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THE CAPSULE REPORT® On Animals

Small Animal/Exotic Edition

Our 30th Year

Volume 30, Number 8 **November 2011**

Propofol for seizures

Propofol is a rapidly acting injectable anesthetic that is a centrally acting GABA agonist. It may be administered via slow IV injection at a dose of 1-6 mg/kg and has been shown to be effective for stopping seizure activity (cluster seizures and status epilepticus) in human and veterinary medicine. If the initial bolus dose is effective but seizures recur, a CRI at 0.1-0.6 mg/kg/min may be instituted. Apnea and cardiovascular depression are important side effects to consider, and it is the author's opinion that any animal receiving a propofol infusion should be intubated to protect the airway, and ventilation should be closely monitored to avoid the sequelae of hypoventilation. In addition, propofol has been associated with transient seizure activity on induction and discontinuation of infusion in people.

Daniel J. Fletcher, PhD, DVM, Dip ACVECC
13th VECCS Symp Procd

Delivery risk for FeLV vaccine

The Food and Drug Administration's Center for Veterinary Medicine is warning veterinarians and pet owners of a possible risk of femur fracture in kittens associated with use of the Vet Jet transdermal vaccination system. Bioject Inc. makes the Vet Jet device as the transdermal delivery system for Merial's Purevax vaccine for feline leukemia. The FDA is aware of three recent reports of femur fractures in kittens involving use of the Vet Jet device. In two of the cases, the user failed or might have failed to lock the nozzle into the device properly. The nozzle of the device subsequently dislodged at the time of vaccination, causing a fracture of the femur. Users need to lock the nozzle into the device securely.

JAVMA, Oct 15, 2011

Treating heartworm without Immiticide

The American Heartworm Society (AHS) has released an interim heartworm management plan to help veterinarians deal with heartworm cases in light of Immiticide being temporarily unavailable. With Immiticide unavailable, veterinarians will need to take steps to carefully manage their heartworm-positive patients. The goals of the interim plan endorsed by AHS include reducing potential pathology from the infection, maintaining the health of the heartworm-positive dog until it can be appropriately treated and preventing additional heartworm infection of the patient. The plan's goal is not to eliminate the infection, but to manage the patient until Immiticide is available. The AHS plan entails pretreatment of heartworm-positive dogs to prevent shock and careful administration of a macrocyclic lactone heartworm preventive, followed by clinical observation for a minimum of eight hours. Veterinarians should continue administration of a heart-worm preventive on the regular dosing schedule and administer doxycycline on a one-month-on/two-months-off schedule. Activity is to be restricted throughout the management period and medical treatment provided for symptomatic heart-worm infection to relieve signs of respiratory disease, with surgical options weighed for dogs exhibiting cardiovascular compromise. The plan is available at (www. heartworm-society.org).

Wallace Graham, DVM
Vet Pract News, Oct 2011

INSIDE THIS ISSUE

Stem cell use becoming more common

Many veterinarians in private practice have been using adult stem cells from fat, bone marrow, and other tissues as a promising treatment for orthopedic conditions and other health issues in horses, dogs, and the occasional cat. These stem cells can differentiate into many types of cells, including bone and cartilage cells. Probably the most common approach to the treatment is to collect fat or bone marrow from an animal, send the sample to a laboratory for processing, and then inject the stem cells into the animal. The cost to clients is in the $2,000-$3,000 range. The anecdotal evidence for stem cells as a therapy is compelling, but research is still under way to establish the efficacy of the treatment—and the mechanisms of action. Some private practitioners process stem cells in-house. Many practitioners send tissue samples to Vet-Stem Inc., university

laboratories, or other laboratories for processing. Recently, MediVet America introduced kits for practitioners to process stem cells in-house. About 4,000 veterinarians have completed the Vet-Stem credentialing course on stem cells as a therapy.

JAVMA, 238:4

Age to administer last dose of vaccine

When should the last dose of vaccine, in the initial series, be given? For both the dog and cat, *all* Guidelines (AAHA, AAFP, and WSAVA) recommend 14-16 weeks of age. The rationale behind these recommendations is to ensure that interfering levels of maternal antibody are either not present or only minimally present (and not interfering) at the time the last dose in the initial vaccine series is administered. Several manufacturers do list earlier completion times (e.g., 12 and 13 weeks in the US; 10 weeks in the UK and Europe). Such practice is not recommended.

Richard B. Ford, DVM, MS, Dip ACVIM
PVMA Winter Sem Procd, 02:11

Cobalamin and EPI

Coatings of enteric-coated preparations can lead to unpredictable dissolution and may lead to treatment failure. Some pancreatic enzyme supplements do not contain sufficient amounts of lipase. For comparison, products should contain approximately 70,000 U.S. Pharmacopeia units of lipase activity per teaspoon of product. Concurrent cobalamin deficiency has been associated with a poor outcome and must be treated. Pure cyanocobalamin should be used. The dose is 250-1200 µg per injection,depending on the size of the dog. Initially give once a week for 6 weeks, then 1 more dose 30 days later; serum cobalamin concentration is rechecked 30 days after that. Some dogs need only short-term cobalamin supplementation; others require lifelong supplementation.

Joseph C. Parambeth, BVSc & AH and Jörg M. Steiner, MedVet
NAVC Clin Brf, 9:5

Anesthetizing the diabetic

The stress associated with anesthesia produces endocrine changes that can be particularly challenging for patients with preexisting endocrine disease. Several key points for anesthetizing patients with diabetes mellitus include: (1) insulin should be administered at 1/2 the dose the day of anesthesia; (2) blood glucose concentrations should be evaluated hourly during anesthesia and recovery, and; (3) patients should only be fasted for 4-6 hours presurgically.

T. Grubb
ACVS Vet Symp (NAVC Clin Brf, 9:1)

Multi-drug resistant staphylococci

Multi-drug resistant staphylococci may pose significant management challenges when, based on culture and sensitivity data, resistance is seen to essentially all oral antibiotics or when appropriate oral antibiotics are not well tolerated. Topical germicidal treatments that may prove beneficial include every-other-day bathing with shampoos containing 3%-4% chlorhexidine, ethyl lactate, or benzoyl peroxide (listed in the author's decreasing order of preference). "Between bathing," topical application (once or twice daily) of germicidal acetic acid/boric acid wipes or chlorhexidine sprays or "residual" chlorhexidine conditioners can be effective. More focal lesions may be treated with mupirocin. Based on culture results, significant benefit may be achieved with a 10 mg/kg amikacin solution (injectable product diluted in saline), which is used on a BID basis. Amikacin is not absorbed in significant amounts from healthy skin. However, when using this drug topically with more open lesional areas, a typical systemic dose should not be exceeded. This is generally 15 mg/kg/day. With this product, as with the treatment of any pyoderma, it is important that the pyoderma be treated in to complete remission and a few days beyond. For more information for the client, go to: http://www.wormsandgermsblog.com/uploads/file/M2%20MRSA%20-%20Owner.pdf.

Rod A.W. Rosychuk DVM, DACVIM
71st Co St U CVM Vet Conf Procd

Antihistamines for atopy

If convincing clinical trial data are unavailable, veterinarians who want to use type 1 antihistamines to treat atopy should use those that have shown demonstrable inhibitory effects after intradermal histamine injections in dogs. At this time only hydroxyzine (2 mg/kg, BID) and cetirizine (0.5-1 mg/kg, once a day) have demonstrated these effects. It really doesn't matter which of these two antihistamines you use since hydroxyzine is rapidly converted to cetirizine. The guidelines also advise that antihistamines be used preventively every day to keep H1 receptors inactive so histamine is not released during immediate allergic reactions. So cetirizine may be effective in some dogs with atopic dermatitis, but it is not one of the antihistamines that this author prescribes. No advantage is seen with this antihistamine over the traditional ones (diphenhydramine, hydroxyzine, chlorpheniramine). Because many different antihistamines are available and none is more effective than another, it is suggested you choose an antihistamine based on ease of administration (pill vs. capsule, twice vs. three times a day), cost, and side effects. If after 14 days the dog shows no improvement, prescribe another antihistamine until each of the antihistamines has been tried for 14 days or an effective one has been found.

Paul Bloom, DVM, Dip ACVD
Vet Med, 105:10

Buspirone for anxiety

One medication used in the treatment of anxiety in dogs and cats is buspirone, which belongs to a class of drugs called azapirones. Buspirone is a partial serotonin agonist, so its effects and uses are similar to those of SSRIs and TCAs. Due to its very few side effects, buspirone is a good choice for older patients and those with other medical conditions. Buspirone can be used in combination with benzodiazepines as well as with SSRIs and TCAs because it seems to have a synergistic effect. However, buspirone should be used cautiously with MAOIs. The typical dose for dogs is 0.5-2 mg/kg, q8-24h; for cats, the typical dose is 2.5-7.5 mg, q12h or 0.5-1 mg/kg, q12h. If you're using buspirone in combination with an SSRI or TCA, use a lower dose of each than you typically would. Note, if a dog is too anxious during a training session, it will have difficulty processing the information it needs to learn. Therefore, most of the medications used in behavioral cases help decrease pets' overall level of anxiety and reactivity so they can learn new things and change their behaviors.

Terry Curtis, DVM, MS, Dip ACVB
NAVC Clin Brf, 8:8

Treatment of idiopathic interstitial cystitis

These authors treat the distress and pain associated with acute flares of idiopathic cystitis with acepromazine and buprenorphine. The injectable form of acepromazine may be given orally (2.5 mg BID-TID) although some cats will exhibit hypersalivation. In these cats, the oral form may be used—1/4 of a 10-mg tablet in a Greenies Pill Pocket (Nutro Products) or made up as a suspension and administered with an oral syringe. The injectable form of buprenorphine is given orally at 5-20 µg/kg, 2-4 times a day for 3-5 days—buprenorphine is absorbed across the buccal mucosa. The authors also recommend enriching the environment of indoor cats, because captivity and housing with people and other cats or other environmental challenges may elicit stress responses in some cats. Although extensive indoor housing in an unenriched environment doesn't cause idiopathic cystitis, it may contribute to its development and ongoing occurrence. The authors have found that about 80% of cats with recurrent idiopathic cystitis respond to successful implementation of environmental modification.

Dennis Chew, DVM and C.A. Tony Buffington, DVM
Vet Med, 104:12

Tick bites and allergy

Recently, tick feeding has been shown to be associated with allergic responses of humans to red meat. Although this connection has not yet been demonstrated, in the future tick feeding may be found to be associated with allergic diseases in dogs. Although we are just beginning to define this connection, it is another indicator of why it is important to prevent ticks from feeding on pets as well as their owners.

Dwight Bowman, MS, PhD
NAVC Clin Brf, May 2011

Mandibular fractures

Myth–When planning treatment for maxillary or mandibular fractures resulting from trauma, teeth in the fracture line should always be extracted at the time of stabilization of the fracture. Reality–It is common for an alveolus to be involved in a fracture line. The tooth involved may be luxated and loose. In those situations, it is preferable to remove the tooth. When there is still sufficient healthy periodontal attachment (as evidenced by the fact that the tooth is immobile), it is usually an indication to leave the tooth in place because it will contribute to stability of the fracture fixation. Leaving a tooth in the fracture line increases morbidity and, in particular, infectious complications, but the immediate removal of the tooth involved cannot reverse those effects. When the apex of a tooth is involved in the fracture, the tooth will probably be devitalized, especially when located rostral to the fracture line. When a tooth involved in the fracture line is retained, it should be carefully monitored for subsequent evidence of periodontal or endodontal lesions and appropriate treatment should be instituted as soon as those conditions are recognized. In some animals, the tooth involved in a fracture line will be fractured. Again, an attending veterinarian has the discretion of whether to retain the tooth or remove it. However, deep crown-root fractures, root fractures, and comminuted fractures are indications for extraction.

Sharon L. Hoffman, DVM, Dip AVDC
JAVMA, 231:12

Goiter in the bird

Lack of dietary iodine is the most common cause of respiratory distress, regurgitation, and voice change in the budgerigar. Thyroid hyperplasia causes mechanical obstruction of the trachea, syrinx, and thoracic esophagus. Although goiter is believed to be independent of functional hypothyroidism, some birds are obese. Affected birds are usually on an all-seed diet (especially seed from iodine-deficient soils from the Midwest). Ingestion of goitrogens (*Brassica* and *Cruciferae spp.* plants and soybeans) may contribute. Treat clinically ill birds with an injection of iodinated contrast agent; relief is fairly rapid (usually within 24-72 hours). Iodine may be then added to the water when birds are stable and diet should be ultimately improved. For injection, use Renografin-60, 292 mg/ml and dose at 122 mg/kg, IM, q24h x 3d. When adding to water, use Lugol's Iodine, 0.2 ml stock iodine/L water.

Laura Wade, DVM, Dip ABVP
28th Avian Mid-Atl Conf Procd

Osteoarthritis and fish oil

This study suggested that fish oil omega-3 fatty acid supplementation in the food reduced the requirement for nonsteroidal antiinflammatory drug therapy in a population of dogs with osteoarthritis. Small animal clinicians should consider the inclusion of fatty acid supplementation in the therapeutic arsenal for osteoarthritis management. In addition, these results provide clinical support for the use of therapeutic joint-protective canine diets in patients with predisposition to arthritis or other inflammatory joint disorders.

Indu Mani, DVM, DSc
NAVC Clin Brf, 8:6

Blood glucose and insulin dose

Ideally, blood glucose concentrations should stay within the normal range, but this rarely occurs. As veterinary patients do not suffer from the retinal, renal, and vascular complications seen in people, blood glucose concentrations do not need to be as rigidly controlled. However, even mild persistent hyperglycemia can cause cataracts (in dogs) and peripheral neuropathy (in cats). Hypoglycemia should be avoided, and prolonged or extreme hyperglycemia is undesirable. As a general rule, if the lowest blood glucose concentration recorded in the clinic is <70 mg/dl, the insulin dose should be reduced by 25%. If the glucose concentration is >250 mg/dl on two or more readings, a 10% increase in insulin is appropriate. It is important to remember that acute and severe hypoglycemia can trigger rebound hyperglycemia (the Somogyi effect), so never use a single high glucose measurement as an indication to increase the insulin dose.

Audrey K. Cook, BVM&S, MRCVS, Dip ACVIM
Vet Med, 102:9

Topical therapy for skin disease

Topical therapy has historically been viewed as merely adjunctive to the use of systemic antibiotics in cases of pyoderma. The emergence and rapid spread of antibiotic resistance are forcing practitioners to reconsider this strategy, however, and to use topical therapies more frequently as the first course. Ingredients commonly used with good results are chlorhexidine and benzoyl peroxide. Consider benzoyl peroxide when follicular flushing activity is needed and when the patient has a lot of scaling and crusts. Chlorhexidine is used frequently in cases of mixed infections and commonly combined with an antifungal or azole agent. It is important to remember that human products containing benzoyl peroxide are typically too harsh for dogs; 2.5% active ingredient is typical in veterinary shampoo products compared with 10% in human topical products. Ethyl lactate can be used to achieve a milder, less degreasing effect than chlorhexidine and benzoyl peroxide while preserving antibacterial and follicular flushing action. Good cosmetic effect is often obtained when chlorhexidine is combined with phytosphingosine, which has moisturizing properties.

Rosanna Marsella, DVM, Dip ACVD
NAVC Clin Brf, Jun 2011

Recurring urinary tract infections

Prophylactic antimicrobial therapy may be indicated in animals with relapses or frequent reinfections. The antimicrobial agent should be selected based on urine bacterial culture and susceptibility testing. The agent is administered at 1/3 to 1/2 of the daily therapeutic dose, and is usually administered once a day at night. Urine should be re-cultured every 4-6 weeks to ensure control of the bacterial UTI. Experience has shown that if an animal does not have a "break-through" infection during a 6-month period, then antimicrobial therapy may be successfully discontinued. Disadvantages of this approach include development of resistant bacteria and side effects of the antimicrobial agent. An alternative to prophylactic antimicrobial therapy in dogs is administration of methenamine. Methenamine is a urinary tract antiseptic that is effective when the urine pH is <6.0. It is used for prophylaxis and requires a sterile urine culture prior to use. Because it requires an acidic urine, it is contraindicated in dogs with metabolic diseases associated with metabolic acidosis (e.g. chronic renal failure and diabetic ketoacidosis); cats do not tolerate methenamine as well as dogs. In addition, methenamine will not be effective with bacterial UTI that involve urease-producing microbes that are associated with alkaluria

Joe Bartges, DVM, PhD, Dip ACVIM
WA St VMA Conf Procd 10:10

Emergency anesthesia induction

1) Diazepam (0.5 mg/kg, IV) and ketamine (5-10 mg/kg, IV): Titrate slowly to effect. Do not use if history of heart disease, auscultable heart murmur, or arrhythmia. This combination is OK for stable and obtunded patients; not recommended for non-stable patients. 2) Ketamine diazepam titration (1:1 mixture) at 0.02 ml increments. Considered very safe for cats with cardiac abnormalities. Recommended for stable patients but not obtunded or non-stable patients. 3) Propofol at 2-4 mg/kg, IV. Doses administered at 25% of calculated dose every 30 seconds to effect. Recommended for stable and obtunded patients, but not non-stable patients.

Catherine Sabino, DVM et al.
NAVC Clin Brf, 8:9

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