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Consensus statement on leptospirosis treatment

While the ideal treatment of canine leptospirosis is unknown, the consensus panel recommends treatment with doxycycline (5 mg/kg, IV or orally, every 12 hours, for 2 weeks). If doxycycline is not available or not tolerated by the patient, ampicillin (20 mg/kg, IV, every 6 hours) should be given. This dose should be reduced for azotemic dogs. Once the patient is able to take oral medications again, doxycycline should be administered for 2 weeks to clear the organisms from the renal tubules. The prognosis for dogs that are treated appropriately and aggressively and that do not have complicating respiratory involvement is good. Renal parameters would be expected to return to normal by 2 weeks, although it may take more than 4 weeks in some cases. In some dogs, permanent kidney damage may occur. Once a patient is discharged from the hospital, follow-up examinations will vary depending on the severity of illness. The panel recommends, at minimum, a follow-up visit one week after discharge to perform a serum chemistry profile and urinalysis and, if indicated, a complete blood count.

Jennifer L. Garcia, DVM, Dip ACVIM
Vet Med, Apr 2011

INSIDE THIS ISSUE

Topicals and ototoxicity

There is frequently discussion of the ototoxicity of agents put into ears. This author has only once seen what was believed to be ototoxicity to a topical agent and in that case the tympanic membrane was intact! Therefore, the agents are chosen more for their effectiveness than the concern 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. Also, just because the tympanic membrane is intact does not mean that the barrier function is complete; therefore, even in the presence of an intact tympanic membrane it is possible to get drugs into the middle ear.

Paul B. Bloom, DVM, Dip ACVD
N Amer Vet Conf Procd, Vol 21

Treating Lyme-positive non-clinical dogs

Although an approach that is not definitively proven, some veterinarians attempt to treat dogs that may be more likely to benefit from therapy. This assessment can be based on the following: 1) Lyme-positive dogs should be tested for proteinuria with a dipstick. A positive result should be confirmed with urinalysis and, ideally, a protein-creatinine ratio. Such dogs should thus be considered "clinical" and treated appropriately. 2) In a dog without proteinuria, a quantitative C6 titer can be used to aid in treatment decisions. In the author's opinion, if the titer exceeds 30, it seems reasonable to treat the dog, although some would argue that it is also reasonable not to treat. The titer will most likely decrease after treatment and probably reflects a similar decrease in circulating immune complexes. This approach has not been proven to be beneficial but appears reasonable on the basis of the partial knowledge currently available

Richard E. Goldstein, DVM
NAVC Clin Brf, 8:5

Status epilepticus, management

Venous access is established and diazepam given at a dosage of 0.5 mg/kg, IV. Midazolam can also be used at a dosage of 0.22 mg/kg, IV. If a seizing patient makes venous access difficult, diazepam is administered at the same dosage either rectally or directly into the nares. Rectal administration can be achieved directly with a syringe, or by inserting a red rubber catheter. If using a red rubber catheter, 5 cc of saline flush should follow to ensure proper dose delivery. For intranasal, the patient's head is elevated and the diazepam is administered drop by drop into the nares, or with an atomizer. Midazolam can also be given nasally as well as intramuscularly.

Stacy Dillard, DVM
So Cal VMA Pulse, May 2011

Inhaled corticosteroid resource

It is important that veterinary practitioners become familiar with inhaled corticosteroid (IC) drugs so they can readily discuss the pros and cons of their use with clients. The veterinary team should be able to refer clients to

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helpful resources concerning IC drug use in pets (particularly cats). One of the best online resource for cat owners is "Feline Asthma with Fritz the Brave!" (fritzthebrave.com), which provides guidelines for the management of cats with lower airway disease.

NAVC Clin Brf, Aug 2011

Treating corneal ulcers

There are multiple steps in the treatment of a corneal ulcers. The first step is to determine the etiology, and remove or eliminate the specific cause. Broad-spectrum antibiotics are usually administered. Prevention of collagen breakdown and ulcer progression are also important steps. Collagenases and proteases are derived from leukocytes in the tears and can be powerful in the destruction of corneal stroma. There are several drugs that can be used to help inhibit protease activity: Serum contains an alpha-2 macroglobulin with anticollagenase activity. Blood is drawn from the patient or an animal of the same species, spun down, and serum drawn off and stored in the refrigerator in a dropper bottle or serum tube for up to 14 days. It should not be stored at room temperature, but the dose about to be given can be warmed to room temp immediately before administration. Serum is non-toxic, and should be used as many times a day as possible. EDTA (0.17%) can be given several times a day as well.

Dennis E. Brooks, DVM, PhD, Dip ACVO
96th KY VMA Conf Procd

Interpreting fructosamine

Evaluating blood fructosamine levels is one of the parameters that is useful to regulate a pet with diabetes mellitus. It is helpful because it measures the duration and extent of the hyperglycemia and the half-life of the serum proteins. A possible pitfall with serum fructosamine testing is that even within a "well regulated range" a patient could be hyperglycemic for half of the treatment period and hypoglycemic during the other half. It is important to look at the patient's history for clues to such dysregulation. Comparisons of serum fructosamine to blood glucose (BG) concentrations can be used as a guideline. The samples should be taken simultaneously at midday. Fructosamine in µmol/L <400 and BG in mg/dl <180 signifies excellent control. Fructosamine >400 and BG <180–poor owner compliance. Fructosamine <400 and BG <60–over-regulation. Fructosamine <400 and BG >180–stress-induced hyperglycemia. Fructosamine >400 and BG >180–poor control.

M. Schaer
NAVC Clin Brf, 6:1

Proper otoscopic examination

The otoscopic examination is easier when the anatomy is understood. The otoscope is rested in the intertragic notch (fissure) which can then be used as a fulcrum as the otoscope is advanced. This placement seems to calm the animal about the movement of the scope down the ear canal. The canal should always be visualized as the scope is passed down the canal. The clinician will hold onto the pinna to facilitate restraint and to manipulate the ear canal during the examination. As the scope reaches the ventralmost aspect of the vertical canal, the pinna is gently pulled laterally (outwardly) and down to straighten out the external ear canal. There is a ridge of cartilage located at the junction of the vertical and horizontal canals, which is often traumatized during examination. Any pressure on this ridge seems to cause discomfort to the animal and will disrupt the examination, so it is very important to pass this area carefully. To do so, the otoscope cone should be passed along the canal as ventral as possible, and then the cone can actually be used to "lift" up the ridge of cartilage. The horizontal canal will be visible and the scope can then be slid into that area.

James O. Noxon, DVM, Dip ACVIM
120th SD VMA Conf Procd

Guidelines for treatment of urinary tract disease

Antimicrobial Use Guidelines for Treatment of Urinary Tract Disease in Dogs and Cats are now available in the journal Veterinary Medicine International. Urinary tract disease is commonly encountered in dogs and cats and accounts for significant use (and presumably also overuse and misuse) of antimicrobials, according to the introduction to the document, which comes from the Antimicrobial Guidelines Working Group of the International Society for Companion Animal Infectious Diseases. The guidelines start by covering single, uncomplicated urinary tract infections and complicated urinary tract infections. Subsequent sections cover subclinical bacteriuria, urinary catheters, and animals with a urinary catheter and signs of a UTI. Additional sections cover upper urinary tract infections and multidrug-resistant infections. The document is available at www.hindawi.com/journals/vmi/contents.

JAVMA, Aug 15, 2011

Myringotomy

If the tympanic membrane is intact but discolored and bulging, it should be incised to obtain samples for culture and susceptibility testing, cytology, and provide drainage from the middle ear cavity. Myringotomy also relieves pain and pressure as well as providing an avenue for lavage and instillation of medication. The procedure most commonly used in veterinary medicine is a simple paracentesis. After thoroughly cleansing the external ear canal, a clean otoscope is introduced and the tympanic membrane visualized. A blunt probe is directed through the otoscope cone to perforate the tympanic membrane caudal to the malleus. The probe is removed and a 20-gauge spinal needle of adequate length is passed through the perforated membrane. A syringe is attached to the spinal needle and fluid or material from the middle ear cavity is aspirated for cytology and culture

and susceptibility testing. If the fluid is too thick or inspissated to be aspirated, flushing may be required. A metal tipped suction cannula is inserted through the tympanic membrane next to the spinal needle. A 20 cc syringe is attached to the spinal needle. Body temperature sterile saline solution is gently flushed into the tympanic cavity and suctioned. Flushing and aspiration are performed until the exudate is completely removed and the saline is clear. Long-term (3-6 weeks) systemic antibiotic therapy is instituted based on results of culture and susceptibility testing. Patients that have concurrent otitis externa should also be treated with local antibiotic preparations. If owners are persistent with post lavage therapy this technique has proven successful in 40%-50% of cases.

Howard B. Seim III, DVM, Dip ACVS
96th KY VMA Conf Procd

FHV-1, treatment with Famvir

In this study, it was found that famciclovir (Famvir:Novartis) administration improved outcomes for systemic, ophthalmic, clinicopathologic, virologic, and histologic variables in cats experimentally infected with FHV-1. Adjunctive topical mucinomimetic and antimicrobial treatments may also be necessary. The dosage of famciclovir was 90 mg/kg, for 21 days.

Sara H. Thomasy, DVM, PhD et al.
Am J Vet Res, 72:1

Treatment of feline arthritis

Complementary (adjunctive) therapies continue to gain favor among the veterinary community and the pet owning public in managing arthritis. The value of acupuncture and chiropractic in management of feline osteoarthritis is growing. Milk from hyperimmunized cows contains a number of biological active substances including irnmunoglobulins, cytokines, enzymes, hormones, and growth factors. These compounds impart non-specific antiinflammatory properties. The exact mechanism has not been well established. There are anecdotal reports of clinical improvement in dogs and cats on daily Duralactin supplementation (duralactin.com). The concept of multi-modal management of feline arthritis increases the chance of long-term success with a progressive disease process plus minimizes possible adverse reactions.

William Fortney, DVM
SW Vet Sym Procd, 09:09

Canine influenza

Most sick dogs will have a mild form of the disease, the predominant sign being cough. Up to 10% will have a more severe form of illness, characterized by bronchopneumonia that may become complicated by secondary bacterial infection. Definitive diagnosis of CIV requires detection of virus in acutely ill dogs using ELISA for antigen, RT-PCR for nucleic acid, or virus isolation. Dogs with clinical signs of <4 days duration can be tested using point-of-care ELISA kits. Paired acute and convalescent antibody titers showing a 4-fold increase or more are necessary to diagnosis recent active infection. Positive titers will be seen in vaccinated dogs. Treatment consists primarily of supportive care and, if secondary bacterial infection is present, appropriate antibiotics. Empirical choices should include broad spectrum bactericidal antibiotics with 4-quadrant coverage. Antitussives are not very effective for CIV-induced cough and should not be used when a productive cough is present. Use of Tamiflu is not recommended. Disease is best prevented through vaccination. This may not prevent CIV infection, but has been shown to reduce severity and duration of signs. The important points to remember are that this disease has not yet been shown to cross species lines (i.e., humans have not caught dog flu); the disease has a high morbidity but low mortality; and human antiflu drugs are not approved for use in dogs and are not recommended.

C. Crawford et al.
NAVC Clin Brf, 8:4

Feline URI, treatment

Antiinflammatories have a role to play. By reducing swelling of the airways, breathing improves and less secretion is produced. The patient will be more comfortable. Glucocorticoids may help by retarding leukocyte function and migration, block phospholipase A, decrease release of lytic enzymes, and suppress delayed hypersensitivity reactions. This makes them candidates for use in lymphoplasmacytic rhinitis, the most common form of chronic rhinitis. Because the condition itself is not life-threatening, glucocorticoids should be used intermittently rather than continuously long-term. The author uses prednisolone daily for a week, and reduces to q48h over the next week. The concern with the use of glucocorticoids is the possibility that they might result in recrudescence of the virus or virus shedding. NSAIDs are alternate options. Meloxicam (1-2 drops from the bottle of the oral Metacam suspension, PO, q48h) may help. Leukotriene blockers may also be considered to reduce inflammatory cell infiltration. Singulair: 0.25mg-0.5 mg/kg, q24h (= 1/8th of a 10 mg tab); Accolate: 0.5 mg-1 mg/kg, q12-24h.

Margie Scherk, DVM, Dip ABVP
VA VMA Conf Procd, 02:07

Administering acidic otic products

The use of topical otic antibiotics immediately following an acidic ear treatment usually is not advised. Waiting 4-6 hours after an acidic ear cleanser treatment before administering antibiotic ear drops may help the antibiotic have a more potent effect. The use of otic antifungals in an acidic medium actually enhances the antifungal effect. For topical ketoconazole, decreased pH enhances binding to the corneocytes, resulting in more prolonged antifungal activity.

Louis N. Gotthelf, DVM
NAVC Clin Brf, Apr 2011

Brucellosis in a kennel

Following confirmation of brucellosis in a kennel, several steps need to be implemented to eradicate the disease. These include euthanizing infected dogs, quarantining other dogs in the kennel, testing all other dogs in the kennel (especially those that had direct contact with infected dogs), and implementing procedures to prevent future outbreaks. *Brucella canis* is a gram-negative intracellular organism. Therefore, it is difficult to eliminate by administration of antimicrobials. Also, the bacteria can be shed in large numbers in milk, as well as in post-abortion discharges for up to 6 weeks after abortion, which provides a continual source of infective material for other dogs. Because the bacteria are rarely eliminated from an infected dog, euthanasia of infected animals is recommended in a kennel situation. In addition, *B canis* is a zoonotic disease. Thus, it is recommended that these dogs not be sold or placed in homes as pets. It is imperative that the kennel be quarantined during an outbreak of brucellosis. No dogs should enter or leave the premises until the disease is eradicated. In addition, to prevent additional exposure, dogs should not be moved within the kennel. The kennel can be cleaned with quaternary ammonium compounds or iodophors, and personnel should take care to ensure removal of all organic material.

Mylissa S.D. Marley, DVM and Patricia E. Rynders, DVM
JAVMA, 231:6

Tips for secure staple closure

Use your judgment as to which size is best based on the wound size, location, and type. For example, use wide staples on wounds on the trunk and regular staples for placing a skin graft on a distal limb. Place a subcuticular or intradermal suture to appose or nearly appose wound edges to help avoid skin tension on the staples. Apply the staples perpendicular to the wound edges and not at an angle. Place equal portions of the staple on each side of the wound. Center the indicator at the dispensing port of the stapler over the wound before applying the staple. Use thumb forceps to apply some tension to the long axis of the wound when applying the staple. Apply moderate pressure on the applicator to help ensure the staple penetrates the skin properly. Too much pressure could result in excessive skin inclusion and pressure injury of the enclosed skin, while insufficient pressure may lead to inadequate skin inclusion and the possibility of the staple coming out. One disadvantage of staples is that they can turn within the skin, resulting in orientation of the staple points over the closed wound. Although the staples hold the wound together, they are difficult to remove with staple removers. They must be manipulated with a hemostat back into proper position (points down) so a staple remover can be applied.

R. Wayne Randolph, VMD, Dip ABVP
Vet Med, 105:10

Estimating blood loss in small mammals

Blood loss during surgical procedures must be evaluated intensively with small patients, since tolerance for blood loss is much less in small patients. For example, one ml blood loss from a 250 g rat represents 6% of its total blood volume while one ml blood loss from a 30 g mouse represents 43% of total blood volume. Blood loss can be estimated by keeping track of the number of fully or partially saturated cotton tipped applicators used to absorb blood or fluids from a surgical site. The average cotton tip applicator holds 0.17 ml of blood, so counting saturated sponges or cotton tips is a crude but effective means for estimating fluid loss.

Kurt Sladky, MS, DVM, dip ACZM
WI CVM Drug Ther Conf Procd, Apr 2011

Effect of Carprofen on bone healing

The authors of this study concluded that the long-term administration of carprofen (2.2 mg/kg, PO, q12 h) may inhibit healing of a tibial osteotomy in dogs. Carprofen-treated dogs had a small callus size during the early stages of the osteotomy healing process, a delayed union of the fracture, obvious cartilage contents in the callus, and significantly lower values for the intrinsic material properties of the healing tibiae. The authors believe that the results of this study may be applicable to fracture healing in animals in clinical situations. The authors recommend caution in carprofen administration when treating fractures with delayed healing associated with a reduction in osteogenesis as well as fractures in animals with diseases (e.g., diabetes mellitus and hyperadrenocorticism) that predispose to delayed osseous repair.

Hiroki Ochi, DVM, PhD et al.
Am J Vet Res, May 2011

Avoid ultrasound gel when biopsying

A note about lubricant material and ultrasound gel; both of these materials can have very detrimental effects on specimen quality. It is essential to not contaminate slides. When aspirates are made using ultrasound for guidance, ALL of the gel must be wiped from the surface prior to inserting the needle through the skin. Failure to do so can result in non-diagnostic or suboptimal slides as even small amounts of gel often adhere to cells causing damage and poor cell staining. When doing rectal scrapings avoid or use minimal amounts of lubricant. Gel can be recognized as irregular, magenta colored material on the slide.

Jennifer Neel, DVM, Dip ACVP
12th NC VMA Conf Procd