Informing the profession since 1981

A digest of practical and clinically relevant information from this month's journals and proceedings

THE CAPSULE REPORT®
On Animals

Small Animal/Exotic Edition

Our 29th Year

Volume 29, Number 12 **March 2011**

IV lipid emulsions for toxicoses

In recent years, this long-time standard in parenteral nutrition (i.e. intravenous lipid emulsions [IVLE]) has been gaining favor as a treatment for common toxicoses. Potential efficacy of IVLE treatment has been shown in the treatment of toxicoses associated with local anesthetics, calcium-channel blockers, tricyclic antidepressants, propranolol, avermectins, permethrins, muscle relaxants (baclofen), chlorpromazine, sertraline, verapamil, and bupropion. While continued studies are being performed to establish optimal dosing schedules, current standard dosing protocol is as follows. Administration of 1.5 ml/kg over 5-15 minutes followed by 0.25 ml/ kg/minute administered over 1-2 hours via a CRI. The osmolarity of these IVLE solutions also allows for administration via both central and peripheral catheters. Additional doses may be repeated every 4-6 hours for 24-36 hours until resolution of clinical signs. But prior to repeating doses, a peripheral blood sample should be evaluated grossly for lipemia. If the serum is lipemic, additional doses should be delayed. In addition to the availability, ease of administration, and remarkable response, thus far, side effects associated with lipid therapy are rare. IVLE is a novel and exciting yet practical treatment option that deserves consideration.

Eleanor E. Lan, DVM, MBA
So Cal VMA Pulse, Feb 2011

INSIDE THIS ISSUE

Griseofulvin dosage

When dosing griseofulvin, using the proper formulation is critical. The dose for ultramicrosized griseofulvin is very DIFFERENT from the dose for micro-sized: the dose for ultramicrosized (Gris-PEG: Pedinol; www.pedonol.com) is 10 mg/kg, q12h; while the dose for microsized is 50 mg/kg, q24h. Make sure a prescription stresses the correct formulation (microsized vs. ultramicrosized) and that the dose is calculated correctly.

Paul Bloom, Dip ACVD
NAVC Clin Brf, 5:9

Efficacy of heartworm preventives

A problem does exist with lack of efficacy of heartworm preventives, according to a panel of representatives from the American Heartworm Society and Companion Animal Parasite Council, but the scope and severity of the problem are unclear. Most credible reports of lack of efficacy that are not attributable to compliance failure are geographically limited at this time, according to the panel report. The extent of this problem is obscured by demonstrated lack of owner and veterinary compliance, possible changes in environmental/vector factors, and newer, more effective antigen testing for heartworms, all of which contribute to what is interpreted to be a lack of efficacy. The panel concluded that the potential for resistance is not a reason to abandon macrocyclic lactones. The panel identified issues for further study and recommended that practitioners follow current AHS and CAPC guidelines on heartworm testing, prevention, and treatment. It was re-emphasized the importance of dog owners giving heartworm preventives to their dogs every 30 days. The practice of using preventives long term to treat heartworms may lead to selection of a resistant strain. The panel report as well as guidelines on heartworm control are available on the AHS website at www.heartwormsociety.org and CAPC website at www.capcvet.org.

JAVMA, Feb 1, 2011

Recognizing illegal dog fight injuries

Injuries are typically on the face, front legs, (rarely the rear legs), chest, and abdomen. Facial injuries are usually multiple puncture wounds that look like scattered buckshot. On the front legs, pieces of skin may have been pulled away in a ring-like pattern. You will see wounds in various stages of healing–fresh ones, recent ones that may appear pink in color, and some old wounds that have healed. Owners of valuable fighting dogs rarely bring their animals to the veterinarian in person. Instead, they send someone else who can claim they don't have direct knowledge of how the dog was injured. They may say the dog ran through a storm door or through a rose bush. They may also claim the dog was injured by a wild

The Capsule Report® is published monthly for active people interested in current topics and trends in veterinary medicine.

boar during a pig hunt or while hunting bear. But, a boar's tusk causes knife-like wounds, not puncture wounds and a bear's claws produce deep scratches inconsistent with fight injuries. If the client asks for surgical supplies like saline, controlled substances, or steroids, that is usually a clear tip-off that they are involved in dog fighting.

Dr. Randall Lockwood
DVM, 38:7

Interpreting the Schirmer tear test

Most sources state that the reference range of Schirmer tear test (STT) values is 15-20 mm/min in most species. But when considering the STT results, you must consider several factors. First, older dogs frequently have STT values lower than 15 mm/min but have no clinical signs of keratoconjunctivitis sicca (KCS). In addition, some animals, especially cats, have very low values (many are 0) when they are stressed in a clinic environment yet have no clinical signs of KCS. Thus, this author determines whether reduced tear production is meaningful based on two factors: 1) a lower-than-15 mm/min STT value and 2) clinical signs of KCS. For example, if an animal is presented that has a red eye or ocular discharge and a STT result of 10-14 mm/min, suspect that decreased tear production is causing it—unless another cause is found such as a corneal ulcer. On the other hand, if a cat is presented for evaluation of an eyelid mass or iris discoloration but no signs of red eye, squinting, or ocular discharge and has a STT result of 1 mm/min, the author assumes that the low result is due to stress and will not treat the cat for reduced tear production.

Juliet R. Gionnfriddo, DVM, MS, Dip ACVO
Vet Med, Oct 2010

Idiopathic cystitis pain relief

Relief of bladder pain during acute episodes or flares of chronic idiopathic cystitis is recommended. Though not specifically studied, oral buprenorphine at 5 to 20 µg/kg, BID to QID for 3 to 5 days has been helpful in providing relief to affected cats in the author's practice. Whether adequate provision of analgesia during acute episodes impacts development of future episodes currently is not known. The best regimen of analgesia for bladder pain (visceral) has yet to be determined.

Dennis J. Chew, DVM and CAT Buffington, DVM
71st Nestlé Purina Conf Procd

Home monitoring testing sites

A variety of testing sites lend themselves to pet and owner preference. Preferred testing sites in the cat and dog include the pisiform pad (non-weight bearing paw pad proximal to the carpal pad on the forelimbs) and lateral or marginal ear vein. The outer pinna is best in the cat and the inner pinna in the dog (best in dogs with floppy ears). The buccal mucosa is optimal in large and medium sized dogs with good temperament. The lateral elbow callus in dogs can make sampling easy when it is present. Small dogs and those that exhibit a biting tendency when their ears, feet, or mouth are handled, do best with testing the redundant skin fold at the dorsal tail base, where a small amount of hair can be clipped to facilitate testing. Varying the injection site of insulin leads to different absorption. For this reason this author does not advise rotation of the injection site. If local inflammation associated with repeat injections occurs, the injection site is changed to a new site rather than rotated between sites.

Sara L. Ford, DVM, Dip ACVIM
Vet Pract News, Nov 2010

Onion, garlic, leeks toxicity

The small amount of garlic sometimes found in dog treats is unlikely to be harmful to dogs. However, if cats or dogs ingest a tasty pan of sautéed onions, garlic, or leeks, poisoning may result. The ingestion of large amounts of garlic pills or powder may also cause poisoning. Garlic was once thought of as a "home remedy" for flea infestations; however, it has been shown to be ineffective and is not recommended by Pet Poison Helpline. These vegetables can cause red blood cell destruction (specifically, Heinz body formation) and result in anemia. Ingestion of onions or garlic greater than 0.5 percent of a dog's body weight is potentially toxic. For example, this equates to a 30-pound dog ingesting about 2.5 ounces of onion or garlic. Cats and Japanese breeds of dogs (Akita, Shiba Inu) are even more sensitive to the effects of these plants. Signs include onion or garlic smell on breath, lethargy, pale mucus membranes, tachypnea, tachycardia, vomiting, and a reduced appetite. Induce vomiting and then administer multiple doses of activated charcoal to decontaminate.

Ahna Brutlag, DVM
DVM360, 05;10

Deafness after anesthesia

The incidence and prevalence of acquired deafness in dogs and cats after an anesthetic procedure have not been established. However, this condition is believed to exist according to client communication with veterinarians. This study investigated the prevalence of clinical deafness after dental or ear cleaning procedures or other use of general anesthesia. Thirty nine cases of bilateral hearing loss were identified after a dental procedure or other procedure; other causes were identified via a survey. Although the study did not investigate the details of hearing loss, it is possible that deafness resulted from edema or fluid in the ear canal or middle ear. Five animals were discharged with ear ointment containing gentamicin or neomycin after an

ear procedure; ototoxicity of these products could also have been implicated as a cause of deafness. Unilateral deafness that occurs following a procedure might make the incidence even higher.

Heather Troyer, DVM, Dip ABVP et al.
NAVC Clin Brf, Oct 2010

Topical otic preparations

Topical otic formulations are made with combinations of pharmaceuticals such as antifungals, corticosteroids, insecticides, and topical anesthetics. First line antibiotics such as gentamicin, amikacin, neomycin, and polymyxin B are potentially ototoxic, so if there is no tympanic membrane (TM), these antibiotics should be avoided. In addition, neomycin has been implicated as a sensitizer in contact dermatitis in the ear. If the ear becomes worse with neomycin treatment, the antibiotic should be stopped immediately. Tobramycin (0.3% ophthalmic drops) is safer to use instead of other topical aminoglycosides if the status of the TM is unknown.

Louis N. Gotthelf, DVM
125th IL VMA Conf Procd

Pain in the surgery patient

There isn't compelling evidence that a NSAID given immediately before surgery is beneficial. In fact, there is an increase for an adverse event if a NSAID is given just before the procedure. Once the surgery and anesthetic events are over, giving the NSAID helps the body mitigate inflammation and post-op pain. Post-surgical thrashing or yelping isn't just part of the anesthesia, experts say. Special attention should be given to these animals to form an appropriate assessment. An appropriately managed patient will not be vocal post-surgically. One way to determine if a patient is experiencing pain post-surgically or is dysphoric is to interact with them. When you speak to the animal does it stop vocalizing or continue? If it completely ignores you and continues to yelp, it is dysphoric. If it stops vocalizing, it is likely experiencing pain.

Dr. Robin Downing
Vet Pract News, 22:8

MRSA ear infections and Zymox

Zymox (petkingbrands.com) is a proprietary solution of enzymes [lysozyme, lactoferrin, lactoperoxidase] for dermatologic conditions in pets that has been found to be effective against a broad range of microbial organisms, including those often found in ear infections. These 2 studies evaluated the efficacy of the topical spray and otic solution against methicillin-resistant *Staphylococcus aureus* (MRSA). The results indicated that Zymox has antimicrobial activity against MRSA at 30 seconds, 1 minute, and 5 minutes. Recommendations on standard infection control precautions for veterinary personnel are available at nasphv.org/documents/veterinaryprecautions.pdf.

R. Atwal, et al.
NAVC Clin Brf, 8:3

Microblood sample vs. standard

Iatrogenic anemia secondary to recurrent collection of blood samples is a recognized condition in hospitalized human patients. In this study, samples obtained from healthy dogs and cats by use of microsample blood collection tubes provided clinically equivalent CBC results, compared with results for samples obtained by use of standard blood collection tubes, and minimized the total sample volume collected for diagnostic testing.

Jacqueline Whittemore, DVM, and Bente Flatland, DVM
JAVMA, 237:3

Kitten diarrhea, *T foetus*

Tritrichomonas foetus, a more recently recognized enteric pathogen in cats, infects the large intestine and causes foul-smelling diarrhea and signs of colitis (mucus, tenesmus, increased frequency, hematochezia). One study reported a prevalence of 31% and found that 12% of patients were coinfected with Giardia organisms. Polymerase chain reaction testing on feces is considerably more sensitive (96%) than fecal culture (sensitivity, 56%), and microscopy of a fecal smear (sensitivity, 14%). An effective antimicrobial treatment for feline *T foetus* infections has not been identified. Metronidazole and ronidazole have been shown to be variably efficacious, although both agents hold potential for adverse effects, such as neurotoxicity. As a result, empirical treatment is inadvisable. Clinical remission is reported to occur in most cats but may take up to 2 years.

Melanie Craven, BVetMed, DSAM, MRCVS, Dip ECVIM
NAVC Clin Brf, 8:8

Using insulin glargine

The very long-acting products such as insulin glargine are now emerging as a suitable choice for feline diabetics. Insulin glargine has a gradual onset of effect but often lasts more than 24 hours. However, twice-daily dosing is suggested to maintain an euglycemic state. Because of its specific biochemical attributes, practitioners need to learn new parameters for dose adjustments with this product. One of the crucial concepts is the slow response; it may take 2-3 days to see a change in blood glucose concentrations after initiation of therapy or after a dose increase. Serious problems can occur if the dose is stepped up aggressively without allowing time to determine the effect. One of the advantages of insulin glargine is that most cats experience only minor fluctuations in blood glucose concentrations over the course of the day, and a reliable picture of glycemic control can be obtained with a blood glucose measurement taken every 4 hours. If possible, have the owner check blood

glucose concentrations at home for the first 3 days so that hypoglycemia can be identified.

Audrey K. Cook, BVM&S, MRCVS, Dip ACVIM
Vet Med, 105:3

Medical therapy, urethral obstruction

Opioids (buprenorphine or hydromorphone at lowest dose needed to attain comfort) can be used for analgesia and to help relax the urethral sphincter. The nonsteroidal antiinflammatory drug meloxicam (0.05-0.1 mg/kg, IV, SQ, or PO given once in patients with normal renal function; a 0.05 mg/kg dose may be repeated in 24 hours) may reduce inflammation and discomfort in cats straining because of inflammation. Alpha-1 adrenergic antagonists (phenoxybenzamine, 2.5-7.5 mg, q12-24h) and prazosin (0.5 mg, q8h) can be used to decrease urethral tone. Acepromazine (0.01-0.05 mg/kg, IV) can also be used to promote relaxation of the urethral sphincter. Parasympathomimetics (i.e. bethanechol) should be used only in animals that have bladder atony secondary to severe prolonged distention of the bladder, and only once urethral patency is confirmed and there is no evidence of remaining calculi.

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

Demodectic pododermatitis

Demodex is a mandatory differential diagnosis for any canine pododermatitis, be it symmetric or involving only one foot. Demodex infections may be restricted to only the feet. Demodectic pododermatitis is commonly complicated by secondary bacterial infections that require documentation (cytology; culture) and therapy. Demodectic pododermatitis may also be comparatively refractory to therapy. Diagnosis is by hair plucking and deep skin scraping. When inflammation is severe and/or chronic, plucking is often the diagnostic of choice, facilitating retrieval of mites from deep within the inflammatory tissue. In that it may be more difficult to keep topical medications in this area (i.e., amitraz), consideration is often given to oral therapy: 1) Oral ivermectin—0.3-0.6 mg/kg, daily or every other day; author starts with 0.4 mg/kg, once daily. If poor response after one month of therapy, increase to 0.6 mg/kg daily. Not to be used in herding breeds or crosses. Screening for genetic propensity to develop ivermectin toxicity is available through Washington State University. 2) Milbemycin oxime, 1-2 mg/kg daily; author starts with 1 mg/kg, once daily; if poor response in one month, increase to 2 mg/kg/day. For either of the above drugs, treat for two months beyond remission.

Rod A.W. Rosychuk, DVM, Dip ACVIM
74th AAHA Conf Procd

Inducing emesis in the dog

Patients that have ingested caustic or volatile substances, petroleum distillates, sharp objects, bread dough, or Gorilla glue should not be made to vomit. Birds, rodents, and rabbits cannot be induced to vomit. In dogs, apomorphine reliably induces vomiting: 0.03 mg/kg, IV is most immediate, while 0.04 mg/kg, IM and 0.08 mg/kg, SQ should work in 5 minutes. Placing crushed-up apomorphine tablets/powder in the conjunctival sac is less reliable and irritating, so it is not recommended. Naloxone can be used for reversal if undesirable sedation occurs. Oral hydrogen peroxide causes emesis by irritating the gastric mucosa, thus it is not ideal. Owners should not be recommended to administer peroxide at home, as aspiration can occur and they often do not realize how much is too much to administer. Doses of 1-2 ml/kg have been documented to cause gastric dilatation and hemorrhagic gastroenteritis.

Colleen Willmus-Cook, DVM, Dip ABVECC
Tex A&M CVM Emerg Med Procd, 10:10

Dermatophytosis

Clipping the patient is arguable. The author does not recommend generalized clipping although spot trimming may be acceptable. Clipping is a great way to contaminate the entire hospital. Most cats will not tolerate clipping and will need to be anesthetized or heavily sedated. Clipper blades should be autoclaved to prevent inadvertent contamination to another patient. Clipping may actually help to spread fungal spores to other parts of the body and accidental clipper damage to the skin may lead to severe inflammation. Bathing patients with dermatophytosis is controversial. No studies to date have supported the benefit of bathing with an antifungal shampoo. One study showed that using a miconazole/chlorhexidine shampoo 3 times per week decreased environmental contamination. However, the time to cure was the same as for those bathed with a plain shampoo or no treatment at all. The lack of efficacy, labor involvement and increased zoonotic potential are all good reasons to not recommend bathing.

Robert A. Kennis, DVM, MS, Dip ACVD
74th AAHA Conf Procd

Noise phobia and acepromazine

Acepromazine is an antipsychotic with sedative properties. However, it is not a good anxiolytic and is probably the most commonly misused medication for the treatment of noise phobias. The animal may move extremely slow because it is sedated, but that does not mean its fear is alleviated. Acepromazine is suitable only as a supplement to a true anxiolytic in patients that engage in such violent behavior, (e.g., jumping through windows), that they are likely to harm themselves.

Sharon Crowell-Davis, DV M, PhD, Dip ACVB
NAVC Clin Brf, 5:4