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Botox for joint pain

Botulinum toxin A (BoNT/A), a potent neurotoxin produced by *Clostridium botulinum,* inhibits acetylcholine release into the synaptic cleft in cholinergic nerve terminals, resulting in muscle paralysis. It also inhibits release of neurotransmitters involved in direct pain perception which are involved in peripheral pain perception in osteoarthritis (OA) patients. Thus, BoNT/A may have antinociceptive properties when injected intraarticularly into a painful arthritic joint. Despite reports that botulism can occur in humans injected with intramuscular BoNT/A, no major adverse reactions were noted in study dogs. Although this study was limited by small sample size, injection of BoNT/A into joints presents a fascinating potential method of combating OA pain. This study is also clinically relevant because the patients had naturally occurring rather than experimentally induced OA, which has been used in past assessments of other intraarticular medications. Perhaps this novel technique will present a new class of clinically relevant analgesics and advance our ability to provide pain relief.

Heather Troyer, DVM, Dip ABVP, CVA, et al.
NAVC Clin Brf, Aug 2014

Perform two heartworm tests

The Companion Animal Parasite Council (CAPC) has updated its heartworm guidelines to recommend that a microfilariae test be performed annually on all dogs in addition to the customary antigen test and that veterinarians consider administering tests twice a year in heartworm-prevalent areas. Reports of an increasing number of false-negative antigen results led CAPC to modify the guidelines. Some dogs appeared to have developed immune complexes that led to a rising number of false negatives involving commercial antigen tests. Some parasitology specialists speculate that one reason for the increase in the test results may be related to the practice of placing heartworm-infected dogs on long-term macrocyclic lactone preventives and antibiotics rather than treating them with an approved adulticide. The combination treatment, known as the slow-kill method, came into use because of an ongoing shortage of Immiticide. Dogs managed with these protocols may experience prolonged inflammation, which could result in the formation of immune complexes that mask the detection of antigens on commercial tests. One study found that more than 50% of dogs on slow-kill treatments displayed a false negative on an antigen test.

Vet Pract News, Sep 2014

INSIDE THIS ISSUE

Breeder myths

"The due date is 63 days from the first breeding." Many breedings have the timing selected by the humans involved rather than the dogs. The "true fertile period" may be earlier or later than that assumed. Breeding dates are determined by show schedules, stud availability, rules like "breed on 10th-14th day," or convenience factors and when the owner can get the bitch to the stud. While 63 days is a good estimation of due date in the situation where a bitch stands for a stud over a 7-8 day period and multiple breedings were allowed, it can lead to very erroneous due dates in many other situations. Bitches can deliver a normal litter anywhere from 57-70 days after a single fertile mating. With veterinary involvement the calculation of the due date based on LH peak, progesterone rise, or vaginal cytologic diestrous are better predictors of the due date.

Kit Kampschmidt, DVM
SW Vet Symp, 09:13

Beware of chloramphenicol in corneal infections

The most common bacteria cultured from canine corneal infections include Streptococci (mainly beta-hemolytic varieties), Staphylococcus pseudintermedius (some are methicillin-resistant or MRSP), *P aeruginosa* and *Enterococcus spp.* About 90% of these bacteria are sensitive to chloramphenicol with the exception of *P aeruginosa.* Both *P. aeruginosa* and *S. pseudintermedius* are sensitive to tobramycin and ciprofloxacin, but MRSP and *Enterococcus spp* are not. Combining chloramphenicol with tobramycin (or ciprofloxacin) should kill over 99% of bacteria found in corneal infec-

tions. However, chloramphenicol has been shown to rarely induce aplastic anemia in humans. An owner's accidental ingestion of even minute amounts of their pet's prescribed chloramphenicol could be life-threatening. Due to this toxicity, chloramphenicol should not be prescribed for trivial infections, prophylaxis, or when infections respond to other antibiotics. If prescribed, owners should wear gloves while administering topical chloramphenicol to their pets.

Noelle La Croix, DVM, Dip ACVO
N Amer Vet Conf, 01:13

Off-label Onsior use

Chronic pain can have many causes, but the most frequent indication for treatment is arthritis, a disease that is common but often hidden by the cat. The most frequently reported clinical signs are reluctance to jump, guarding of joints and lameness. However, if it is bilateral (both knees, for example), a noticeable limp is usually not present. Management of chronic pain caused by arthritis is complicated because limited options exist. One of the best options is Onsior. Use of Onsior past 3 days is considered off-label in the U.S. It is approved for six-day use in many other countries around the world. However, it is increasingly being used for chronic feline pain, most notably that caused by arthritis. To date, side-effect have not been reported other than mild GI upset. This author has used it very successfully in older cats with arthritis. It is prescribed for daily use, but after a period of stabilization, some cats do well with treatment every 48 hours. Informed consent in writing is also recommended.

Gary D. Norsworthy, DVM, Dip ABVP and Lisa Restine, DVM
Vet Pract News, Jul 2014

Vaccine fallacies

FICTION: As long as the vaccine is approved for use in that species, mixing vaccines from difference manufacturers is OK. FACT: This practice is NOT recommended. Because manufacturing processes vary among companies, mixing different vaccines from different manufacturers may result in pH or osmolality incompatibility that will render one or more immunizing antigen ineffective. PLUS...if a serious post-vaccinal reaction or injury resulted, the veterinarian could be deemed negligent. Vaccines from different manufacturers can be administered to an individual patient at the same appointment, however, it is recommended that vaccines be administered in different sites using a separate syringe for each dose administered. FICTION: Once reconstituted, MLV vaccines have a 'shelf-life' of several hours or, if kept in the refrigerator, several days. FACT: Vaccines sold as a freeze-dried (lyophilized) product (typically MLV vaccines) should be used promptly, regardless of whether they are stored in the refrigerator. Especially important is the fact that once re-constituted (rehydrated with diluent), MLV vaccines are susceptible to degradation and may become completely inactive. In the case of canine distemper vaccines, for example, the re-constituted product can become inactive within 2 hours. Therefore, it is currently recommended to adhere to the following principle: "1 HOUR...use it....or lose it!"–regardless of how it's stored.

Richard B. ford, DVM, MS, Dip ACVIM
Gulf-Atl Vet Conf, 10:13

Guidelines for house soiling

The American Association of Feline Practitioners and the International Society of Feline Medicine have released guidelines for Diagnosing and Solving House-Soiling Behavior in Cats, which have been endorsed by the American Animal Hospital Association. The guidelines convey scientifically documented information, when available, and provide practical insight that reflects the accumulated clinical experiences of the authors. The document emphasizes that house soiling is not a result of spite or anger toward the owner but a result of the cat's physical, social, or medical needs not being met. The guidelines replace the term "inappropriate urination" with the term "house soiling" because the latter implies no misconduct by the cat and thus could encourage owners to follow veterinary recommendations. The document helps clinicians identify the causative factors of house soiling and includes a questionnaire for cat owners. Within the guidelines is an algorithm for the diagnosis and treatment of four basic categories of house soiling. The document offers two universal recommendations for the management of all cases of house soiling: optimizing the litter box and meeting the five pillars of feline environmental needs. The guidelines also include specific treatment suggestions for each diagnostic category, take-home instructions for cat owners, and steps for practitioners to take if a client is considering euthanasia.They are available at http://bit.ly/1mc59fP.

JAVMA, Aug 15, 2014

An old "solution" to wounds

Dakin's solution or diluted sodium hypochlorite solution 0.5% is germicidal and nonirritating. It can be applied for more than 7 days without irritation. Lower concentrations (0.025%) are also bactericidal and do not hamper wound healing. At 0.25% concentrations, Dakin's is effective against gram-negative and gram-positive bacteria, fungi, and viruses. The solution can be applied directly to the wound or in soaked gauze. It should be used for 7 days or less. It will not debride the wound, encourage macrophages, relieve edema, or provide anti-inflammatory properties. You will need tap water, baking soda, and household bleach to make Dakin's solution. a) Boil 4 cups water for 15 minutes. b) Remove from heat. c) Using a sterile spoon, add 1/2 teaspoon of baking soda and 95 ml of bleach. d) Place

in a sterile jar, close the lid tightly, and cover the jar in foil to protect it from light.

Jennifer Wardlaw, DVM, MS, Dip ACVS
79th AAHA Conf

Aspirin and heartworm in the cat

The use of aspirin has been questioned as vascular changes associated with heartworm infection (HWI) consume platelets, increasing their turnover rate and effectually diminishing the antithrombotic effects of the drug. Conventional doses of aspirin did not prevent angiographically-detected vascular lesions. Dosages of aspirin necessary to produce even limited histological benefit approached the toxic range. However, because therapeutic options are limited; because at conventional doses (80 mg, PO, q72h), aspirin is generally harmless, inexpensive, and convenient; and because the quoted studies were based on relatively insensitive estimates of platelet function and pulmonary arterial disease (thereby possibly missing subtle benefits), the author continues to advocate aspirin for cats with HWI. Aspirin is not prescribed with concurrent corticosteroid therapy.

Clarke E. Atkins, DVM, Dip ACVIM
New Eng Vet Conf, 09:13

Strategies for treating Pseudomonas otitis

An aminoglycoside antibiotic will be inactivated in the presence of large amounts of pus. Always utilize a chelating agent (tris-EDTA) to prevent development of resistance and to remove the abundant purulent exudate. Volume is crucial when treating these cases - the ear canal must be filled with solution, especially when utilizing a tris-EDTA product. Compounded products are often very successful, used wisely. Ticarcillin: an alternative treatment - It's use should be reserved for fluoroquinolone (FQ) failures. Topical therapy instructions: 3.1 gram vial is diluted using 100 ml of sterile saline and 1.0 ml aliquots are drawn into 3.0 ml syringes (plus 1 extra ml of air), capped and frozen. The product is stable for 1 month if frozen. Owners are instructed to thaw 2 syringes each a.m. and p.m., allowing the syringes to reach room temperature, and the solution is then infused into the external ear canals, which are then massaged for 30-60 seconds. 1 vial (100 syringes) will last for 25 days in a dog with bilateral disease. Malassezia overgrowth is commonly noted following treatment with Ticarcillin and will require treatment with an appropriate antifungal otic.

Elizabeth R. May, DVM, Dip ACVD
123rd SD VMA Conf Procd, Aug 2014

Feeding tube in the cat

Should the tube clog, a cola-type soft drink, pancreatic enzymes, or meat tenderizer can be instilled into the tube, left to incubate for about 10 minutes before attempting to flush tepid water through the tube to check for patency. Cats can eat with any of these tubes in place. It is recommended to avoid offering food for a week to reduce the likelihood of them developing aversion to the food offered. Once a cat is eating well with tube in place, the question becomes when one can remove the tube. Weigh the cat and, as long as he/she is eating well, avoid using the tube (for nutrients) for a week then reweigh the kitty. If the weight is stable (or increased), then it is safe to remove the tube. Because of stoma formation (except with nasoesophageal tubes), removal does not require anesthesia. Remove the suture (purse-string or stay sutures) and pull the tube out. In the case of a gastrostomy tube, the bulb/balloon must be straightened out by inserting a straight probe through the tube while concurrently pulling the tube out. Suturing is not required for any of the skin openings. Cleanse any minimal serous discharge that may occur for two-three days. Protect using a Kitty Kollar e-tube collar (www.kittykollar.com).

Margie Scherk, DVM, Dip ABVP
SW Vet Conf, 09:13

Importance of fatty acids in cancer treatment

Many referring veterinarians around the world have noted that medical, surgical, and radiation oncologists are treating with n-3 polyunsaturated fatty acid (PUFAs) such as docosahexaenoic acid (DHA) to enhance the effects of chemotherapy and radiation therapy and as an adjuvant therapy to prevent cancer progression and metastasis. The use of fatty acids such as DHA is designed to enhance disease-free intervals, survival, and quality of life after surgery by reducing the rate of cancer development or incidence. This concept, known as "cancer prevention by delay," has recently been recognized and is an important mechanism behind the successes of several therapeutic agents. As an example, when dogs with lymphoma were treated with doxorubicin chemotherapy and a diet supplemented with n-3 fatty acids in the form of fish oils, there was a direct correlation between the level of DHA in the blood and improved disease-free interval.

Gregory Ogilvie, DVM, Dip ACVIM
79th AAHA Conf

Avian CPR

Cardiac arrest carries a grave prognosis, as direct compression of the heart is not possible because of the overlying sternum and musculature. IF A BIRD IS IN CARDIAC OR RESPIRATORY ARREST, YOU ONLY HAVE SECONDS. Immediately give the bird high flow-by oxygen by mask (4 L/min). If possible, place an endotracheal tube and start positive-pressure ventilation. Use non-cuffed ET tubes or an 18-gauge catheter (for Lovebirds, Budgies). The glottis is located at the base of the tongue in all species. If no heartbeat is ausculted, chest compressions are performed by compression of the sternum at a rate of 60-80 per minute. Epinephrine

and atropine can be given IV, IO, or via the endotracheal route (use a tom cat catheter inserted down the endotracheal tube and double the dose used for IV). Intracardiac injections should be avoided, because of risk for laceration of the coronary vessels. Following are doses for epinephrine (1:1000). Budgie-0.01 ml; Cockatiel/Conure-0.04 ml; African Grey/Amazon/sm cockatoo-0.2 ml; Macaw—0.5 ml. The doses for atropine follow. Budgie-0.03 ml; Cockatiel/Conure-0.08 ml; African Grey/Amazon/sm cockatoo-0.4 ml; Macaw/large Cockatoo-1.0 ml.

Katherine Quesenberry, DVM, MPH
New Eng Vet Conf, 09:13

Grade III corneal ulcers

Grade III ulcers extend past the basement membrane and may extend to the mid-stroma. Often these ulcers will have a "melting" appearance similar to that of Grade IV ulcers. These ulcers tend to be less painful than Grade I ulcers. The lesions may or may not be progressive and should be carefully monitored. Anytime an ulcer involves the corneal stroma you are not wrong to consider culture and sensitivity testing. Treatment should include topical antibiotic solutions and here is a good time to consider using two different classes of antibiotics simultaneously, especially if a culture and sensitivity is not performed. Atropine is used according to the level of pain and intraocular inflammation, but generally 2-3 times daily. ***Topical serum is a great source*** of anti-proteases. It can be obtained from the patient or another animal. Generally serum is applied 3 times daily and does not have to be refrigerated. Serum should be discarded after 7 days. Cyclosporine solution may also be considered for its ability to decrease T-helper cell migration into the cornea. Systemic NSAIDs or steroids should be considered. Frequent reevaluations are critical as a Grade III ulcer can rapidly progress to a Grade IV ulcer. It is recommend all animals with Grade III ulcers be evaluated every 24 hours.

William W. Miller, DVM, Dip ACVO
SW Vet Symp, 09:13

5-Fluorouracil poisoning

Fluorouracil, also referred to as 5-FU, is an antineoplastic agent commonly found in creams prescribed for the treatment of human actinic keratosis and superficial basal cell carcinomas. Common topical preparations have a 0.5% to 5% concentration. Brand names include Efudex, Carac, Adrucil, and Fluoroplex. The most common exposure of cats and dogs to this product is via accidental oral exposure after chewing into a tube of the product. These preparations have an extremely narrow margin of safety, and most ingestions must be considered medical emergencies. Cats are quite sensitive to the effects of 5-FU; even a few licks of the product may cause life-threatening toxicity. The onset of clinical signs is very rapid, beginning 1-5 hours after ingestion. Because of the rapid onset of toxicity, the induction of emesis by the pet owner is not often recommended. The most common signs of toxicity include rapid onset vomiting, death, and seizures and tremors that are often poorly responsive to diazepam. Treatment of toxicity must be aggressive. Typically, decontamination is not effective due to rapid absorption of the drug from the stomach and rapid onset of clinical signs. Treatment is supportive and includes anticonvulsant therapy (e.g., diazepam, phenobarbital, propofol, gas anesthesia), antiemetic therapy, and IV fluids to maintain perfusion to both the GI and CNS. Death typically occurs as a result of secondary complications.

Ahna Brutlag, DVM, MS
79th AAHA Conf, 03:12

Feeding canned food to the cat

The commercially available diets lowest in CHO are canned foods. It is important to remember that just because you are feeding a canned food, it does not mean that you are feeding a high protein, low CHO diet (you must read the label) and it also doesn't mean you are feeding a high quality protein (low quality protein in foods can cause fecal odor and diarrhea due to poor digestibility). Most cats should be fed some (50% is a starting point) canned food as part of their diet throughout their life — both to reduce the CHO in their diet, but also to better control calories (dry foods are very calorie dense), and to increase the amount of water consumed daily. Furthermore, eating canned food is a learned behavior — if canned food is part of a kitten's diet, they will more readily eat canned food as an adult (e.g. when they need canned food for urinary disease or renal disease later in life). An important follow up point to remember about all diets is that calories count. You cannot free choice feed most indoor cats — even with high protein, low carb diets - because if they consume too many calories (and the diabetes diets are very calorie dense) they will become or remain obese. Also, calorie control must be started when they are kittens as obesity starts in young adults due to the issues with neutering and energy intake.

Debra L. Zoran, DVM, PhD, Dip ACVIM
WI VMA Conf, 10:12

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