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

"Pearls" of Veterinary Medicine

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AT A GLANCE

Fructosamine in cats

Until recently we did not know the kinetics of fructosamine in cats. A study infused cats with dextrose to achieve long-term hyperglycemia. This study showed that it takes about 5 days for fructosamine to increase when severe hyperglycemia was induced (522 mg/ dl) and about 20 days for maximal values to be reached. After the infusion was stopped, it took 6 days to return to baseline. In cats in which moderate hyperglycemia (310 mg/dl) was induced, the fructosamine concentration was often in the reference range, and values returned to baseline in two days. This suggests that in cats fructosamine gives an ***indication of glycemic control over the last week at most*** and only if marked hyperglycemia is present. An earlier study had looked at ways to monitor clinical glycemic control based on various laboratory and clinical test results. This study found fructosamine to only be somewhat indicative of glycemic control. The study found that urine glucose, water intake and mean blood glucose determined from a 24-hour blood glucose curve were the best predictors of glycemic control.

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

Injecting lidocaine and bupivacaine together

You are about to perform a local block with lidocaine and bupivacaine. Which drug do you draw up first in your syringe? It is important to draw up the lidocaine first. If you drew bupivacaine first you might inadvertently cause some bupivacaine to end up inside the lidocaine vial. Lidocaine is not only used for local blocks. It is also used to treat VPCs. Injecting bupivacaine IV is not ideal because it is a cardiotoxic drug.

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

Misconception on use of cerclage wire

Orthopedic wire is used to create static interfragmentary compression between bone segments. It should never be used as the sole method to repair long bone fractures - it is considered an ancillary or supplemental implant. Therefore, orthopedic wire should always be used in combination with IM pins, bone plates/screws, interlocking nail or external fixation. One misconception is that tightly placed cerclage wires can result in avascularity of cortical bone. To the contrary, studies have found this to be totally untrue, and demonstrated a loose cerclage wire results in disruption of the periosteal capillary network, resulting in devascularization of underlying cortical bone, which negatively affected bone healing. Therefore, it is essential that **all cerclage, hemicerclage, and interfragmentary wires are placed as tight as possible**, to prevent movement of both the bone and wire. Cerclage and hemicerclage wires are generally used as ancillary fixation in long oblique, spiral and certain comminuted fractures, to compress the primary bone segments together.

Robert M. Radasch, DVM, MS, DACVS
N Amer Vet Conf, Vol 29

Hemorrhage in the bird

Hemorrhage is theoretically addressed first if acute and copious. However, any bleeding severe enough to warrant intervention will have caused exsanguination within a few minutes. Therefore, ***birds seldom present with a bleeding emergency***. Pressure wraps, bandaging, application of styptic, etc., WILL raise the blood pressure, WILL increase bleeding, and WILL lead to increased stress and increased oxygen demand. LESS IS OFTEN MORE. Place the bird in a quiet, warm, dark incubator, provide food and water, *and leave it alone*. Very anxious birds may benefit from midazolam.

Teresa L. Lightfoot, DVM, DABVP-Avian
Music City Vet Conf, 02:14

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Robenacoxib for cats with CKD

Robenacoxib can be used very effectively for cats suffering from chronic osteoarthritis pain, but some veterinarians are hesitant to use it if the patient has concurrent kidney disease. However, a recent study found that robenacoxib was well-tolerated when given daily for one month to osteoarthritic cats, even if the animals showed evidence of chronic kidney disease. The concern is using nonsteroidals and making chronic kidney disease worse or progress more quickly. Many veterinarians will not use nonsteroidals in a cat with chronic kidney disease. Other veterinarians will, hopefully doing it cautiously, recognizing that you ***can use nonsteroidals long-term in cats with chronic kidney disease*** and that the chronic kidney disease does not necessarily get worse. The most important aspect is to carefully select the patient in which to use NSAIDs.

B. Duncan X. Lascelles, BVSc, PhD, DACVS
Vet Pract News, Aug 2016

Managing post-anesthetic delirium

To manage post-operative distress or delirium, nothing has been more useful in this author's practice than very low doses of Dexdomitor. Typically, an appropriate opioid analgesics given first, to ensure that clinical pain is not likely the problem, and then inject 0.5 to 1 microgram/kg, IV, and repeat if needed, along with continued observation and monitoring.

Ralph Harvey, DVM, MS, DACVAA
N Amer Vet Conf, 2016

Clickers as a positive reinforcement tool

Pets can be taught to expect food when hearing the 'click'. Then the click sound can be used to mark the instant the pet is performing a desired behavior or an approximation of it. Clicker training can be a valuable approach for fearful and anxious pets because they can choose to perform or not perform a behavior without interference, and can be rewarded from a distance without pressure from the trainer. Some of these dogs will be afraid of a standard clicker, but will do well with a ***quieter cick*** like the sound made by an i-Click http://store.clickertraining.com. A Clik Stick has a clicker imbedded into the handle of a telescoping wand for target training.

Margaret M. Duxbury, DVM, DACVB
124th SD VMA Conf

Vaccine myths

MYTH: MLV parenteral vaccines for cats can be used intranasally. **TRUTH:** Never. Mucosal (e.g. conjunctival/nasal) contact with these vaccines can cause disease. **MYTH:** Disinfectant should be used at the vaccine injection site. **TRUTH:** Disinfectants could inactivate a MLV product. **MYTH:** If an animal gets only the first dose of a two-dose vaccine, the series must start over again. **TRUTH:** As long as the second dose is given within six weeks, it should provide immunity. **MYTH:** Vaccinated animals will not be immunized for several weeks after vaccination. **TRUTH:** This is dependent on the animal, the vaccine and the disease. Fastest immunity is provided by canine distemper vaccines, within 24 hours; immunity to canine parvovirus and feline panleukopenia virus takes 3-5 days. **MYTH:** Dogs that fail to develop immunity to vaccines just need to be revaccinated. **TRUTH:** Some will respond, if capable to do so; others never will, as they are genetic vaccine "non-responders." This trait runs in certain breeds and families.

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

Treating localized demodicosis

How to treat a dog with demodicosis depends on whether it is localized or generalized. In cases of localized demodicosis, less is best. In many cases, especially juvenile onset, the disease will spontaneously resolve within a couple months. Miticidal therapy is not required unless the disease becomes generalized. Since the progression of localized disease to more generalized form is not influenced by whether the localized form is treated or not, treatment of localized disease is not necessary. However, in the author's practice ***"benign" topical treatment*** is prescribed. This is done so that if the disease does progress, the owner feels that something had been done to try to prevent this from occurring. Topical therapy with benzoyl peroxide shampoo and/or gel can theoretically be helpful due to its antibacterial properties and follicular flushing activity. Due to its suppressive effect on the immune system you should avoid using any steroid containing product (topically or systemically) in patients with demodicosis (localized or generalized). Ensuring a proper diet and intestinal deworming program should also be part of the treatment of dogs with demodicosis. To evaluate the effectiveness of treatment, a follow up examination, including repeating skin scrapings, should be performed in 30 days.

Paul Bloom, DVM, DACVD, DABVP
CVC Kansas City, 08:15

Sedating the poisoned patient

Sedation is often necessary when it comes to treating the veterinary poisoned patient. For patients demonstrating severe agitation secondary to toxicosis, anxiolytics or sedatives should be considered: • Acepromazine - 0.05–0.1 mg/kg (up to 0.5 mg/kg in stable patients), SC, IV, or IM, to effect PRN. • Butorphanol - 0.2–0.8 mg/kg, SC, IV, or IM to effect PRN. • Chlorpromazine - 0.2–0.5 mg/kg, IV, IM, or SC to effect, q6-8h. Likewise, sedation may be necessary if a patient requires gastric lavage. Ideally, this should be performed under general anesthesia, with a protected airway (e.g., inflated endotracheal tube). Sedation protocols should ideally be quick acting, reversal, and cardiovascular sparing. The author's preference for sedation for procedures such as gastric lavage in the critically ill poisoned patient includes the following: • Butorphanol - 0.2–0.8 mg/kg, IV. • Diazepam

- 0.25–0.5 mg/kg, IV. • Propofol - 1–2 mg/kg, slow IV to effect. The clinician should feel comfortable sedating the poisoned patient, either for severe agitation or for life-saving procedures. When in doubt, all drug dosages should be confirmed and cross-referenced with a reference guide such as Plumb's Veterinary Drug Handbook.

Justine A. Lee, DVM, DACVECC, DABT
N Amer Vet Conf, 2016

Crisis buster for atopy

Emergency dose - 0.11-0.22 mg/kg, IV (dexamethasone sodium phosphate [SP]) or SQ (dexamethasone, dexamethasone SP). Dexamethasone 2 mg/mL injectable is FDA approved for use in cats; dexamethasone SP 4 mg/mL is not. Oral dose (dogs, extralabel in cats) - 0.1-0.3 mg/kg, PO, once a day. Taper every 2-3 days before stopping. **Key Points**. Duration of relief is variable, ranging from 24-72 hours, depending on pruritus severity. Injections can be used to rapidly reduce pruritus, a method colloquially termed *crisis buster.* Oral administration can be used for short-term itch relief, especially when patient's itch is refractory to prednisone/prednisolone. Not ideal for long-term use because of its potency and longer duration of action (i.e., long biologic activity), which can be problematic regarding adverse effects.

Valerie A. Fadok, DVM, PhD, DACVD
Plumb's Ther Brf, 3:1

Sedating the cat for examination

It is the rare cat which has been socialized to being handled for examination in a veterinary hospital; this means that important procedures (physical exam, bloodwork, IV catheterization) may be significantly more difficult to accomplish and much more stressful for the cat. Yet, these procedures are critically important for safe anesthesia, so it is worthwhile to be patient and try to provide a calm atmosphere for the cat. When sedation is necessary, this author has found that acepromazine (0.025-0.05 mg/kg) with butorphanol (0.2-0.4 mg/kg) or butorphanol with midazolam (0.2 mg/kg) may be sufficient to relax the cat enough for these procedures. If not, it is generally safe to add ketamine (2-5 mg/kg) to provide additional sedation without unduly depressing the cat. Unfortunately, sedation is also associated with mortality, probably because it is necessary to allow examination; underlying disease may be missed.

Nora S. Matthew, DVM, DACVA
West Vet Conf, 03:15

Status epilepticus

A parenteral formulation of levetiracetam is available. Although its use in animals with status epilepticus or cluster seizures has been limited, it may prove useful in this role, based on reports in humans and preliminary experience in canine patients. Pharmacokinetic studies in dogs suggest that a dose of 20-60 mg/kg, IV results in blood concentrations within the range considered to be effective in humans (5-45 µg/ml) for greater than 8 hours. Levetiracetam is approximately 100% bioavailable after IM administration and results in similar blood levels, although peak concentrations are not reached until about 40 minutes after the drug is given.

Christopher L. Mariani, DVM, PhD, DACVIM
124th SD VMA Conf

Resuscitation of newborn puppies

Resuscitation consists of removing the placenta, clamping the umbilical cord, suctioning the airway and nose, rubbing vigorously, and pinching the skin along the spine. The neonate should be kept in a head-down position to allow gravity to assist in bringing respiratory fluids to the mouth. The old "puppy shaking" is no longer used, as it results in fluid from the stomach being brought forward and is not as effective as correct suctioning at removing respiratory fluid. Use of bulb syringes should be replaced by a more effective system—the ***DeLee mucus trap***. This human-source product is available for <$4.00 each, is disposable, and allows excellent gentle, safe suction of airway, nostrils, with no aspiration of contents by operator. These are available from any human medical or midwife supply distributor.

Joni L. Freshman, DVM, MS, DAVCIM, CVA
SW Vet Symp, 09:14

FHV-1

In kittens with acute life-threatening infection, use of alpha interferon at 10,000 U/kg, SQ, daily for up to 2 weeks can be beneficial. Acyclovir is an anti-herpesvirus drug for use in people but can be toxic to cats and so should not be used. Famciclovir is safer and more effective than acyclovir and is now being used for long-term therapy. One dose that has been used is 1/2 tablet of a generic 250 mg tablet (125 mg), PO, q8-12h. Depending on the size of the cat, this is about 30 mg/kg. If a cat with suspected FHV-1 infection is not responding and is on less than 40 mg/kg per dose, three times daily, the dose should be increased before assuming therapeutic failure. The drug is safe at up to 90 mg/kg, PO, q8h and so the dose should be increased if the initial response is suboptimal and FHV-1 is still suspected. Topical cidofovir (product for humans) can be used for the treatment of FHV-1 conjunctivitis twice daily and was effective in a controlled research project. The drug was easier to administer (twice daily) than idoxuridine or other anti-FHV-1 ocular therapies and does not cause as much irritation. This drug is available in some compounding pharmacies. However, it is now known that ***famciclovir is excreted in high levels in the tears for 4 hours*** after a dose and so topical treatment with anti-FHV-1 drugs may not be needed if famciclovir is prescribed.

Michael Lappin, DVM, PhD, DACVIM
AAFP Conf, 09:14

Antifungal shampoos for dogs and cat

Some topical products are supported by clinical evidence, to wit. Strong evidence supports twice-weekly

use of 2% miconazole + 2% chlorhexidine. Shampoo for both dogs and cats, including puppies and kittens. Once-or twice-daily application of 0.3% chlorhexidine + 0.5% climbazole and Tris-EDTA wipe has been shown to reduce *M pachydermatis* populations in naturally infected dogs - for dogs only. May also be effective in dogs with localized overgrowth of *M pachydermatis*.

William Oldenhoff, DVM, DACVD
NAVC Clin Brf, Aug 2016

New oncology guidelines

The guidelines include basic information on principles of medical therapy of cancer, radiation therapy, and surgical oncology. The document provides in-depth tables of information about the behavior, clinical evaluation, common treatments, and prognosis for the most common cancers of dogs and cats. The document also offers recommendations for discussing cancer with owners and overviews of newer cancer treatments such as targeted molecular therapies and metronomic chemotherapy. Other themes are safe handling of chemotherapeutic agents and supportive and palliative care for cancer patients. The key feature with potential to help the busy general practitioner are the tables of information on specific canine and feline cancers. These provide quick at-your-fingertips summaries of what is currently generally being done for each cancer type by specialists and what owners can expect to be offered if they decide to seek referral to a specialist. The guidelines are available at www.aaha.org/guidelines.

JAVMA, Sep 1, 2016

Recurring UTI

For animals with frequent infections, which cannot be cured, low dose antimicrobial administration at bedtime may be recommended after the urinary tract has been sterilized with standard dose antibiotic treatment. This allows the drug to be present in the bladder overnight, supplementing the animal's defense mechanisms. For recurrences due to *E. coli* infections, nitrofurantoin (4 mg/kg, PO, once at bedtime instead of q8h), trimethoprim-sulfa or enrofloxacin are recommended. It should be noted however, that long-term, sub-therapeutic antibiotic treatment could predispose the animal to a resistant UTI. While the literature references the use of antimicrobials for prophylactic and suppressive therapies for complicated *E. coli* UTIs, the Antimicrobial Guidelines Working Group of the International Society for Companion Animal Infectious Diseases does not recommend this practice as there is no evidence to support it.

Ashtri Bonaparte, DVM
So Ca VMA Pulse, Sep 2016

Pre-euthanasia sedation

Cats: Telazol (100 mg/ml) - 0.15ml/10 pounds, Atropine (0.54 mg/ml) – 0.5 ml, Acepromazine (10 mg/ml) – 0.5 ml. Combine in one syringe and administer SQ with a 22 or 25g needle in the scruff or rump. If you have a very aggressive cat, IM injection is also extremely effective. Dogs: Telazol - 0.1 ml/10 pounds, Xylazine (100 mg/ml) - 0.05 ml/10 pounds, Acepromazine and Atropine - 0.5 ml each for up to 25 pounds, 1 mL each for up to 60 pounds, 1.5 ml each for up to 90 pounds, and 2 ml each for over 90 pounds. This cocktail takes anywhere from 30 seconds (in a very debilitated animal) to 20 minutes. Most are asleep in 5-10 minutes. The owners love this time that they can pet and kiss their baby.

Cherie Buisson, DVM
Gulf Atl Vet Conf, 9:14

Problems with heartworm prophylaxis

With the enhanced efficacies of heartworm medications come some additional problems. Failure to administer these medications regularly or at appropriate doses can result in heartworm infections. However, these infections generally involve fewer numbers of worms -sometimes too few worms to detect. Fewer worms also mean an increased possibility of single-sex infections and failure of worms to produce detectable microfilaria. We also now know that the macrolide preventatives will, to varying degrees, reduce or eliminate circulating microfilaria from infected dogs. Consequently, detection of microfilaria no longer can be considered as reliable a confirmation of diagnosis as it once was. Although point-of-care heartworm antigen tests have become increasingly sensitive and rigorously specific, the lower worm burdens likely to occur in infected dogs seen by veterinarians can challenge the capabilities of these tests. Other phenomena such as fluctuating antigen levels and potentially conflicting antigen test results, antibody test results (for feline tests), and microfilaria test results can create diagnostic dilemmas for the veterinarian. In addition, it was recently discovered that concurrent infections in dogs with other parasites or presence of other diseases can affect the detection of heartworm antigen.

Byron, Blagburn, BS, MS, PhD
100th WI VMA Conf, 10:15

Hypovolemia in shock

Approximately 10% of the blood is found in the arteries, 20% in the capillaries, and 70% in the veins; therefore, in order to truly assess the volume status of the patient the venous volume must be assessed. Preload, or the amount of venous blood returning to the heart, is assessed most effectively by measuring central venous pressure. In the patient with no central catheter the jugular vein should be clipped and examined for distention when held off at the thoracic inlet. Hypovolemic patients will have flat jugular veins and poor filling.

Jennifer J. Devey, DVM, DACVECC
3rd Gulf-Atl Vet Conf