few cysts but maintain normal renal function. There is no specific treatment aside from support for chronic kidney disease and failure. Prospective pet owners interested in kittens of susceptible breeds should ask for the PKD DNA test results on both parents and/or the kittens. Breeders who offer a breeding stock that is "PKD clear" on ultrasonography are using an ***outdated and unreliable diagnostic standard***. If valid PKD DNA test results are not available from the breeding stock, potential pet owners can collect a cheek swab from kittens for testing.

Jerold S. Bell, DVM
NAVC Clin Brf, 14:12

Importance of chest x-rays in the ER

One of the most common mistakes in the emergency room is not performing chest radiographs (a "met check") as part of routine geriatric diagnostics. Geriatric patients (defined as a dog >6-7 years of age [size-dependent] or a cat >12 years of age) with, for example, hepatosplenomegaly, icterus, hemoabdomen, immune-mediated disease, or fever of unknown origin should have chest radiographs done at the same time as abdominal radiographs. Typically, a three-view chest set is the method of choice; however, this may be difficult in emergency patients with dyspnea. That said, a right- and left-lateral chest radiograph is also an effective way to screen for metastasis. While a met check is often a "low-yield test" (i.e., the likelihood of identifying chest metastasis is relatively low), it is an important screening tool that can help veterinarians counsel pet owners on end-of-life decision-making and overall prognosis.

Justine Lee, DVM, DACVECC, DABT
3rd Gulf Atl Conf, 11:15

Treating ear mites

Parasiticidal drugs that are frequently used for Otodectes usually include many topical agents: pyrethrins (particularly for young puppies and kittens), ivermectin drops, thiabendazole and fipronil spray used as drops. Although treating just the ears topically is usually sufficient, it has been suggested that some failures may occur unless treatment is continued long term as mites may be found in areas other than the ears. Therefore, systemic therapies may be preferred unless there is contraindication such as very young kittens or puppies in which case topical therapy alone is utilized until they are old enough to utilize a systemic option. Selamectin (Revolution: Zoetis) and Imidacloprid and moxidectin (Advantage Multi: Bayer) are approved systemic therapies and preventative treatments. Another consideration is that asymptomatic carriers of Otodectes may be present and therefore it is best to treat all in-contact pets. The life cycle of Otodectes requires that otic and systemic treatment be continued for at least three weeks to a month.

Craig Griffin, DVM and Wayne Rosenkrantz, DVM
4th Vet Derm For10:16